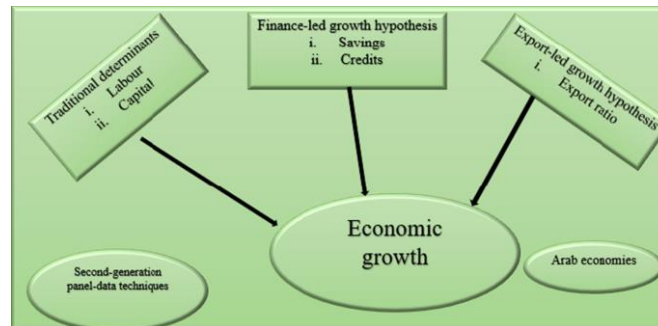# BANKING SECTOR DEVELOPMENT AND ECONOMIC GROWTH DEVELOPING COUNTRIES: A BOOTSTRAP PANEL GRANGER CAUSALITY ANALYSIS

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Abstract:

The purpose of this paper is to revisit the Granger causal relationship between banking sector development and economic growth for forty developing countries in the period 1970-2012. We devised two indices to comprehensively assess the development of the banking sector and employed a panel bootstrapped approach for Granger causality testing. This method adequately addresses concerns related to cross-sectional dependence and heterogeneity. Our empirical findings offer modest backing for the supply-leading, demand-following, and complementarity hypotheses. Moreover, our analysis suggests a causal relationship between banking sector development and economic growth across twenty-five countries.

This paper investigates the relationship between banking sector development and economic growth in developing countries using a Bootstrap Panel Granger Causality Analysis. The banking sector plays a crucial role in fostering economic development by mobilizing savings, allocating capital efficiently, and channeling investments into productive sectors. However, the precise nature of the causal linkages between banking sector development and economic growth remains subject to empirical scrutiny, particularly in the context of developing economies characterized by diverse institutional settings and economic structures.

Employing a panel data approach, this study examines the causal dynamics between banking sector development and economic growth across a sample of developing countries. By leveraging the richness of cross-country variation and time-series dynamics, we aim to provide a nuanced understanding of the symbiotic relationship between banking sector development and economic growth.

Our discoveries illuminate the causal connection between banking sector advancement and economic growth in developing nations, presenting significant insights for policymakers, economists, and scholars. Through informing policy discussions and promoting data-driven decision-making, this research contributes to the crucial goals of sustainable development and inclusive growth in developing economies.

Objective:

Here are some possible objectives for your research on banking sector development and economic growth in developing countries:

- To assess the level of banking sector development:

1. Measure the depth, breadth, and efficiency of banking services in a sample of developing countries.
2. Evaluate indicators such as banking assets, loan-to-deposit ratios, and financial inclusion metrics.

- To analyze the impact of banking sector development on economic growth:

1. Investigate the relationship between various dimensions of banking sector development (e.g., financial intermediation, access to credit) and economic growth.
2. Examine how changes in the banking sector affect key macroeconomic variables such as GDP growth, investment, and employment.

- To explore the channels through which banking sector development influences economic growth:

1. Identify the transmission mechanisms by which a well-developed banking sector contributes to economic growth.
2. Investigate whether improvements in banking sector efficiency lead to increased capital formation, productivity gains, or enhanced risk management practices.

- To examine the role of institutional factors in shaping the relationship between banking sector development and economic growth:

1. Analyze the impact of regulatory frameworks, legal systems, and governance structures on the effectiveness of the banking sector in promoting economic growth.
2. Investigate how institutional quality moderates the relationship between banking sector development and economic outcomes in developing countries.

- To provide policy recommendations for enhancing banking sector development and promoting economic growth:

1. Offer evidence-based policy insights to policymakers, central banks, and financial regulators on strategies to foster a sound and inclusive banking sector.
2. Suggest reforms aimed at improving financial stability, enhancing access to finance for underserved populations, and promoting sustainable economic growth in developing countries.

- To contribute to the existing literature on banking sector development and economic growth:

1. Synthesize and extend previous research findings on the relationship between banking sector development and economic growth in developing countries.
2. Fill gaps in the literature by employing robust econometric techniques and addressing methodological challenges in assessing causality.

Introduction:

In the realm of economic development, the banking sector serves as a critical conduit, facilitating the flow of capital, fostering investment, and ultimately driving growth. Particularly in developing countries, where financial systems are often nascent and undergoing rapid transformation, understanding the dynamic relationship between banking sector development and economic growth becomes imperative. This paper delves into this intricate relationship, employing a robust analytical framework – the Bootstrap Panel Granger Causality Analysis – to unravel the causal linkages between banking sector development and economic growth across a spectrum of developing economies.

Over the past few decades, the banking sector has emerged as a linchpin of economic progress, transcending its traditional role of mere financial intermediation. Its functions now encompass mobilizing savings, allocating capital efficiently, mitigating risks, and channeling investments into productive sectors. Consequently, the performance and stability of the banking sector wield profound implications for overall economic performance, especially in the context of developing countries striving to achieve sustainable development goals.

The significance of banking sector development in fostering economic growth has garnered considerable attention among policymakers, economists, and researchers. While conventional wisdom suggests a positive association between a robust banking sector and economic growth, the precise nature and direction of causality remain subject to empirical scrutiny, particularly in the context of developing economies characterized by diverse institutional settings, regulatory frameworks, and economic structures.

In this study, we embark on a comprehensive investigation into the causal dynamics between banking sector development and economic growth in developing countries. We adopt a panel data approach to leverage the richness of cross-country variation and time-series dynamics, thus offering a nuanced understanding of the causal linkages that underpin the symbiotic relationship between banking sector development and economic growth.

Furthermore, to address potential endogeneity concerns and enhance the robustness of our analysis, we employ the Bootstrap Panel Granger Causality Analysis – a state-of-the-art econometric technique that accommodates for non-normality, heteroscedasticity, and cross-sectional dependence, thereby yielding reliable and unbiased causal inference.

By shedding light on the causal nexus between banking sector development and economic growth in developing countries, this study aims to inform policy deliberations, foster evidence-based decision-making, and offer insights that resonate with the imperatives of sustainable development and inclusive growth.

Review Of Literature:

In theoretical models of growth, investment capital is recognized as the fundamental factor that determines growth from both perspectives: aggregate supply and aggregate demand. An increase in the investment capital (total supply) causes output to increase. An increase in output causes an increase in income and consumption, that is, an increase in aggregate demand. In turn, an increase in aggregate demand stimulates investment and promotes growth. Therefore, a lack of investment capital is often seen as a major obstacle to accelerating economic growth. Investment capital is also a decisive factor in improving infrastructure and promoting the application of technological advances. Domestic investment capital is mainly mobilized from households and entities with idle capital in the economy, which is then allocated to the business sector for developing investment projects or expanding business activities. This financial system helps the processes of capital mobilization and allocation to take place through two main channels: the banking system and the stock market. Thus, the financial system has a special role in the growth process. The ability to raise capital and allocate capital depends on the level of development of the financial system and its components.

The banking system is an integral part of the financial system. Therefore, the nature of the impact of banking system development on economic growth can be clarified on the theoretical ground of the concept of financial development and its role in economic growth. **Levine** (**2005**) believes that financial development is the process by which financial intermediaries, financial markets and financial instruments perform well in processing information, minimizing transaction costs, and ensuring the execution of financial transaction contracts so that the financial system can best perform its functions. **Levine** (**2005**) puts forward five important criteria for financial development. First, economic entities can easily find information about potential investment projects and allocate capital efficiently. Second, economic entities can monitor and control investment activities. Third, economic entities can carry out economic transactions and diversify and manage risks. Fourth, there are appropriate channels to mobilize savings. Fifth, the financial system supports and promotes the purchase and sale of goods and services. By performing these functions, the financial system affects saving and investment, thereby promoting economic growth. In addition to the definition of financial development by **Levine** (**2005**), there are other definitions of financial development in the literature. Indeed, all of these definitions commonly imply financial development in such a sense that the financial system operates more efficiently and performs its functions well (through the operation of financial institutions and financial markets), helping economic entities to access financial resources, invest their savings and satisfy other financial needs as per their functions and roles.

A banking system that develops, operates and performs its functions well contributes to the healthy and efficient operation of the financial system, thereby promoting economic growth. Intuitively, financial markets and financial institutions can hardly perform their functions if the banking system is primitive and underdeveloped. For example, if the banking system does not perform well as an intermediary for payments and money creation, financial transactions may slow down and financial assets may become illiquid. Similarly, inappropriate credit decisions and asymmetric information may also adversely affect the process of capital flow in financial markets. The banking system itself, if well developed and able to better perform its functions, will directly affect economic activities and promote economic growth. First,

the banking system helps to improve the allocation of scarce financial resources by providing credit to the most efficient businesses or investment projects. Second, the banking system assists households in planning and implementing appropriate consumption through savings and bank borrowing (**Allen and Gale 2001**). Third, the banking system provides liquidity to the economy by transforming short-term liabilities into long-term assets (**Diamond and Dybvig 1983**). Through this activity, the banking system helps savers manage their liquidity risks while providing capital for long-term investment projects. Fourth, the banking system helps to speed up the flow of goods and services, accelerate the payment process, and promote the speed of capital flow, thereby supporting economic growth as well. From the perspective of macroeconomic policy management, the banking system is a channel that the central bank can use to carry out the transmission of monetary policy and achieve its policy targets for each period.

There are two main views on the nexus between financial development and growth. The supply-leading view considers financial development to be the driving force behind economic growth. The demand-following view holds that financial development results from the real needs of the economy. Based on these two views, many empirical studies with different datasets and methods have been carried out in past decades, but they have not yet yielded consensus conclusions about the direction and channel of interaction between financial development and growth. Many studies provide evidence that supports the view that financial development plays a driving role in growth, while others support the view that growth drives the development of the financial system as the latter develops to respond to the needs of the real economy. Meanwhile, a number of studies provide evidence of a two-way cause–effect relationship. Several recent studies have documented the nonlinear impact of financial development on economic growth and the important role of financial stability (**Prochniak and Wasiak 2017**; **Bucci and Marsiglio 2019**; **Nguyen and Pham 2021**). Several reasons can be put forward to explain the differences in empirical findings.

While there are many studies focusing on the relationship between financial development and growth in general, few studies have been conducted to present empirical analyses of the influence of banking development on growth. The studies taking into consideration the influence of banking development are either based on a cross-sectional sample of data collected from a group of countries or a sample of time series data from a given country. Overall, these studies report two main findings. First, banking development has a positive impact on growth, in which banking development is measured by criteria such as money supply to GDP ratio, bank credit to GDP ratio, and deposit to GDP ratio (**Levine 1997**; **Fukuda 2001**; **Koivu 2002**; **Beck and Levine 2004**; **Dawson 2008**; **Abubakar and Gani 2013**). Second, bank performance has a positive effect on growth (**Al-Khulaifi et al. 1999**; **Cole et al. 2008**).

The study of the impact on growth of financial development in general and banking development in particular is specifically significant for transition economies, such as those in Vietnam and a number of countries in Eastern Europe, as the findings can be useful for drawing policy implications. Before launching the journey of economic transition in the late 1980s or so, the banking systems in these countries purely operated under a centrally planned mechanism. In order to support the formation and operation of the market mechanism in these economies, it is essential for the banking system to reform, innovate and develop market-based principles. However, there are only a few studies on the effects of banking

development on growth for transitional economies (see, for example, **Kenourgios and Samitas 2007**; **Koivu 2002**; **Petkovski and Kjosevski 2014**; **Nguyen and Pham 2021**).

A conclusion drawn from the review of the literature is that empirical studies provide mixed and inconclusive findings on the interaction between financial development and economic growth. This could be partly due to differences in the adopted methods, data samples and time spans. The multidimensionality of financial development, leading to the use of different measures of financial development, might be another reason. In addition, the degree and direction of interaction between financial development and growth might be dependent on country-specific conditions such as the level of economic development, the degree of financial depth and the macroeconomic environment. Countries differ in their level of financial development due to differences in policies and institutions, thus experiencing different interactions between financial development and economic growth (**World Bank 1993**). For example, **Odedokun** (**1996**) investigated the impact of financial development on economic growth using time series data spanning from 1960 to 1980 collected from 71 less developed countries (LDC), reporting that the impact of financial intermediation on growth in low-income LDCs is more predominant than that in high-income LDCs. A number of empirical studies documented a positive correlation between the size of the financial sector and economic growth for countries with small or medium financial sectors but not for countries with very large financial sectors (**Deidda and Fattouh 2002**; **Arcand et al. 2012**; and **Cecchetti and Kharroubi 2015**). Conducting a short-term causality analysis with a dataset collected from 168 low- and middle-income countries, **Hassan et al.** (**2010**) provided evidence of bidirectional causality between financial development and growth for countries in most regions, but there was evidence of unidirectional causality from growth to financial development for the two poorest regions. **Creel et al.** (**2015**) applied the generalized method of moments to a dataset formed from European Union countries for the period 1998–2011 and reported that a high degree of financial depth might give rise to a risk of financial instability, which was harmful to macroeconomic performance. By and large, in spite of numerous empirical studies, the reported findings are inclusive and general in nature, and they are not relevant to drawing policy implications for specific conditions.

For a transition-emerging economy such as Vietnam, a clear understanding of the role of the banking system in growth, as well as the interaction channels, is significant in terms of formulating relevant strategic developmental policies. For the Vietnamese case, a few studies have been conducted with the aim of quantifying the impact of financial development on growth in general, in which financial development is measured by one or two indicators normally proxied for the development of the banking system, such as the ratio of bank credit to GDP or the ratio of broad money to GDP (for examples, see **Tran 2005**; **Anwar and Nguyen 2011**; **Phan 2011**; **Nguyen 2014**). These studies have two main limitations: (i) they only provide empirical analytic evidence based on too-short time series data with a time span limited to the period before Vietnam started its economic restructuring; and (ii) they do not consider the possible nonlinear effect and diminishing marginal effect of the banking development on growth.

Methodology:

The empirical analysis in this paper is carried out in two steps. First, as a prerequisite to our Granger causality tests, we carry out tests for cross-section dependence and slope homogeneity. In the second step, based on the results from preliminary analysis, we apply a panel causality test that takes into consideration the issues of cross-section dependence and slope homogeneity (Kònya, 2006). A brief account of the econometric models used is presented below. Recent advances in panel causality analysis have brought to the fore two basic econometric issues that cannot be ignored in under taking panel Granger causality tests. The first concerns the issue of cross-dependence and the second concerns the issue of heterogeneity across countries. The recent world economic situation has shown that turbulence in a country can easily be transmitted to other countries through international trade and economic and financial integration (Nazilioglu et al. 2011). As pointed out by Pesaran (2006) ignoring cross-section dependency leads to substantial bias and size distortions implying that testing for the cross-section dependence is a crucial step in a panel data analysis (Nazilioglu et al. 2011; Chu and Chang, 2012; Boubtane et al. 2013; Chang et al. 2013).

$$Y_t = \alpha_0 + \alpha_1 K_t + \alpha_2 X_t + \varepsilon_t \qquad (1)$$

To investigate the impact of the level of banking development on economic growth we estimate equation (2) by introducing the independent variables in growth form except for IRS due the behavior of these variables over time as shown in descriptive statistics of the employed variables.

Therefore we estimate the following equation;

$$GDPG_t / (GDPPCG_t) = \alpha_0 + \alpha_1\, ASTRG_t + \alpha_2 CRTRG_t + \alpha_3 DEPG_t + \alpha_4 IRS_t + \varepsilon_t \quad (2)$$

Data Collection

Secondary Sources of data composition have been used, viz. journals, IBA bulletin, statistics released by Reserve bank of India and annual reports released by the banks.
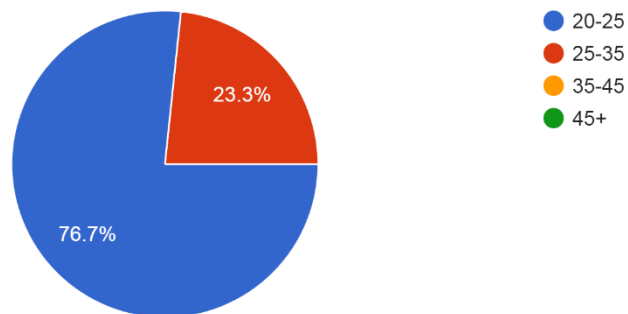
Results And Analysis:

DATA ANALYSIS AND INTERPRETATION

Figure 1:

On the basis of Age Group.

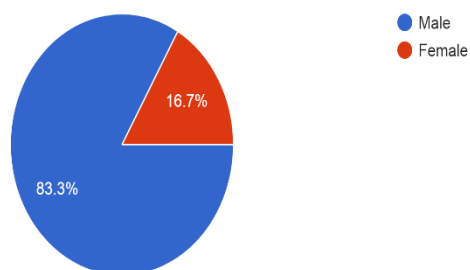Age
30 responses

Legend:
- 20-25
- 25-35
- 35-45
- 45+

INTERPRETATION

The above chart clearly describes, out of 30 respondents, 76.7 % were in the age group of 20-25 years, 23.3% were 25-35 years in the age group, and none of the respondents were above 45+ years in the age group.

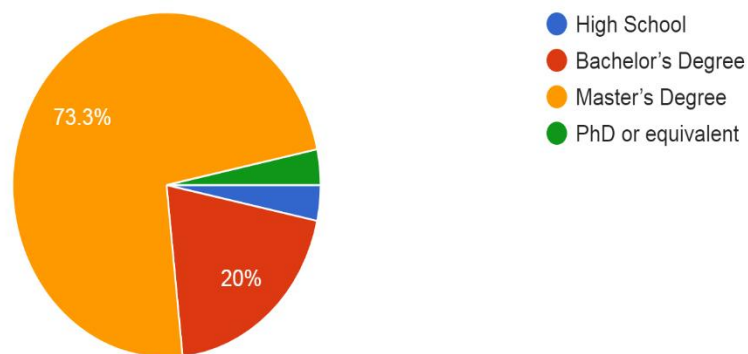**Figure 2:**

On the basis of Gender.

Gender
30 responses

INTERPRETATION

The above chart clearly describes, out of 30 respondents,83.3% are Male, and 16.7% are Female.

Figure 3:

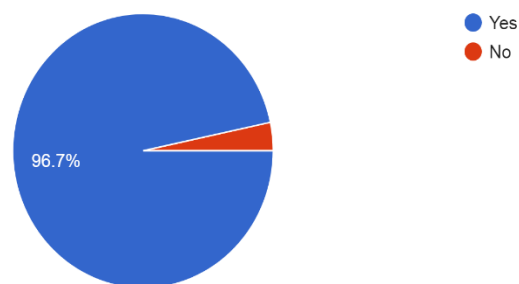**Education Background**

Education Backgroung

30 responses

INTERPRETATION

The above chart clearly describes, out of 30 respondents, 73.7 % were in the Master's Degree, 20% were in the Bachelor's Degree,4% were in the High School and 3.7 % is PhD or Equivalent.

Figure 4:

Person have a Bank A/c or not
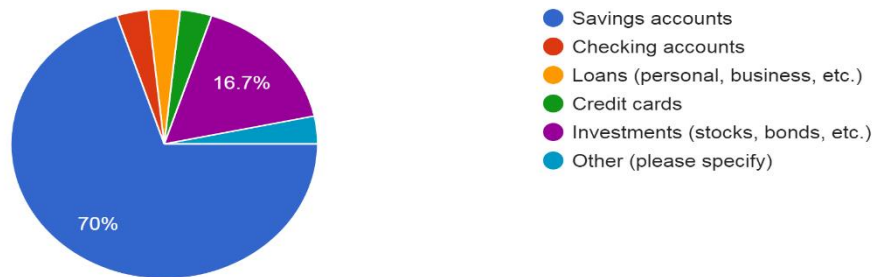
Do You Have A Bank Account

30 responses

INTERPRETATION

The above chart clearly describes that 96.7% person have their personal A/c now a days, 3.3% person have does not have their personal A/c Now a days.

Figure 5:

Banking Service are Mostly Use

Which banking services do you mostly utilize?
30 responses

INTERPRETATION

The above chart clearly describes that 70% Saving Accounts person can utilize, 16.7% persons Invest their money in (Stocks, bonds) ,2.3% person using Checking A/c, 4 % person using loan Facilities provided by Banks, 4% person using Credit Cards, 3% persons using other Facilities.

Figure 6:

Employment Status

Employment Status

30 responses

- Employed
- Unemployed
- Self-employed
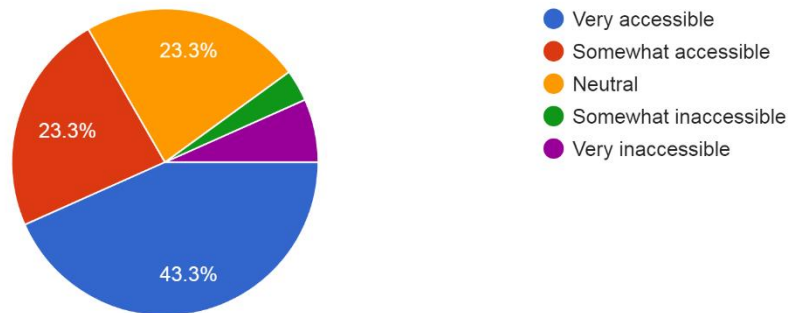- Student

53.3%

10%

36.7%
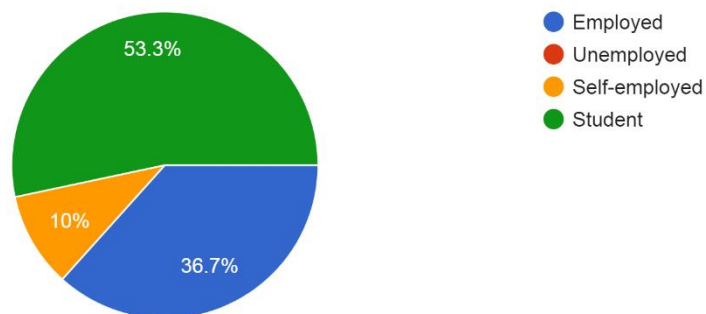
INTERPRETATION

The above chart clearly describes that 53.3% Person are Students, 36.7% person are Employed,10% are Self Employed

Figure 7:

How is Banking service in your Area?

How would you rate the accessibility of banking services in your area?
30 responses

● Very accessible
● Somewhat accessible
● Neutral
● Somewhat inaccessible
● Very inaccessible

INTERPRETATIONS

The above chart clearly describes that 43.3% person says very Accessible, 23.3% person says Somewhat Accessible, 23.3% person says its Natural, 2.1% people says somewhat inaccessible, 8% People says Very in accessible.

Figure 8:

What is the current Economic Situation in our country?

In your opinion, how would you describe the current economic situation in your country?
30 responses
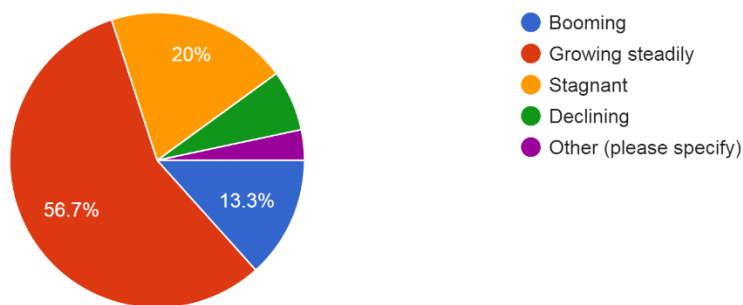
INTERPRETATION

The above chart clearly describes that 56.7% person says that Economic Growing steadily, 20% person says Economic is Stagnant, 13.3% people says Economic is Booming, 6% people says Economic is Declining, 4% people says Economic is Stable.

Figures 9:

Do you think that Banking sectors promoting economic growth in our country?

How do you perceive the role of the banking sector in promoting economic growth in your country?
30 responses

- Very important
- Somewhat important
- Neutral
- Not very important
- Not important at all
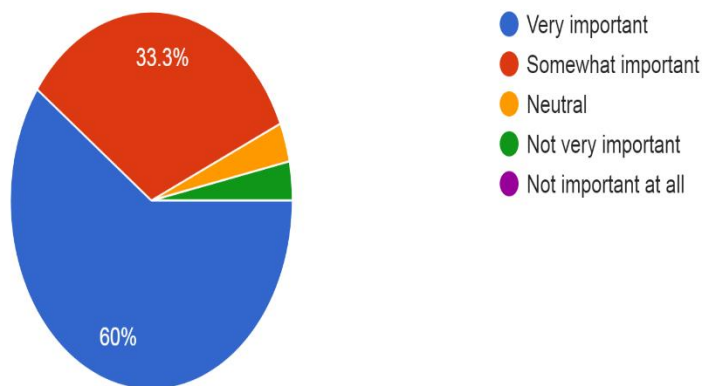
INTERPRETATION

The above chart clearly describes that 60% people says that banking sector promoting economic growth in our country very important ,33.3% people says that banking sector promoting economic growth in our country somewhat important , 4.7% people says that banking sector promoting economic growth in our country Neutral, 2% people says that banking sector promoting economic growth in our country Not very important

Conclusion & Recommendations:

This paper revisited the Granger causal relationship between banking sector development and economic growth for forty countries using a bootstrap panel causality approach that allows for both cross-sectional dependency and for heterogeneity across countries for the period 1970- 2012. We developed two banking sector development indices based on three indicators Outputs and three indicators Inputs of banking sector development using principal component analysis.

The empirical results show that the direction of causality between banking sector development and economic growth is sensitive to the choice of indices used Outputs or Inputs of banking sector development. The findings support evidence on the three demandfollowing, supply leading and complementarity hypotheses.

Some interesting conclusions emerge from this empirical study. First, none of the banking sector development indices causes economic growth in twenty three countries or for almost 57% of the sample (Burkina Faso, Cameroon, Central African Republic, Dominican Rep, Ecuador, Egypt, El Salvador, Guatemala, Haiti, India, Jamaica, Kenya, Liberia, Mali, Mexico, Nepal, Paraguay, Peru, Philippines, Sierra Leone, Tunisia, Venezuela and Zimbabwe). Second, as regards the causality from economic growth to banking sector development, the results show that banking sector development is not sensitive to economic growth in twenty three countries or for almost 57% of the sample (Benin, Botswana, Burkina Faso, Cameroon, Central African Republic, Colombia, Costa Rica, Dominican Rep, Guatemala, Haiti, Iran, Kenya, Liberia, Malawi, Mali, Nepal, Paraguay, Peru, Philippines, Sierra Leone, Tanzania, Togo and Zimbabwe). Third, sixteen countries or for almost 40% of the sample, the "neutrality" hypothesis is supported as there was no causality in any direction between banking sector development and economic growth, i.e. at least 62% of the sample there is a causal relationship between banking sector development and economic growth (twenty five countries: Argentina, Benin, Botswana, Brazil, Colombia, Costa Rica, Ecuador, Egypt, El Salvador , India, Iran, Jamaica, Jordan, Malawi, Malaysia, Mexico, Morocco, Panama, South Africa, Sri Lanka, Tanzania, Thailand, Togo, Tunisia and Venezuela).