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## Macroeconomic Impact of Islamic Bank Financing in Saudi Arabia

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**EFFAT University**  
**College of Business**

## Macroeconomic Impact of Islamic Bank Financing in Saudi Arabia

A Thesis Submitted in Partial Fulfillment for the  
Master Degree of Science in Islamic Finance  
Management in accordance with the Requirements of  
Effat University

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## Declaration

This work is original and has not been previously submitted in support of any degree qualifications or course.

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## **Acknowledgments**

In the name of Allah, the Entirely Merciful, the Especially Merciful

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Sincerely,

Fatima Abalhareth

July, 12, 2018

## **Abstract**

Islamic banking is a fast growing segment of the financial system in Saudi Arabia and has effects on the economic performance of a great importance to the economic growth. This study is to assist bridging an existing research gap of exploring how the Islamic banking helps the macroeconomic growth of K.S.A. The study mainly to employ the statistical analysis to investigate the macroeconomic impact of Islamic bank financing (IBF) in the Saudi economy from the year of 2001 to 2017 by looking into independent variables of the IBF and the total financing against the macroeconomic factors: gross domestic product, gross fixed capital formation, inflation, international trade, and unemployment. The analyzed data are obtained from Bankscope websites, Bloomberg and International Monetary Fund (IMF) databases. The main results from the Vector Auto Regression (VAR) model in the E-views show both of the TF and IBF have an impact on GFCF, but not on the inflation. The IBF effects on the unemployment, the international trade, and with no significant effect on the GDP growth. Although, the TF data of the growth equation show an influence on GDP growth and international trade.

**Keywords:** Islamic Banks, Islamic Financing, Macroeconomic Factors, VAR Modeling, Saudi Arabia.

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## **LIST OF ABBREVIATIONS AND ACRONYMS**

AAOIFI	Accounting and Auditing Organization for Islamic Financial Institutions
AIC	Akaike Information Criterion
ADF	Augmented Dickey-Fuller test
IBIS	Islamic Banks and Financial Institutions Information
IBF	Islamic Banks Financing
IBP	Islamic Banks products
GDP_G	Gross Domestic Product growth
GFCF	Gross Fixed Capital Formation
IMF	International Monetary Fund
K.S.A.	Kingdom of Saudi Arabia
SAMA	Saudi Arabian Monetary Authority
VARM	Vector Auto Regression Model

# Chapter One - Introduction

## 1.1. Background of the Study

The Islamic banking is a unique banking system, which enables its customers to carry out activities positively in relation to economic growth. The Islamic banks (IBs) are functioning within a stipulated model which pertains to the laws that the IBs abide by in the Islamic religion.

The banking sector of Saudi Arabia has risen ever since the end of the 20<sup>th</sup> century in parallel with the Saudi economy. The Saudi Arabia banking sector has included the Islamic banking model whereby they can use the Shariah economic laws to conduct their activities as Murabaha, Musharaka, Mudaraba, and Ijarah, to the satisfactory levels. The Islamic Banks Financing (IBF) has become common in the country due to the favorable conditions that they have as well as the core values that are used in the setting up of the banks. The communal share of the profits and proceeds from the IBF and the use of equity in an instrumental manner have aided the creation of steps that make the economy to become better. The Islamic banking model had therefore raised in the past decades due to the fair model of handling economic resources among participants.

Saudi Arabia as the main Islamic country has a largely Muslim population this has facilitated the increase in demand for the Islamic banking model. The Islamic banking, therefore, comes out as a leading banking model in the country. This is because the bank gets to attend the core needs of the individuals and also works out in the essence of every activity that they carry out according to the policy of the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI).

### **1.1.1. Islamic Banking**

An Islamic bank is a financial institution that works and operates on the basis of the Shariah economic laws, where all of its transactions do not include riba, gharar, and maisir. The IBs are created with the foundational values of the Islamic religion and they work towards the identity of the major ways they could level the benefits of participants to have the greatest of values.

These banks are oriented to have an instrumental development of the economy and also to create a model whereby individuals can get loans without being accounted for interests. The Islamic banking activities also include investment accounts and other formal structures of the commercial banks in the modern economy.

The IBF ensures through compliance committees that there are no violations of the participants' rights to have free of interest transactions as well as participating only ethical investments. This is in both Muslim and non-Muslim countries wherever Islamic bank exists.

Islamic banks have made efforts to mobilize savings in an attempt to improve the rate of economic growth. Following the global economic crisis, reforms were introduced to prevent a similar occurrence in the future. This included the incorporation of ethical principles in the financial sector where most have already existed in Islamic banking to protect the economy. Islamic finance is of five principles, including limitation of investments of legitimate activities, profit and loss sharing, the backing of funds with tangible assets, the prohibition of interest, as well as the prohibition of wealth acquisition by chance and deceitful transactions (Boukhatem & Moussa, 2018, p. 3).

The customers of the Islamic banks share profits and losses thus the IBs have to share their profits and losses equitably with the members who have registered and finance related activities. The profit share and the provision of an account for profit loss sharing model make the Islamic banking initiatives to become better proponents of the economic development.

The IBF is very important for the growth of the economy as they provide several products at a higher level of security due to higher stability of not having derivatives products and dealing with assists for money. Such secure circulation of money hypothetically will not promote inflation and avoid crises like the one took place in 2008. This will maintain the level of economic growth if not affecting it positively. Additionally, since the IBs influence the circulation of money securely, its effects on the inflation rate, which impacts the financial capacity of organizations.

The IBF further influences international trade since it provides the necessary products to support the trade. The gross fixed capital formulation relies on the banking sector as well since it determines the amount of capital available to the country. The Saudi Arabian Monetary Authority (SAMA) fund is the third largest reserve wealth fund in the world, with assets of over \$600 billion. Saudi Arabia holds 116.8 billion in US Treasuries (Wong A. , 2016).

Musharakah is a short-term partnership between a client and an IBF to fund a certain transaction based on profit sharing principle. This participating in Musharakah promotes the level of investment in business lead to decrease unemployment rates. Musharakah is used to promote international trade as well by enabling the IBs to be the clients for certain trades and task the importers to pay for the IBs. Also, Mudaraba is where the capital provider (rabbul mal) and the small entrepreneur (mudarib) become a partner. The profits from the project are shared

between a capital provider and entrepreneur, but the financial loss will be borne entirely by the capital provider (Sarwer, Ramzan, & Ahmad, 2013).

Murabahah using murabahah as a product of Islamic financing requires Islamic banks to acquire and purchase assets or business equipment, then sells the asset to entrepreneur at a mark-up. The Islamic bank will become the owner of the asset until the full settlement. The benefit of this product of financing is continuous monitoring, and entrepreneurs with a good reputation of repayment will be offered extra loan (Bakhitta, 2017).

Ijarah by definition is a long term contract of rental subject to specified conditions as prescribed by the Shari'ah. Unlike conventional finance lease, the lessor (Islamic bank) not only owned the asset and discharges its responsibility to maintain. Then the bank is responsible for the risks associated with the asset. Ijarah is mostly used for the purchase of fixed assets (Bakhitta, 2017).

### **1.1.2. Economic Growth**

The economic growth is the rate at which the country has risen in its output. The economic growth is measured by looking into the nominal terms in the country.

Saudi Arabia GDP growth is a strong function of oil prices and quantity produced. Therefore, mainly due to a moderate recovery in levels of oil production and higher public spending, Saudi Arabia economic GDP growth is projected to move from 1.7%, 1.8% and 2% in 2017, 2018 and 2019 respectively, The World Bank Group (April 2018). This growth is not stable as long as it is linked mainly to oil prices. Thus, the government is implementing different incentives to reform the economy structure like the National Transformation Program.

The Islamic Banks products (IBP) like Musharakah, Murabaha and Mudaraba usually increase the number of fixed investments by enabling investors to borrow loans at a reasonable level of borrowing risk to run current business or establish new projects that will lead to accumulate the fixed assets and boost the growth of GDP accordingly.

More particularly, this study focuses on the GDP growth, GFCF, inflation rates, and international trade, along with the unemployment rate. The study gives an introduction as mentioned in this chapter, which is followed by a review of previously conducted research and related topics. Additionally, the paper provides the methods to be used to conduct the data analysis. The anticipated findings are stated, after which the expected limitations are provided. The paper will then be concluded by recommending and summarizing the contents.

## **1.2. Problem Statement**

The lack of scholarly works that fully explore how the IBF is improving the macroeconomics growth in Saudi Arabia has left a huge research gap that the study aims to assist filling. The available studies have mainly concentrated on the role of the Islamic banking system of the global economy. They do not provide an evaluation of how various IBs financing can be used in the form of trade or unemployment rates. Therefore, the study sought to regulate the impact of the financial Islamic banking on economic growth in K.S.A. The purpose of this study is, therefore, to bridge this gap by evaluating the key Islamic finance that is used to affect the macroeconomic variables as GDP growth, GFCF, Inflation, international trade, and unemployment rates from Saudi Arabia economy prospective. The relevance of Islamic banking in economic growth in the Saudi Arabia has been a core issue of discussion. Thus, one of the

mainly reason to make this study is lacking the literature available related to this topic specifically on the Saudi Arabia.

### **1.3. Objectives of Study**

The study aims to investigate the impact that IBF on the Saudi Arabian economy. To deal with this issue effectively, the study sets five distinct objectives. Therefore, the specific objectives of the study are to:

- Evaluate the influence of Islamic bank financing on GDP growth.
- Examine the influence of Islamic bank financing on GFCF.
- Evaluate the effect of Islamic bank financing on inflation.
- Examine the effect of Islamic bank financing on international trade.
- Evaluate the influence of Islamic bank financing on unemployment rates.

### **1.4. Research Question**

The research question of this study is: How does Islamic bank financial impact on the macroeconomic variables: gross domestic product growth, gross fixed capital formation, inflation, international trade, unemployment rates in Saudi Arabia?

### **1.5. The significance of the Study**

The study has the primary significance of ensuring that there are better ways to carry out an analysis of the IBF effects in the macroeconomic growth in Saudi Arabia. As such, the goal of this research is to assist researchers to create a better understanding of how the GDP growth,

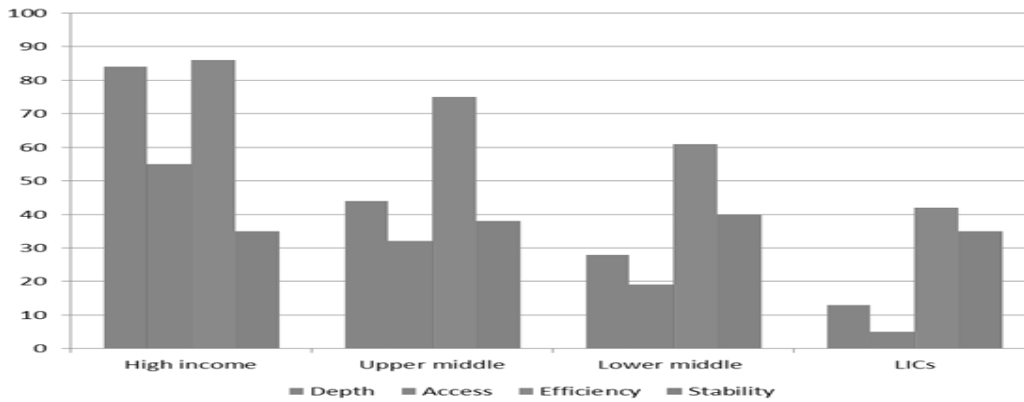
GFCF, inflation, international trade, and the unemployment rates are affected by changes in Islamic banking. The study attempts to determine whether the relationship between the Islamic banking products and these macroeconomic factors are inverse or direct. This study uses reliable information on the Islamic financial institutions that have been introduced in the Saudi Arabia. Therefore, the major significance of the study is to ensure that there is proper documentation of the effects of the Islamic bank financing on the economy evolution, also help to reduce the unemployment rates and decrease the inflation rate for developing the Saudi economy as well as the gross fixed capital formation by the investors, who are part in this improvement. These activities as Musharaka, Murabaha, and Mudaraba of finance that the Islamic bank dealing with having an incremental impact on the economy. The study bases itself on the economy of Saudi Arabia, thus its analysis will also help the government in stating the present state of the Saudi economy and provide attributes to the factors that enhanced its creation into a reliable model of an economy.

## Chapter Two - Literature Review

### 2.1. The Influence of Islamic Financing on Economic Growth

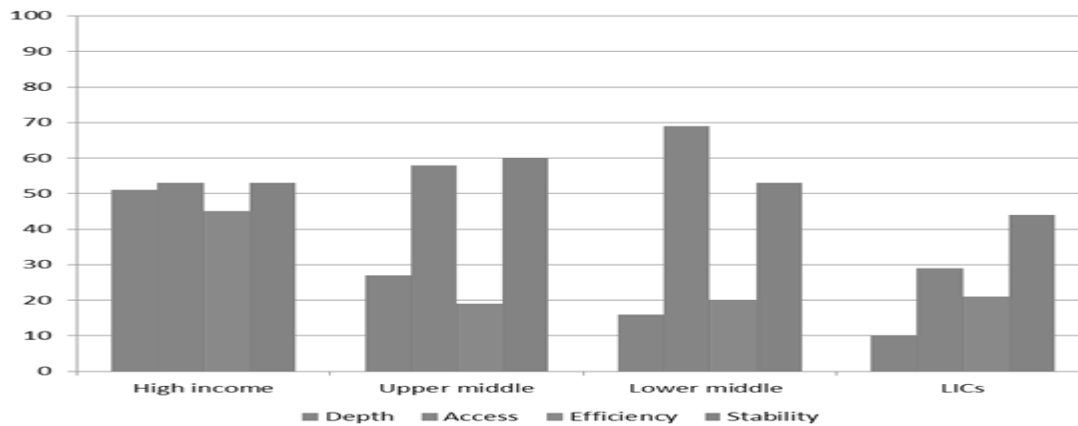
The association between banking and economics has been researched by several scholars. It has been found that the financial and banking sector affects a country's economic growth. This is because banks play a significant role in maintaining the financial stability of a country. As the financial system is well improved in term efficiency and stability as the economy is enjoying better stand and improvement which lead to more economic growth. According to a study conducted by Levine (2004), it is possible to establish the international comparability of the data corresponding to the low-income nations, especially with respect to stability. Levine also discovered that when the financial system data in the low-income countries in comparison with their high-income-counterparts, the ratios for the accessibility and efficiency are higher in the extraordinary income counterparts. Therefore, studies suggest that the efficiency and access are even bigger problems for low income countries, thus need to be improved by adapting other financial systems. The charts below provide the summaries for the trends assumed by the financial institutions and the corresponding markets for nations of different income levels

**Figure 1 The Trends Assumed by the Financial Institutions as at 2010**



Source: (Cihak et al., 2013)

**Figure 2 The Trends Shown by the Financial markets 2010**



Source: (Cihak et al., 2013).

In line with the Levine, the efficiency of the financial system can be improved by the policies of IBs as they are well controlled by their nature as explained by Izhar, and Asutay (2007) conducted a research and look into the manner which the IBs carry out their day to day operations. The research uncovers that the financial activities were a great source of income generation for the bank. When the IBs gets to distribute their resources to individuals, The IBF gets a great profit from such dealings despite not having any interests generating value that could favor their model of business. This step makes an incremental value on the reputation of the banks and they attract a large number of individuals. The existence of large markets means the availability of diverse and high-quality services. Short-term financial activities and long-term financial activities were both income generation models that the banks participated in to ensure that there was a greater accrual of value to the members.

Hidayat and Abduh (2012) look into the manner in which Islamic banking is like doing different financial situations in the economy. Srari (2013) and Idris et al. (2011) look into the manner in which the banks had macroeconomic indicators of their growth and development in

the economy. The IBs had different features that help to indicate the manner in which they turn out to be profitable. The carrying out of efficient activities to create and mark a general perception of greatness makes the banks work in an efficient manner. These steps make the banks to have a positive effect on the profitability indicators in the economy.

Islamic banks (IBs) provide several products which enable the mobilization of savings and maximum utilization of the financial resources (El-Ghattis, 2016). The banking system of a nation affects the rate of GDP growth since it determines the expenditure levels of consumers. Additionally, since the banking sector also influences the circulation of money, it affects the inflation rate. As such, banking impacts the financial capacity of organizations to pay for its labor (Feldmann, 2013, p. 720). Banking further influences international trade since it provides the necessary products to support the trade. The gross fixed capital formulation relies on the banking sector as well since it determines the amount of capital available to the country.

## **2.2. Empirical Review**

The IBs first principle is the act of lending money to customers as all the cases of interest charging are prohibited. This is because of the fact that such activities are considered to be riba (Benninga & Czaczkes, 2014). As a measure to ensure that this principle is obeyed by the Islamic financial institutions, banking rules (Fiqh al-Muamalat) are established to control all banking transactions (Yudistira, 2004). The other important principle of IBs is that all investors are prevented from investing in organizations which are involved in illegal or unacceptable activities in Islam. (Mankart, Michaelides & Pagratis, 2014). With these two principles, this may guide to the misleading conclusion that IBF neither generates profits nor contribute in Saudi Arabia economy growth. But in fact, Islamic financing performs efficiently as a result of their

wise use of their capital in funding their trade. Most likely, IBs thrive in competitive markets (Bilal, 2016).

When there are changes in the performance of a financial institution, the economy of the entire country reacts, with the eventual impact (Choudhry, 2017). This is due to the fact that the banking sector is considered as one of the key determinants of the GDP growth of a country. A positive performance of this sector would significantly boost the economy. The other aspects of the economy which are affected by the banking policies are the corporate sector and the public in general. For effective functionality, the corporate sector depends highly on the activities of the banking sector. According to Mankart, Michaelides, and Pagratis, (2014), banking policies like the IBF policies that tend to favor the public and the corporate sectors are always beneficial to the economy and can result in rapid economic growth.

Rehman and Masood (2012), provided the different methods of funding Islamic trade after The Shari'ah laws. He explained the discrepancies between Mudaraba and Musharakah, which have, for a long time, been the most significant financing methods. In Abdul Rehman's research, he focuses on two main problems. These are the double failure burden, which takes place when the debtor's project fails, and the lender's capital is depleted due to inflation. The Musharakah financing method can be used to deal with these issues (Rehman & Masood, 2012).

To state that the efficiency of IBF lead to the strong economic growth as the developed country.

Saddiqui (2008) studied the different risks that Islamic banks face in trade financing. These banks, just like the traditional ones, also face risks of credit. The Musharakah and Mudaraba financing methods, particularly face a huge risk as a result of the entrepreneurs' failure to pay the banks. This risk is of credit comes only as a counterpart risk caused by the

trading partner's non-performance. Hence, these IBP reduce the inflation rate in the economic growth.

### **2.2.1. The influence of Islamic financing on GDP Growth**

The Islamic financial products as Musharakah, Murabaha, and Mudaraba provided by the Islamic banks have an influence on the Gross Domestic Product (GDP) growth of the countries using them such as the Kingdom of Saudi Arabia. They boost the growth in GDP by encouraging lending as well as invest in various business ventures in a country. The IBF products also enhance the level of savings which is a crucial determinant of GDP growth. In addition to these, the IBF improves the level of GDP growth by promoting financial stability (Bakhitta, 2017, p. 1).

According to Boukhatem and Moussa (2018), Islamic finance promotes GDP growth by providing a platform for productive ventures, which improves the GFCF and liquid assets. Celebi, Hassan and Zirek (2015) examined the relationship between investment, economic growth and Islamic banking in some selected countries in the Arab World. The results show that the size and investments in Islamic banks are sufficient to drive up the real GDP growth rate. Nasir and Ali (2015) who used VAR analysis show that the effect of financial depth is positive in response to real GDP growth. Khrais and Al-Wadi (2016) analyzed unemployment and GDP growth in selected countries in the Arab World including Saudi Arabia. The results show that GDP growth had no relationship with unemployment rates in the countries studied. Hence, many other factors impact the unemployment rate besides GDP growth.

Almalki and Batayneh (2015) assessed the impact that financial development in Saudi Arabia has on trade openness and inflation in the country. The results showed that inflation and

financial development have a statistically significant negative relationship, both in the short and in the long-run. However, trade openness had negative impact financial development. This is because financial sector performance is hampered by trade liberalization policies and a rise in inflation rates.

### **2.2.2. The Influence of Islamic financing on Gross Fixed Capital Formation**

According to Daly and Frikha (2016), the banking products offered by the IBs usually increase the number of fixed investments which lead to increase the Gross Fixed Capital Formation (GFCF). Additionally, the GFCF is boosted by the fact that the Islamic banking products enable investors to borrow long-term loans to establish projects (Daly & Frikha, 2016, p. 1). In their study, Kaleem, Mushtaq, and Arshed (2016) opined that the Islamic banking and the GFCF are directly correlated. This is so because they promote economic growth and development through the accumulation of fixed assets as well as capital.

Based on this chapter discussion, it is worth noting that the financial system in a country is a very instrumental factor. The relationship between the financial system and growth is a clear indicator that the growth can be shaped by modifying the finance system in a country. Since Islamic banking is characterized by a unique system of finance, it is highly likely that such policies will have an impact on the overall growth. Based on the findings, it is identical important to study the nature and impact of the Islamic system of banking in Saudi Arabia because such knowledge will act as a guide for future studies into the finance-growth nexus. More researchers will be able to come up with ways through which the financial system in the country can be used to control and monitor growth.

Tabash and Bhankar (2014) used Vector Auto-Regression (VAR) model to establish the long-term relationships between Islamic Finance and Saudi Arabian economic growth, showed that Islamic finance contributes to the growth of Real Gross Domestic Product (GDP) in the long-run. The VAR model and Granger Causality test established that a causal relationship exists between the GDP and Islamic banking. As well, the causality tests show that there is a positive relationship between IBF and GFCF. Furthermore, GFCF support demand in Saudi Arabia in the long-run, but not in the short-run. The authors concluded that the Islamic bank's financial and GFCF, international trade and investment activities move together in the long-run.

### **2.2.3. The Effect of Islamic financing on Inflation**

The Islamic finance can influence the inflation rates in the countries with the IBs such as Saudi Arabia. Mudaraba can control the rates of inflation by encouraging interest-free ventures or undertakings. Inflation is usually caused by the credit creation and interest rates charged by financial institutions. Therefore, Islamic financing such as Musharakah product and Mudaraba product prevent inflation by eliminating the payment of interests (Sarwer, Ramzan, & Ahmad, 2013, p. 61). By boosting the levels of the GFCF, these kind of financing prevents inflation by creating jobs. In addition to this, they also help in the control of inflation by eliminating unsubstantiated credits as well as boosting the number of business enterprises in a country (Rabaa & Younes, 2016, p. 102).

In addition, Islamic banking principles demand that there should be no banking activities which are not characterized by any form of material finality. Instead, every banking activity should have a direct attachment to the actual economic transaction. Such a condition does not include the options or a majority of the derivatives. According to these conditions, people can

only make money from tangible property or assets which they own and can rightfully sell to willing buyers. This requirement applies mostly to contracts involving debts (Benninga, 2014).

However, the analysis observed shows that the inflation rate was driven by supply bottlenecks during the financial banking crisis of 2007 and 2008 (Alshammary, 2014, p. 44).

#### **2.2.4. The effect of Islamic financing on International Trade**

The Islamic financing has been used to trade for centuries and the main form of finance during the early Islamic era was Musharaka. It was widely used across the Mediterranean, and by the Scandinavians and Indians that traded through the Arab Caravans (Iqbal & Mirakhor, 2017). The nature of these financial products makes them ideal for international trade. Importers use Musharaka and Mudaraba to cater for the capital deficit when trading. The financial products enable the importers to enter into partnership agreements with the IBs (Naqvi, 2011, p. 4). This takes place in the event that the importer does not have sufficient capital to acquire goods from an exporter or producer. The Islamic finance boosts the level of international trade by enabling an IBF to carry out the roles of an importer on the behalf of another party (the client) in a particular trade. The client is then tasked with settling the deferred payments, and providing a markup which is payable to the IBF (Chong et al., 2009, p. 235).

Clearly, Islamic banking, Trade and Investment activities move together in the long-run. Particularly, fixed investments in Islamic banks are sufficient to drive up the real GDP growth rate. However, the Boukhatem and Moussa (2017) found that international trade openness, as a control variable to the impact of Islamic banks on growth, made the observed countries more vulnerable to exogenous shocks. Hence, in the long-term, economic growth becomes weaker and more volatile. Hafnida, Maamor and Abdullah (2016) who investigated the relationship between

economic growth and financial development in four countries including Saudi Arabia. The international trade (net exports) and fixed investment (GFCF) were kept as control variables. The results showed that, in the long-run, the development of Islamic banks leads to economic growth. Since it supports supply lending, the VAR model shows that the direction of causality runs for international trade openness, Islamic banking and economic growth have a long-run equilibrium co-existence.

### **2.2.5. The Influence of Islamic financing on Unemployment Rates**

Islamic finance has had an important role in determining the rates of unemployment in the Kingdom of Saudi Arabia. Musharakah which is one of the Islamic financing methods, has been a vital determinant of employment rates for a long time. Musharakah uses the principle of short-term partnership. This is a partnership developed between a client and an IBF with the aim of funding a particular undertaking for a given duration of time. The returns gained are shared based on pre-determined rates. Participating in Musharakah usually promotes the level of investment in business enterprises and hence decreasing and hence decreasing the unemployment rates in the country. The growth in the Gross Fixed Capital Formation (GFCF) as a result of the use of Islamic banking products enables the creation of employment opportunities (Hakim & Uddin, 2016, p. 12). Additionally, by enabling the financing of new projects as well as the ongoing projects, Musharakah increases the number of jobs, therefore, lowering the unemployment rates.

Alshammary (2014) investigated the impact of the Saudi Arabian banking sector on economic growth. Specifically of results that the growth of financial and construction sectors in Saudi Arabia led to a shortage of skilled labor during the financial crisis of 2007 and 2008 (Alshammary, 2014, p. 44). From the interviews, it is still difficult to accurately report

unemployment in Saudi Arabia because of the effect of foreign workers working without permits. All the macroeconomic variables were statistically significant in all the models used that show there is a positive relationship between Sharia compliant financial systems and GDP, but negative effect on the unemployment rate (Kim et al., 2018, p. 7). This implies that Islamic finance development reduces the unemployment rates.

## Chapter Three- Research Methodology

### 3.1. Introduction

The methodology of the research investigates the impact of IBF on the macroeconomic growth in the Saudi Arabia. This chapter describes the model of the study, introduce the variables of the equations that use, the hypothesis of this study, and the data sources. Then, answer the question of the importance to use the VAR Modeling rather than other models. Also, in this chapter shall include the diagnostics which testing to assess the data as the unit root test, and other tests relative to our model as the impulse response function, variance decomposition, and granger causality.

### 3.2. The Model

The model of this study provides room for the possible correlation among multiple variables and can be represented using the following expression.

$$Y = a + b x + e$$

The corresponding variables in the model can then be represented using as the following expressions:

$$GDP\_G = a + b TF + et \quad (1)$$

TF is the Total Finance that includes both the Islamic and conventional model of financing; hence equation (1) can be written as:

$$GDP\_G = a + b_1 IF + b_2 CF + et \quad (2)$$

However, this study aims at investigating the impact of Islamic financing only.

Hence; the model of this study is of the following expression:

$$GDP\_G = a + b_1 IF + e \quad (3)$$

In addition to unemployment other macroeconomic variables that are studied in this study for

Total Financing are:

$$GFCF = a + b TF + e \quad (4)$$

$$IN = a + b TF + e \quad (5)$$

$$IT = a + b TF + e \quad (6)$$

$$UNEM = a + b TF + e \quad (7)$$

The corresponding model equation for IBF of these variables are as follows:

$$GDP\_G = a + b IF + e \quad (8)$$

$$GFCF = a + b IF + e \quad (9)$$

$$IN = a + b IF + e \quad (10)$$

$$IT = a + b IF + e \quad (11)$$

$$UNEM = a + b IF + e \quad (12)$$

Where,

- GDP\_G = Gross Domestic Product growth
- GFCF = Gross Fixed Capital Formation
- IN = Inflation
- IT = International Trade
- UNEM = Unemployment rate
- TF = Total financing
- IF = Islamic bank financing
- CF = Conventional bank financing
- e = Error term

### **3.3. Variables and Hypothesis Formulation**

#### **3.3.1. Independent Variable**

Independent Variable is the total financing that is the transaction of finance, that fund pools from many sources gives for the business. Basically, the Islamic financing based on Shariah Complaint principles, and it included many Islamic products as the Murabaha, Mudaraba, Musharaka, and Ijarah, to help the economy of the country. Initially, the plan was only to study the impact of these Islamic Bank Products on the macroeconomic factors of Saudi Arabia, but there were insufficient data which lead the study to consider the sum of twelve banks total financing in Saudi Arabia along with the sum of four banks that are a full fledge Islamic banks, the total financing includes both of the conventional and Islamic bank financing. This study focuses on the impact of Islamic bank financing on the macroeconomic variables and the dependent variables show as follows:

#### **3.3.2. Dependent variables**

This study investigates the impact of Islamic financing on the macroeconomic variables in Saudi Arabia. The macroeconomic variables used in the study are as follows:

- **Gross Domestic Product growth**

Gross Domestic Product is the measure of the income and expenditures of an economy. GDP is the total market value of all final goods and services produced within a country in a given period of time. The economic GDP growth in Saudi Arabia is projected to be 1.7%, 1.8% and 2% in 2017, 2018 and 2019 respectively, The World Bank Group (April 2018).

One of the previous study as (Bakhitta, 2017, p. 1), found the Islamic financial improves the level of GDP by promoting financial stability in the Islamic countries that implement them. The

relationship between the Islamic financial system and growth is a clear indicator that the growth can be shaped by modifying the finance system in a country. The hypothesis set as:

$H_{01}$ : Islamic financing does not effect on the GDP growth in Saudi Arabia.

$H_{a1}$ : Islamic financing effect on the GDP growth in Saudi Arabia.

- **Gross Fixed Capital Formation**

The gross fixed capital formation is an establishment of assets by producers for their own use, minus disposals of produced fixed assets within the measurement period without considering land purchase or fixed capital depreciation. The relationship between Islamic financing and GFCF found, according to Daly and Frikha (2016), the banking products offered by the IBs usually increase the number of fixed investments in the Islamic nations that become to the increase of the Gross Fixed Capital Formation (GFCF). This is because they promote economic growth and development through the accumulation of fixed assets as well as capital. Hence, opined that the Islamic banking and the GFCF are directly correlated. For the hypothesis is:

$H_{02}$ : Islamic financing does not effect on the GFCF in Saudi Arabia.

$H_{a2}$ : Islamic financing effect on the GFCF in Saudi Arabia.

- **Inflation**

Inflation is the rate at which the price level of services and goods is inflated up by rising thus the currency purchasing power fall. This is measured by the inflation rate of customer index that is the percentage rate of variation in the price level over the time period. Inflation is usually caused by different reasons, among them, the interest rates charged by financial institutions. In Saudi Arabia, the average inflation rate of 2017 was 1.98 percent opposite of the 2016 to 3.52 percent.

The earlier study as Sarwer, Ramzan, & Ahmad (2013) reported that Islamic financing such as Musharakah product and Mudaraba product prevent inflation by eliminating the payment of interests. This product financing can control the rates of inflation by encouraging interest-free ventures or undertakings. The following hypothesis are expressed in this study as:

H<sub>03</sub>: Islamic financing does not influence inflation in Saudi Arabia.

H<sub>a3</sub>: Islamic financing influences inflation in Saudi Arabia.

- **International Trade**

The international trade is related to the export trading means the exchange of capital, goods, and services across international borders. In addition, such trade represents a significant share of gross domestic product (GDP) growth and the study data of this variable are the export trading of Saudi Arabia. Previously, (Naqvi, 2011, p. 4) said that the Islamic financing has been used to trade for centuries. The nature of these financial products makes them ideal for international trade. For instance, importers use Musharaka and Mudaraba to cater for the capital deficit when trading with producers or importers. The hypothesis formulated as:

H<sub>04</sub>: Islamic financing does not influence on the international trade in Saudi Arabia.

H<sub>a4</sub>: Islamic financing influence on the international trade in Saudi Arabia.

- **Unemployment rate**

The unemployment rate is calculated as a percentage of the labor force that is unemployed. Most of the economy's unemployment problem is attributable to relatively different reasons, among them private sector low contribution in creating new jobs at an acceptable level of wages. In the 2017, Saudi Arabia's projected the unemployment rate to be around 5.5 percent. This example of

the past studied (Hakim & Uddin, 2016) found that by enabling the financing of new projects as well as the ongoing projects, Musharakah increases the number jobs, and lead to lowering the unemployment rates. The hypothesis presented as:

H<sub>05</sub>: Islamic financing does not impact on the unemployment rates in Saudi Arabia.

H<sub>a5</sub>: Islamic financial impact on the unemployment rates in Saudi Arabia.

### **3.4. Data and Sample**

The target sample for this research includes the Islamic banks in Saudi Arabia. These are four banks that are fully-fledged Islamic banks: Al Rajhi Bank, Bank AlJazira, Bank AlBilad, & Alinma Bank, as total Islamic bank financing (IBF). The IBF data were collected from banks scope since this database contains all the data in accordance with the Saudi banking standard policies. The total financing is related to twelve banks offering IBF along with their conventional bank financing, these are: Alawwal Bank, Al-Rajhi Bank, Bank AlJazira, Bank Al-Bilad, Alinma Bank, Saudi British Bank, Saudi Investment Bank, National Commercial Bank, Banque Saudi Fransi, Riyadh Bank, Samba Financial Group, Arab National Bank. The TF data were obtained from Bloomberg database. In addition, the study data of IBF and TF were gathered annually, for the period between and including the 17 years from 2001 to 2017. It cannot take more this duration, because one of the Islamic bank established after 2001. The Islamic financing provided by these four banks will be evaluated along with their contribution to macroeconomic changes in the country. The procedure for the study comes in the form of several tests on the Time Series data to come up with conclusions which either support or oppose the hypothesis for this study. This study relies on secondary data. As such, the data will be derived from the banks' financial records. The VAR model by use the E-Views to approximate the parameters in the

study. Furthermore, Saudi Arabia’s macroeconomic data will be gathered to analyze how they are impacted by the (IBF), as gross domestic product (GDP) growth, gross fixed capital formulation (GFCF), inflation (IN), trade (NX), and unemployment rate where these macroeconomic data were gathered from the International Monetary Fund (IMF) database, and Bloomberg used to access the quantitative data relating to the banking finance. The reason for the selection of this database is the fact that the data contained is easy to retrieve and can even be converted to MS excel easily. The selection was specific not only in terms of the banks whose information was collected, but also the variables that were targeted. The variable selection was directed by the nature of the study problem and various literature materials indicating past studies on similar topics. The two tables below summarizes first the key Financing variable, which is the independent variable selected in this study. Secondly, the macroeconomic variables that were selected, including the measurement and the data source of each table.

### **Independent Variables**

<b>Independent Variable</b>	<b>The Measurement</b>	<b>Representation in the Model</b>	<b>Data Source</b>
Total Finance	Finance for 12 banks in the Saudi Arabia	TF	Bloomberg Database
Islamic Finance	Finance for 4 banks that full fledge Islamic finance in K.S.A.	IF	Bankscope Database

### **Dependent Variables**

<b>Dependent Variable</b>	<b>Representation in the Model</b>	<b>The Measurement</b>	<b>Data Source</b>
Gross Domestic Product growth	GDP_G	The accumulated market values for all the goods and services offered in the Saudi market over a given period of time	The International Monetary Fund Database
Gross Fixed Capital Formulation	GFCF	The net increase in the physical assets measured over a specific period	The International Monetary Fund Database

Inflation	IN	The pattern with which the prices of goods are rising	The International Monetary Fund Database
International Trade	IT	The process of exchanging products, services, and capital across the national boundaries	The International Monetary Fund Database
Unemployment rate	UNEM	The extent to which the Saudi does not available workforce is being utilized	The International Monetary Fund Database

### 3.5. Model Testing

#### 3.5.1. VAR Model

VAR is a model called Vector Auto Regression Model. An unrestricted VAR includes all variables in each equation and a restricted VAR include some variations in one equation or other variables in another equation. The restrictions and specifications were derived from simplistic macro theory, Chris Brooks (2008). The term auto regressive is due to the appearance of the lagged values of the dependent variable on the right-hand side. Hence, it is difficult to interpret the large number of coefficients in the VAR model.

In general, the Multiple Equation System that has an equation for each variable, and each equation includes  $p$  lags of  $y$  and  $p$  lags of  $X$ . Also, there is one error per equation, and the errors are typically correlated (Chris Brooks, 2008). In the VAR model, there are no exogenous variables and treating every variable as endogenous as a function of the lagged values of all endogenous variables in the system.

The most relevant model for this study is the Vector Auto Regression Model because, first it is one of the most commonly used models for applying macro econometric analysis and forecasting in central banks. Second, it is suitable to use the VAR model as a two-variable to

estimate the output of all macroeconomic variables, one by one with the IBF and with the total finance. Furthermore, the VAR approach bypasses the need for structural modeling by treating every variable as endogenous in the model as a function of the lagged variables of all endogenous variables in the system. Hence, all these estimations to answer the research question and to preform, where the developmental impact appears. Finally, the VAR is a system of interrelated time series and for analyzing the dynamic impact of random disturbances to the system of variables, by using VAR model this study becomes first one applicant that Islamic financing influence on the macroeconomic in the Kingdom of Saudi Arabia.

### **3.6. Diagnostics**

To ensure that the data is suitable for analysis will use the VAR model. Also, all data series are tested for statuanarity, by using the Augmented Dickey-Fuller Method (ADF). The Unit Root is a test of the stationarity wither the data are fit for the study or not. To preform some diagnostics we have to make some test as normality test and heteroskedasticity test for stability of the data and the various tests will be observed to investigate the statistical significances, the unit root test and lag section criteria both are estimated.

The various tests will be conducted to examine the impulse response function, the directional impact as the Granger causality, and the variance decomposition for all the data study that each the dependent variable estimate once with total financing and again with Islamic financing for indicating the relative impact of variable has on another.

## Chapter Four- Data Analysis and Interpretation

### 4.1. Descriptive Statistics

The descriptive statistics reveal a lot of information about the data. The statistical measures have also been included to ensure that the trends associated with most macroeconomic factors and financing as shown in this data that can easily be identified the mean, standard deviation (SD), skewness, kurtosis, Jarque-Bera, and probability.

Based on the information provided in Table 1, the overall data size is represented by 17 observations. The center of the data can be described by the value of the mean that range between 1.643761 is the mean of international trade and 8.469584 is the mean of GFCF, while the SD ranges between 0.37070 for unemployment the and 11.52259 for GFCF in the macro economic growth. Thus, the GFCF and IT which are characterized by large standard deviation. Furthermore, the total financing has 776567.5 lower numbers in the mean, but 452942.8 is a higher number of SD than Islamic financing 192158.4 ,124481.7 in the mean and SD numbers respectively. The data for IN, GFCF, GDP growth, and IT is skewed to the right as evidenced by the fact that the mean is larger than the median. On the other hand, the influence of the skewness distribution can be determined as the highest point is represented 0.877410 by the positive and negative values is -0.7409 in the unemployment (high and low areas respectively).

The kurtosis of any normal distribution is always equal to 3. This is similar to inflation and GPD as their kurtosis falls in the range of '+ or -3' from the SD. The kurtosis has high, normal, and low kurtosis levels ranging from 1. 62344 is for the inflation and higher kurtosis levels ranging to 4.1700 is for the international trade. The values IBF, CF and TF have a common whole-number kurtosis of 1 with decimals from 0.62 to 0.76.

A result of 1 or less than 1 means a null hypothesis and this shows that the data has a normal distribution. In the table, values IBF, TF, GFCF and GPD growth have a J-B value of less than one indicating a normal distribution. Values unemployment, inflation and IT have a J-B value of 2 which similarly indicate a normal distribution looking at the skewness and kurtosis. From the J-B test, the values show normality, and level of regressors. From all the values, it is observed that the skewness is close less than 1. This means that the graph does not have an abnormal distortion from the line of symmetry.

Probability distribution links each outcome of an experiment with its probability of occurrence. In the table of values, the probability of all the 7 values shows a common trend of values very close to 0. This shows a very small difference from any normal. For example, the highest probability value of 0.84605 is GDP growth, and lowest probability value is 0.256661 is the inflation rate. Hence, the distribution can be established as a normal distribution.

At the end, the data distribution is the statistical representation of all the observations that have been collected from the field during the data collection exercise. From the table, the value of the unemployment has a kurtosis of 3.88055 and skewness of -0.7409 hence a normal distribution. Value IBF has a kurtosis of 1.76687 and a skewness 0.38706; value TF has a kurtosis of 1.64378 and a skewness of 0.09943; the inflation has a kurtosis of 3.873127 and a skewness of 0.877410; GFCF has a kurtosis of 1.750337 and a skewness of 0.054652; GPD growth has a kurtosis of 2.40206 and a skewness of 0.16918 and finally IT has a kurtosis of 4.1700 and a skewness of 0.680. From the above, it is evident that the data exhibit a common trend. Hence, a normal data distribution as demonstrated by the table following.

**Table 2: The Descriptive Statistics for the all Variables**

	Unemployment	IBF	TF	Inflation	GFCF	GDP_G	IT
Mean	5.539608	192158.4	776567.5	2.939463	8.469584	3.67031	1.643
Median	5.60000	169422.4	787332.0	2.670526	8.382542	3.65248	0.687
Maximum	6.20000	404228.5	1425351.	9.868752	26.19527	11.2420	20.917
Minimum	4.60000	36396.25	163487.4	-1.11251	-9.93208	-2.8191	-10.720
Std. Dev.	0.37070	124481.7	452942.8	2.645964	11.52259	3.95955	7.416
Skewness	-0.7409	0.38706	0.09943	0.877410	0.054652	0.16918	0.680
Kurtosis	3.88055	1.76687	1.64378	3.872127	1.750337	2.40206	4.1700
Jarque-Bera	2.10490	1.50158	1.33087	2.719998	1.114636	0.33435	2.2813
Probability	0.34908	0.47199	0.51405	0.256661	0.572743	0.84605	0.3196
Sum	94.1733	3266693.	13201647	49.97087	143.9829	62.3954	27.94
Sum Sq. Dev.	2.19870	2.48E+11	3.28E+12	112.0180	2124.320	250.849	880.17
Observations	17	17	17	17	17	17	17

#### 4.2. The Stationarity Test

Just as mentioned in the diagnostic part of the preceding chapter of this study, the Augmented Dickey-Fuller Method use to present the results of the unit root tests conduct on the variables. This decision was inspired by the need to avoid any cases of spurious regression. Caution was taken to ensure that there was no inclusion of I (2) variables. The unit root test was meant specifically for the purpose of testing the predictability of the tests. Based on the present results for the macroeconomic variables, it emerges that each of these tests has unit root tests. Based on the results of the Augmented Dickey-Fuller test, the data is stationary by the results presented in Table 2 for (ADF) Level I (I). Therefore, it can be concluded that the time series data is characterized by high levels of predictability. In general, it can be concluded, from the stationary test, that the impact of IBF on the macroeconomic variables is highly predictable. Through the theoretical analysis of the aspects of the IBF, which affect the macroeconomic factors, one can predict the nature of the impacts which are expected from each of these variables. The series can be regarded as of the form, I (I) variables as suggested by the results presented in Table 2 for (ADF) 1st different I (I) that all the data stationary.

#### 4.2.1. Group Unit Root Test: Summary

**Table 3: The result of ADF Unit Root, I (0), and I (1)**

Variables	LEVEL I (0)			1 <sup>st</sup> Different I (1)		
	t-statistic	Pro.	Decision	t-statistic	Pro.	Decision
IF	-1.94	0.9942	Do Not Reject	-4.203296	0.0064*	Rejected at 1%
Unemployment	-3.410	0.0653***	Rejected at 10%	-4.4572	0.0040*	Rejected at 1%
Export = IT	-3.65	0.056**	Rejected at 5%	-5.656	0.0005*	Rejected at 1%
GFCF	-4.97	0.0059*	Rejected at 1%	-9.1185	0.0000*	Rejected at 1%
GDP growth	-3.43	0.0823***	Rejected at 10%	-4.9098	0.0018*	Rejected at 1%
Inflation	-2.99	0.2136	Do Not Reject	-4.701005	0.0026*	Rejected at 1%
TF	-0.15898	0.9262	Do Not Reject	-3.005832	0.0587**	Rejected at 5%

\*, \*\*, \*\*\* means significant at 1%, 5%, and 10% the level of rejected respectively.

To check the stationarity of the data, by using Augmented Dickey-Fuller test on the 1<sup>st</sup> difference to make all the variables rejected. The lag-lengths for the test regressions are based on \*\* Probabilities for Fisher tests are computed using an asymptotic Chi. All other tests assume asymptotic normality. The results are represented in Table 2, that the ADF estimates show that all variables in the sample are stationary at level except the TF, IF, and inflation which are not stationary at 10% last level of significance. However, all these variables are stationary at 1<sup>st</sup> difference, showing an order of integration I (1) all variable rejected at 1% except the TF reject at 5%. Since all the variables are integrated in the I (0) and I (1) in one table.

The t-statistic for Islamic financing is 1.009 p - value of 0.994.

1. If is greater than p 0.05. Hence, the null cannot be rejected.

The null hypothesis of the ADF test is:

Ho: Data has unit root.

The null hypothesis should be rejected to confirm that data is stationary.

The ADF test: The critical value at 5%.

Hence, the null hypothesis is rejected at the 5% level.

- The ADF test for GDP growth rejected at 0.10 in I (0).
- The ADF test for unemployment rejected at 0.10 in I (0).
- The ADF test for GFCF rejected at 0.01 in I (0).
- The ADF test for inflation rejected at 0.05 in I (I).
- The ADF test for international trade rejected at 0.10 in I (0).

Clearly, preformed the unit root test is very important as showed in the table 2 indicated that all the variables used for this study will have rejected the null hypothesis in the unit root identification process. All the variables are stationary in nature because the VAR model requirements stationary data to run it.

### 4.3. Lag Selection

Another important feature of the model is the total number of lags which are segmented. This factor is represented by the letter p and can be determined through the minimization of the Schwartz Bayesian Information or the lowest Akaike Information Criterion (AIC) value. The lower the AIC value, the better model for each model mentioned in the methodology chapter.

#### 4.3.1. VAR Lag Selection Criteria of GDP growth with TF, and IBF

**Table 3: The Resulte of VAR Lag Selection Criteria for GDP growth with TF, and IBF**

VAR Lag Order Selection Criteria

Endogenous variables: GDP\_G TF\_IBS  
Included observations: 13

Lag	LogL	LR	FPE	AIC	SC	HQ
-----	------	----	-----	-----	----	----

0	-200.8722	NA	1.23e+11	31.21110	31.29802	31.19324
1	-172.7849	43.21123	3.07e+09	27.50537	27.76611	27.45177
2	-170.6237	2.659923	4.36e+09	27.78826	28.22284	27.69893
3	-169.8589	0.705999	8.51e+09	28.28598	28.89438	28.16092
4	-153.7170	9.933476*	1.93e+09*	<u>26.41799*</u>	<u>27.20023*</u>	<u>26.25721*</u>

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

VAR Lag Order Selection Criteria  
 Endogenous variables: GDP\_G TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-216.6080	NA	1.39e+12	33.63200	33.71891	33.61413
1	-192.4063	37.23338	6.29e+10	30.52405	30.78479	30.47045
2	-189.2547	3.878910	7.66e+10	30.65457	31.08914	30.56524
3	-184.1469	4.714911	7.66e+10	30.48413	31.09254	30.35908
4	-164.9201	11.83184*	1.08e+10*	<u>28.14156*</u>	<u>28.92380*</u>	<u>27.98077*</u>

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

Hence, the results from the lag selection criterion has advised us to take 4 lags in the VAR model to be optimum lags to estimate GDP growth with both TF and IBF as well.

#### 4.3.2. VAR Lag Selection Criteria of GFCF with TF, and IBF

**Table 4: The Resulte of VAR Lag Selection Criteria (GFCF, TF)**

VAR Lag Order Selection Criteria  
 Endogenous variables: GFCF TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-229.2537	NA	9.69e+12	35.57750	35.66441	35.55963
1	-202.4958	41.16607*	2.97e+11*	32.07627	32.33702*	32.02268
2	-201.5904	1.114356	5.11e+11	32.55236	32.98694	32.46304
3	-200.2803	1.209329	9.17e+11	32.96619	33.57460	32.84114
4	-188.4854	7.258396	4.07e+11	<u>31.76698*</u>	32.54922	<u>31.60620*</u>

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

The results show from the AIC and HQ to using 4 lags in the VAR model by for this particular variable of the estimation the GFCF and total financing.

**Table 5: The Resulte of VAR Lag Selection Criteria (GFCF, IBF)**

VAR Lag Order Selection Criteria

Endogenous variables: GFCF TF\_IBS

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-213.7093	NA	8.87e+11	33.18605	33.27296	33.16818
1	-188.2401	39.18344*	3.31e+10*	<u>29.88309*</u>	<u>30.14383*</u>	<u>29.82949*</u>
2	-188.0333	0.254531	6.35e+10	30.46666	30.90123	30.37733
3	-185.8467	2.018344	9.96e+10	30.74565	31.35406	30.62059
4	-177.7354	4.991560	7.78e+10	30.11314	30.89538	29.95236

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

Thus, pick the lag has the minimum of the least standards. To obtain optional lags, the log structure of my variables is a log structure of one. Hence, the results from the lag selection criterion has advised us to take one lag in the VAR model to be optimum lags to estimate GFCF and IBF only.

#### 4.3.3. VAR Lag Selection Criteria of Inflation with TF, and IBF

**Table 6: The Resulte of VAR Lag Selection Criteria for Inflation with TF, and IBF**

VAR Lag Order Selection Criteria

Endogenous variables: INFLATION TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-213.3615	NA	8.41e+11	33.13254	33.21945	33.11467
1	-187.6775	39.51385*	3.04e+10*	29.79654	30.05728	29.74294
2	-186.3595	1.622194	4.91e+10	30.20915	30.64372	30.11982
3	-184.8965	1.350385	8.60e+10	30.59947	31.20787	30.47441
4	-172.2754	7.766834	3.36e+10	<u>29.27314*</u>	<u>30.05538*</u>	<u>29.11236*</u>

\* indicates lag order selected by the criterion

VAR Lag Order Selection Criteria

Endogenous variables: INFLATION TF\_IBS

Exogenous variables: C

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-197.3422	NA	7.15e+10	30.66802	30.75494	30.65016
1	-171.2098	40.20356*	2.41e+09	27.26305	27.52380	27.20946
2	-169.7472	1.800177	3.81e+09	27.65342	28.08799	27.56409
3	-167.2445	2.310189	5.69e+09	27.88377	28.49218	27.75871
4	-151.8342	9.483265	1.45e+09*	<u>26.12834*</u>	<u>26.91058*</u>	<u>25.96755*</u>

\* indicates lag order selected by the criterion  
LR: sequential modified LR test statistic (each test at 5% level)

The  
lag

selection criterion has advised us to take 4 lags in the VAR model to be optimum

lags to estimate inflation with both TF, and IBF as well.

#### 4.3.4. VAR Lag Selection Criteria of Inflation with TF, and IBF

**Table 7: The Result of VAR Lag Selection Criteria for IT with TF, and IBF**

VAR Lag Order Selection Criteria  
Endogenous variables: EXP\_GROWTH TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-223.1310	NA	3.78e+12	34.63554	34.72246	34.61768
1	-199.7922	35.90586*	1.96e+11	31.66034	31.92109	31.60675
2	-194.7644	6.188068	1.79e+11	31.50222	31.93679	31.41289
3	-189.9003	4.489900	1.86e+11	31.36928	31.97769	31.24423
4	-175.2569	9.011347	5.31e+10*	<u>29.73183*</u>	<u>30.51407*</u>	<u>29.57105*</u>

\* indicates lag order selected by the criterion  
LR: sequential modified LR test statistic (each test at 5% level)

VAR Lag Order Selection Criteria  
Endogenous variables: EXP\_GROWTH TF\_IBS

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-207.5503	NA	3.44e+11	32.23851	32.32542	32.22064
1	-180.6929	41.31907*	1.04e+10*	28.72198	28.98273*	28.66839
2	-177.2062	4.291281	1.20e+10	28.80096	29.23553	28.71163
3	-174.1282	2.841293	1.64e+10	28.94279	29.55120	28.81774
4	-167.6995	3.956114	1.66e+10	<u>28.56915*</u>	29.35139	<u>28.40836*</u>

\* indicates lag order selected by the criterion  
LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error  
 AIC: Akaike information criterion

The results show from the most formation criterion by using 4 lags in the VAR model estimate the inflation variable with TF and IBF as well.

#### 4.3.5. VAR Lag Selection Criteria of Unemployment with TF, and IBF

**Table 8: The Resulte of VAR Lag Selection Criteria (Unemployment, TF)**

VAR Lag Order Selection Criteria  
 Endogenous variables: UNEMPLOYMENT TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-186.5696	NA	1.36e+10	29.01071	29.09763	28.99285
1	-161.6268	38.37362*	5.52e+08*	<u>25.78873*</u>	<u>26.04948*</u>	<u>25.73514*</u>
2	-160.7697	1.054840	9.58e+08	26.27226	26.70684	26.18294
3	-155.0431	5.286103	8.71e+08	26.00663	26.61504	25.88158
4	-150.8111	2.604305	1.24e+09	25.97094	26.75318	25.81015

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

Hence, the results from the lag selection criterion has advised us to take one lag in the VAR model to be optimum lags to estimate unemployment rate and TF only. But for IBF has different lag of result as shown in the table following:

**Table 9: The Resulte of VAR Lag Selection Criteria (Unemployment, IBF)**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-171.2011	NA	1.28e+09	26.64633	26.73324	26.62846
1	-147.0794	37.11030*	58929734	23.55068	23.81143	23.49709
2	-145.2052	2.306683	87344805	23.87773	24.31231	23.78840
3	-140.4973	4.345757	92912280	23.76882	24.37723	23.64377
4	-130.6756	6.044155	55821976*	<u>22.87317*</u>	<u>23.65540*</u>	<u>22.71238*</u>

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

Hence, the results from the lag selection criterion has advised us to take 4 lags in the VAR model to be optimum lags to estimate unemployment rate and IBF only.

#### 4.4. VAR Model Estimations

##### 4.4.1. Estimates VAR Model for both IBF and TF on the Macroeconomic growth of SA.

From the VAR output below, the VAR specification contains two endogenous variables, the Islamic finance of four full fledged Islamic banks (IBF) and the finance of twelve banks in Saudi Arabia (TF) on all the factors of macroeconomic, i.e. GDP growth, GFCF, IN, IT, and the unemployment rates, one by one respectively. Additionally, the output has 1 to 4 lags (p=4). Therefore, each of the examples above has 9 (kp+d) regressors. To realize if there is impact in which lag it will be and this will answer the question of the research as well. Also, give a declaration of the coefficient, t-statistic, a p-value, The adjusted R squared, and standard error that comes from the tables of Vector Autoregression estimates of the data study. First applied the dependent variable, then the independent variable for all the VAR estimations below as follows. Then, select the number of the t-statistic of all lags if it is more than two mean the p-value less than 5%. In other words, the number of the coefficient minus the number of the standard errors equal the number of the t-statistic, that number should be more than two to consider specifically in which lag is significant.

**Table 10: The Results of VAR Estimation (GDP\_G; IBF)**

Vector Autoregression Estimates  
 Included observations: 13 after adjustments  
 Standard errors in ( ) & t-statistics in [ ]

	TF_IBS	GDP growth
TF_IBS(-1)	0.745079 (0.70264)	-6.69E-05 (0.00011)

	[ 1.06040]	<u>[-0.60428]</u>
TF_IBS(-2)	0.232781 (0.98222) [ 0.23699]	5.29E-05 (0.00015) <u>[ 0.34187]</u>
TF_IBS(-3)	-0.640641 (0.97575) [-0.65656]	4.43E-05 (0.00015) <u>[ 0.28823]</u>
TF_IBS(-4)	0.815512 (0.80538) [ 1.01258]	-3.79E-05 (0.00013) <u>[-0.29884]</u>
GDP(-1)	323.7568 (5299.10) [ 0.06110]	0.308817 (0.83466) [ 0.36999]
GDP(-2)	-339.2505 (4517.76) [-0.07509]	-0.255939 (0.71159) [-0.35967]
GDP(-3)	2224.780 (2954.35) [ 0.75305]	-0.075793 (0.46534) [-0.16288]
GDP(-4)	-642.4256 (2767.79) [-0.23211]	-0.082940 (0.43595) [-0.19025]
C	19579.17 (46550.7) [ 0.42060]	6.603109 (7.33218) [ 0.90057]
<hr/>		
R-squared	0.977815	0.271685
Adj. R-squared	0.933444	-1.184944
Sum sq. resids	3.20E+09	79.51262
S.E. equation	28306.15	4.458492
F-statistic	22.03756	0.186516
Log likelihood	-144.0458	-30.21748
Akaike AIC	23.54551	6.033459
Schwarz SC	23.93662	6.424578
Mean dependent	235219.1	3.632680
S.D. dependent	109720.7	3.016254
<hr/>		
Determinant resid covariance (dof adj.)		6.75E+08
Determinant resid covariance		63911407
Log likelihood		-153.7170
Akaike information criterion		26.41799
Schwarz criterion		27.20023
<hr/>		

From the VAR output above table 4, the VAR specification contains two endogenous variables as explained in the methodology chapter that the all variables are endogenous in VAR system. First VAR estimation is GDP growth and IBF. Additionally, the output has 1 to 4 lags (p=4). Therefore, each has 9 (kp+d) regressors. The coefficient IBF from 1<sup>st</sup> to 4<sup>th</sup> lags in the GDP growth are -6.69E-05, 5.29E-05, 4.43E-05, and -3.79E-05 respectively, while the standard error are 0.00011, 0.00015, 0.00015, and 0.00013 respectively. This estimate is insignificant in explaining the GDP growth as the t-statistic are -0.60428, 0.34187, 0.28823, and -0.29884 respectively, which is clearly less than two indicating a negative impact on first and last year' in all t-statistic of four lags are not significant. The adjusted R squared from the output is 0.933444 for the IBF. This means that about 93% of the data points lies within the regression equation. In other words, 93% of the variation of IBF can be explained by the explanatory variables which only affect the dependent variable. But for the GDP growth, the adjusted R squared from the output is negative. The variable C means constant. This is the value that the dependent variable will take in the absence of interaction with the identified variables, but the results will change with total financing data of the growth equation as shown below:

**Table 11: The Results of VAR Estimation (GDP\_G; TF\_G)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	GDP growth	TF_ALL_G
GDP(-1)	0.498233 (0.69101) [ 0.72102]	-0.982723 (1.07416) [-0.91488]
GDP(-2)	0.252903 (0.48304) [ 0.52357]	5.884786 (0.75087) [ 7.83731]
GDP(-3)	-0.058189 (0.28092) [-0.20714]	1.672995 (0.43668) [ 3.83118]

GDP(-4)	0.147673 (0.25067) [ 0.58911]	1.953886 (0.38966) [ 5.01432]
TF_ALL_G(-1)	-0.004549 (0.07510) [-0.06058]	0.235334 (0.11674) [ 2.01594]
TF_ALL_G(-2)	-0.215762 (0.07610) [-2.83539]	-0.603763 (0.11829) [-5.10410]
TF_ALL_G(-3)	0.239109 (0.15756) [ 1.51756]	0.089318 (0.24493) [ 0.36468]
TF_ALL_G(-4)	0.011535 (0.16155) [ 0.07141]	1.156949 (0.25112) [ 4.60717]
C	-0.888097 (4.58847) [-0.19355]	-43.27919 (7.13266) [-6.06775]
R-squared	0.813380	0.974625
Adj. R-squared	0.315726	0.906957
Sum sq. resids	19.61214	47.39067
S.E. equation	2.556830	3.974530
F-statistic	1.634430	14.40312
Log likelihood	-19.97472	-25.26838
Akaike AIC	4.829119	5.711396
Schwarz SC	5.192799	6.075076
Mean dependent	3.470916	12.35984
S.D. dependent	3.090915	13.02999
Determinant resid covariance (dof adj.)		92.87964
Determinant resid covariance		5.804978
Log likelihood		-44.60682
Akaike information criterion		10.43447
Schwarz criterion		11.16183

From the output above, the estimates and the t-statistic for TF data of the growth equation with 2<sup>nd</sup> lag is 2.835 that higher than two in the GDP growth, which is statistically significant. This implies the P-value less than 5%. Therefore the change of TF\_G from 2<sup>nd</sup> lag only an influence on GDP growth. However, the rest of the GDP growth and TF change in other lags are not significant anywhere. Therefore, these are not needed to explain the variation in today's

changes in the GDP growth. From the output above, the adjusted R squared is 0.90675. Which means that about 90% of the variance of TF\_G can be explained by the independent variables that significantly affects the response variable. However, the adjusted R squared for the GDP growth is 0.3157 that about 31% of the variance of TF\_G can be explained by the dependent variables that significantly effects the response variable.

**Table 12: The Results of VAR Estimation (GFCF; IBF)**

Vector Autoregression Estimates  
Included observations: 16 after adjustments  
Standard errors in ( ) & t-statistics in [ ]

	GFCF	TF_IBS
GFCF_GROWTH(-1)	-0.155343 (0.21837) [-0.71139]	-36.81216 (474.218) [-0.07763]
TF_IBS(-1)	-7.01E-05 (2.2E-05) <u>[-3.25372]</u>	1.040579 (0.04679) [ 22.2413]
C	23.37480 (5.47022) [ 4.27310]	16071.22 (11879.5) [ 1.35285]
R-squared	0.456865	0.978182
Adj. R-squared	0.373305	0.974826
Sum sq. resids	1027.702	4.85E+09
S.E. equation	8.891234	19308.87
F-statistic	5.467549	291.4260
Log likelihood	-56.00295	-178.9350
Akaike AIC	7.375369	22.74188
Schwarz SC	7.520230	22.88674
Mean dependent	9.393438	201893.6
S.D. dependent	11.23140	121697.1
Determinant resid covariance (dof adj.)		2.85E+10
Determinant resid covariance		1.88E+10
Log likelihood		-234.6689
Akaike information criterion		30.08361
Schwarz criterion		30.37333

From the VAR output above, the VAR specification contains two endogenous variables, GFCF and IBF. Additionally, the output has one lag (p=1). The coefficient IBF (-1) in the GFCF is  $-7.01E-05$ , the standard error is  $2.2E-05$  while the t-statistic is  $-3.25372$ . From the output above the t-statistic are significant because it is higher than two. The adjusted R squared from the output is 0.97 for the IBF. This means that about 97% of the data points lies within the regression. Also, the adjusted R squared for the GFCF that the output is lower than half. The variable C means constant. This is the value that the dependent variable will take in the absence of interaction with the identified variables. Hence, the IF impact on the GFCF, this impact to the investors will give a positive impact on the future for the economy growth.

**Table 13: The Results of VAR Estimation (GFCF; TF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	TF_ALL	GFCF_GROWT H
TF_ALL(-1)	1.249372 (0.62416) [ 2.00169]	2.75E-05 (4.0E-05) [ 0.69500]
TF_ALL(-2)	-0.730572 (0.94801) [-0.77063]	-8.90E-05 (6.0E-05) [-1.47989]
TF_ALL(-3)	0.438299 (0.91941) [ 0.47672]	0.000133 (5.8E-05) [ <u>2.27774</u> ]
TF_ALL(-4)	-0.031198 (0.69965) [-0.04459]	-0.000117 (4.4E-05) [ <u>-2.64344</u> ]
GFCF_GROWTH(-1)	-928.5851 (5275.77) [-0.17601]	-0.357137 (0.33474) [-1.06690]
GFCF_GROWTH(-2)	165.2692 (4552.27) [ 0.03630]	0.062255 (0.28884) [ 0.21554]
GFCF_GROWTH(-3)	-1499.369	-0.572232

	(4162.43)	(0.26410)
	[-0.36021]	[-2.16670]
GFCF_GROWTH(-4)	-518.6071	-0.127313
	(3233.80)	(0.20518)
	[-0.16037]	[-0.62049]
C	187422.7	43.82831
	(172923.)	(10.9718)
	[ 1.08385]	[ 3.99462]
R-squared	0.974953	0.893037
Adj. R-squared	0.924860	0.679111
Sum sq. resids	4.07E+10	163.8459
S.E. equation	100869.9	6.400114
F-statistic	19.46267	4.174509
Log likelihood	-160.5656	-34.91705
Akaike AIC	26.08701	6.756469
Schwarz SC	26.47813	7.147588
Mean dependent	949288.0	8.416354
S.D. dependent	367981.0	11.29822
Determinant resid covariance (dof adj.)		1.42E+11
Determinant resid covariance		1.34E+10
Log likelihood		-188.4854
Akaike information criterion		31.76698
Schwarz criterion		32.54922

From the output above, the t-statistic for TF with 3<sup>rd</sup> and 4<sup>th</sup> lags are significant in the GFCF are 2.27774, and -2.64344TF respectively. The TF has a coefficient of TF are 0.000133, and -0.000117 respectively, with a standard error of 5.8E-05, and 4.4E-05 respectively. Therefore, the three and four periods lagged change in the TF has an effect on time changes on the GFCF. The adjusted R squared for TF is 0.95. While that of GFCF is 0.67. These look countless as they are both less than the R squared. Thus, the model fits well.

**Table 14: The Results of VAR Estimation (Inflation; IBF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	TF_IBS	INFLATION
TF_IBS(-1)	0.631919	-2.70E-05
	(0.42525)	(7.2E-05)
	[ 1.48599]	[-0.37398]

TF_IBS(-2)	0.352262 (0.56413) [ 0.62444]	9.31E-06 (9.6E-05) [ 0.09724]
TF_IBS(-3)	-0.284938 (0.51837) [-0.54968]	4.03E-05 (8.8E-05) [ 0.45741]
TF_IBS(-4)	0.300664 (0.45687) [ 0.65810]	-2.92E-05 (7.8E-05) [-0.37600]
INFLATION(-1)	-3343.374 (3216.51) [-1.03944]	0.473145 (0.54617) [ 0.86630]
INFLATION(-2)	-1532.708 (4010.42) [-0.38218]	0.071185 (0.68098) [ 0.10453]
INFLATION(-3)	3293.599 (3705.66) [ 0.88880]	-0.042382 (0.62923) [-0.06736]
INFLATION(-4)	3757.371 (4022.17) [ 0.93417]	-0.033296 (0.68297) [-0.04875]
C	37187.55 (16590.2) [ 2.24154]	3.560578 (2.81705) [ 1.26394]
R-squared	0.990483	0.393292
Adj. R-squared	0.971448	-0.820123
Sum sq. resids	1.37E+09	39.64215
S.E. equation	18539.83	3.148101
F-statistic	52.03597	0.324120
Log likelihood	-138.5447	-25.69333
Akaike AIC	22.69919	5.337436
Schwarz SC	23.09031	5.728555
Mean dependent	235219.1	3.841295
S.D. dependent	109720.7	2.333448
Determinant resid covariance (dof adj.)		5.05E+08
Determinant resid covariance		47839038
Log likelihood		-151.8342
Akaike information criterion		26.12834
Schwarz criterion		26.91058

From the VAR output above, the coefficient for IBF from 1<sup>st</sup> to 4<sup>th</sup> lags in the inflation rate are -2.70E-05, 9.31E-06, 4.03E-05, and -2.92E-05 respectively, while the standard error are

7.2E-05, 9.6E-05, 8.8E-05, and 7.8E-05 respectively. This estimate is insignificant in explaining the inflation rate as the t-statistic are -0.37398, 0.09724, 0.45741, and -0.37600 respectively, which is clearly less than two indicating a negative impact on first and fourth lags, and in all t-statistic of four lags are not significant. The adjusted R squared from the output is 0.971448 for the IBF. This means that about 97% of the data points lies within the regression equation. In other words, 97% of the variation of IBF can be explained by the explanatory variables which only affect the dependent variable. But for the inflation rate, the adjusted R squared from the output is negative.

**Table 15: The Results of VAR Estimation (Inflation; TF)**

Vector Autoregression Estimates  
Included observations: 13 after adjustments  
Standard errors in ( ) & t-statistics in [ ]

	TF_ALL	INFLATION
TF_ALL(-1)	1.325988 (0.40362) [ 3.28526]	1.77E-05 (1.3E-05) [ 1.33025]
TF_ALL(-2)	-0.468194 (0.69468) [-0.67397]	-3.71E-05 (2.3E-05) [-1.61985]
TF_ALL(-3)	0.447707 (0.71986) [ 0.62193]	3.69E-05 (2.4E-05) [ 1.55544]
TF_ALL(-4)	-0.502405 (0.57640) [-0.87162]	-1.86E-05 (1.9E-05) [-0.97759]
INFLATION(-1)	-12140.68 (11451.5) [-1.06018]	0.352570 (0.37731) [ 0.93443]
INFLATION(-2)	-2452.341 (15064.3) [-0.16279]	0.436137 (0.49635) [ 0.87870]
INFLATION(-3)	-3237.536 (14834.8) [-0.21824]	-0.292923 (0.48878) [-0.59929]

INFLATION(-4)	25592.19 (15807.5) [ 1.61899]	-0.156341 (0.52083) [-0.30017]
C	145913.2 (66422.1) [ 2.19676]	1.761091 (2.18851) [ 0.80470]
R-squared	0.987043	0.650198
Adj. R-squared	0.961130	-0.049405
Sum sq. resids	2.11E+10	22.85596
S.E. equation	72549.39	2.390395
F-statistic	38.08998	0.929382
Log likelihood	-156.2812	-22.11391
Akaike AIC	25.42788	4.786755
Schwarz SC	25.81900	5.177874
Mean dependent	949288.0	3.841295
S.D. dependent	367981.0	2.333448
Determinant resid covariance (dof adj.)		1.17E+10
Determinant resid covariance		1.11E+09
Log likelihood		-172.2754
Akaike information criterion		29.27314
Schwarz criterion		30.05538

From the output above, the coefficient for IBF from 1st to 4th lags in the inflation rate are  $1.77E-05$ ,  $-3.71E-05$ ,  $3.69E-05$  and  $-1.86E-05$  respectively, while the standard error are  $1.3E-05$ ,  $2.3E-05$ ,  $2.4E-05$ , and  $1.9E-05$  respectively. This estimate is insignificant in explaining the inflation rate as the t-statistic are 1.33025, -1.61985, 1.55544, and -0.97759 respectively, which is clearly less than two indicating a negative impact on the second and fourth lags, and in all t-statistic of four lags are not significant. The adjusted R squared from the output is 0.961130 for the IBF. This means that about 96% of the data points lies within the regression equation. In other words, 96% of the variation of IBF can be explained by the explanatory variables which only affect the dependent variable. But for the inflation rate, the adjusted R squared from the output is negative.

**Table 16: The Results of VAR Estimation (IT; IBF)**

Vector Autoregression Estimates

Standard errors in ( ) &amp; t-statistics in [ ]

	TF_IBS	EXP_GROWTH
TF_IBS(-1)	0.521520 (0.47098) [ 1.10731]	-0.000212 (8.3E-05) [-2.55098]
TF_IBS(-2)	1.200060 (0.92041) [ 1.30383]	0.000336 (0.00016) [ 2.07080]
TF_IBS(-3)	-0.611242 (0.63041) [-0.96959]	9.19E-05 (0.00011) [ 0.82705]
TF_IBS(-4)	-0.131071 (0.77491) [-0.16914]	-0.000257 (0.00014) [-1.87922]
EXP_GROWTH(-1)	3875.022 (2913.79) [ 1.32989]	1.111010 (0.51342) [ 2.16395]
EXP_GROWTH(-2)	-1993.731 (1834.84) [-1.08660]	-0.384379 (0.32330) [-1.18891]
EXP_GROWTH(-3)	-309.8401 (1267.65) [-0.24442]	-0.401670 (0.22336) [-1.79828]
EXP_GROWTH(-4)	-238.3851 (929.185) [-0.25655]	-0.106434 (0.16373) [-0.65008]
C	21087.15 (19909.7) [ 1.05914]	4.297588 (3.50815) [ 1.22503]
R-squared	0.983642	0.758227
Adj. R-squared	0.950926	0.274681
Sum sq. resids	2.36E+09	73.36970
S.E. equation	24306.10	4.282806
F-statistic	30.06594	1.568055
Log likelihood	-142.0652	-29.69485
Akaike AIC	23.24080	5.953054
Schwarz SC	23.63192	6.344173
Mean dependent	235219.1	0.952448
S.D. dependent	109720.7	5.028794
Determinant resid covariance (dof adj.)		5.80E+09
Determinant resid covariance		5.49E+08

Log likelihood	-167.6995
Akaike information criterion	28.56915
Schwarz criterion	29.35139

From the output above, the t-statistic for IBF with 1<sup>st</sup> and 2<sup>nd</sup> lags is significant in the international trade and has a coefficient of -0.000212, and 0.0003 respectively, while the standard error of 8.3E-05, and 0.00016 respectively. Therefore, the change of TF from 1 to 2 periods ago has only an effect in this period rate of international trade. The t- statistic for IT with 1<sup>st</sup>, and 2<sup>nd</sup> lags are significant in the international trade, which are 2.0708 and -2.55098 respectively. Also, the t- statistic 1.89 in the 4<sup>th</sup> lags is almost significant because it seems equal two. Therefore, the p-value less than 5%, the one period lagged change in the IT has an influence on time changes in only IT. The adjusted R squared for IBF is 0.95. While that of IT is 0.27. These look great as they are both less than the R squared. Thus, the model fits well.

**Table 17: The Results of VAR Estimation (IT; TF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	TF_ALL	EXP_GROWTH
TF_ALL(-1)	0.946016 (0.30153) [ 3.13739]	-2.98E-05 (2.4E-05) [-1.23518]
TF_ALL(-2)	-2.024210 (0.68795) [-2.94239]	-3.49E-05 (5.5E-05) [-0.63511]
TF_ALL(-3)	0.591022 (0.52577) [ 1.12410]	7.76E-05 (4.2E-05) [ 1.84711]
TF_ALL(-4)	1.648614 (0.72542) [ 2.27264]	-1.25E-05 (5.8E-05) [-0.21630]
EXP_GROWTH(-1)	-24822.69 (10467.8)	-0.261843 (0.83660)

	[-2.37134]	[-0.31298]
EXP_GROWTH(-2)	4391.312 (3358.24) [ 1.30762]	0.148047 (0.26839) [ 0.55160]
EXP_GROWTH(-3)	3919.154 (2356.56) [ 1.66308]	-0.063320 (0.18834) [-0.33620]
EXP_GROWTH(-4)	4421.643 (2107.38) [ 2.09817]	-0.084895 (0.16842) [-0.50405]
C	329870.0 (111710.) [ 2.95290]	8.742272 (8.92801) [ 0.97920]
R-squared	0.992930	0.758185
Adj. R-squared	0.978789	0.274555
Sum sq. resids	1.15E+10	73.38241
S.E. equation	53592.57	4.283177
F-statistic	70.21849	1.567697
Log likelihood	-152.3441	-29.69598
Akaike AIC	24.82217	5.953227
Schwarz SC	25.21329	6.344346
Mean dependent	949288.0	0.952448
S.D. dependent	367981.0	5.028794
Determinant resid covariance (dof adj.)		1.86E+10
Determinant resid covariance		1.76E+09
Log likelihood		-175.2569
Akaike information criterion		29.73183
Schwarz criterion		30.51407

From the output above, the t-statistic for TF with 3<sup>rd</sup> lag is significant in the TF and has a coefficient of 7.76E-05, with a standard error of 4.2E-05, and a t- statistic of 1.84711. Because it seems equal two. Therefore, the change of TF from 3<sup>rd</sup> period ago has only an impact in this periods rate on TF. Additionally, from the output, the rest of the international trade variables and TF change are not significant anywhere. Therefore, these are not needed to explain the variation in today's changes in the IT. The adjusted R squared for TF is 0.97. While that of IT is 0.27. These look great as they are both less than the R squared. Thus, the model fits well. Cecchetti, S. G., & Kharroubi, E. (2012).

**Table 18: The Results of VAR Estimation (Unemployment; IBF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	UNEMPLOYME NT	TF_IBS
UNEMPLOYMENT(-1)	0.355614 (0.29900) [ 1.18936]	6905.054 (33525.2) [ 0.20597]
UNEMPLOYMENT(-2)	-0.339368 (0.32992) [-1.02865]	9305.816 (36992.1) [ 0.25156]
UNEMPLOYMENT(-3)	0.081428 (0.28310) [ 0.28763]	-31675.05 (31743.0) [-0.99786]
UNEMPLOYMENT(-4)	-0.551476 (0.22927) [-2.40534]	138.5494 (25707.2) [ 0.00539]
TF_IBS(-1)	2.00E-06 (4.2E-06) [ 0.47290]	0.738222 (0.47359) [ 1.55879]
TF_IBS(-2)	-7.76E-06 (5.6E-06) [-1.39579]	0.328234 (0.62323) [ 0.52667]
TF_IBS(-3)	1.55E-05 (6.1E-06) <u>[ 2.51806]</u>	-0.397102 (0.68827) [-0.57696]
TF_IBS(-4)	-1.09E-05 (5.1E-06) <u>[-2.13837]</u>	0.430942 (0.57258) [ 0.75263]
C	8.134738 (2.15427) [ 3.77611]	109566.0 (241549.) [ 0.45360]
R-squared	0.817286	0.982027
Adj. R-squared	0.451858	0.946081
Sum sq. resids	0.206521	2.60E+09
S.E. equation	0.227223	25477.56
F-statistic	2.236517	27.31971
Log likelihood	8.478762	-142.6771
Akaike AIC	0.080191	23.33494
Schwarz SC	0.471309	23.72606
Mean dependent	5.605641	235219.1
S.D. dependent	0.306906	109720.7
Determinant resid covariance (dof adj.)		19491558

Determinant resid covariance	1845355.
Log likelihood	-130.6756
Akaike information criterion	22.87317
Schwarz criterion	23.65540

From the output above, the t-statistic for IBF with respectively the 3<sup>rd</sup> and 4<sup>th</sup> lags are significant in the unemployment rate, which are 2.518, -2.13837 respectively. Therefore, the t-statistic more than two, which is P-value less than 0.05. Also, the change of IBF from 3<sup>rd</sup> to 4<sup>th</sup> periods ago has an influence in this periods rate on LF. The coefficient of 1.55E-05, and -1.09E-05 respectively, with a standard error of 6.1E-06, and 5.1E-06 respectively. Moreover, The adjusted R squared for IBF is 0.94. While that of the unemployment rate is 0.45. These look great as they are both less than the R squared. Thus, the model fits well. Bollerslev, T., Chou, R. Y., & Kroner, K. F. (1992).

**Table 19: The Results of VAR Estimation (Unemployment; TF)**

Vector Autoregression Estimates  
 Included observations: 16 after adjustments  
 Standard errors in ( ) & t-statistics in [ ]

	UNEMPLOYME NT	TF_ALL
UNEMPLOYMENT(-1)	0.341484 (0.18646) [ 1.83140]	96216.19 (39541.8) [ 2.43328]
TF_ALL(-1)	-1.38E-07 (1.6E-07) [-0.84527]	0.983381 (0.03469) [ 28.3484]
C	3.809260 (1.02718) [ 3.70846]	-442602.7 (217829.) [-2.03188]
R-squared	0.223773	0.984736
Adj. R-squared	0.104353	0.982388
Sum sq. resids	0.978563	4.40E+10
S.E. equation	0.274361	58182.44
F-statistic	1.873839	419.3476
Log likelihood	-0.348947	-196.5833

Akaike AIC	0.418618	24.94792
Schwarz SC	0.563479	25.09278
Mean dependent	5.598333	814885.0
S.D. dependent	0.289904	438418.0
<hr/>		
Determinant resid covariance (dof adj.)		2.28E+08
Determinant resid covariance		1.51E+08
Log likelihood		-196.0482
Akaike information criterion		25.25603
Schwarz criterion		25.54575

From the output above, the t-statistic for TF with one lag is not significant in the unemployment and has a coefficient of  $-1.38E-07$ , with a standard error of  $1.6E-07$ , and a t-statistic is  $-0.84527$  of periods rate on the unemployment rate. The rest of the unemployment variable and TF change are significant in the opposite way. However, the adjusted R squared for TF is 0.95. While that of unemployment is negative. These look excessive as they are both less than the R squared.

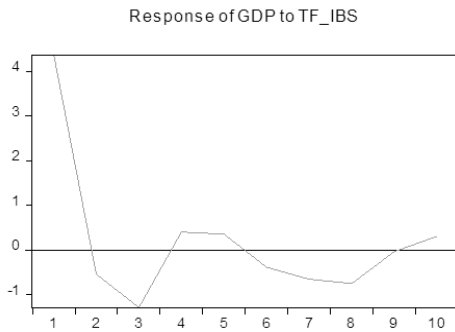
#### 4.5. The Impulse Response

Basically, the Impulse Response Function divides into the Impulse variable which is mean the source of the shock, and the Response variable means the variable being effected. The impulse responses are these time-paths of  $y$  and  $x$  due to the shocks  $u_1$  and  $u_2$ . It can be found by this recursion formula, and they are functions of the estimated VAR coefficients.

Any shocks occurring on each of these variables will trigger different types of reactions from the status of the economy. However, as indicated by the response function in 10 figures, the nature of the response depends on the direction of the shock. Depending on the directions mentioned above, the economic reactions can be negative, sinusoidal, positive, or constant as illustrated by these functions. Impact of Shocks on Variables, it will show in two variable systems. Initially, There are 4 impulse response functions. Nevertheless, in this study justify

only one chart that relevant to our study of those 4 charts, when the IBF or TF impact on the macroeconomic growth. The impulse response is graphed as a function of forward time periods.

The period in this analysis means one year, because our data is annually.



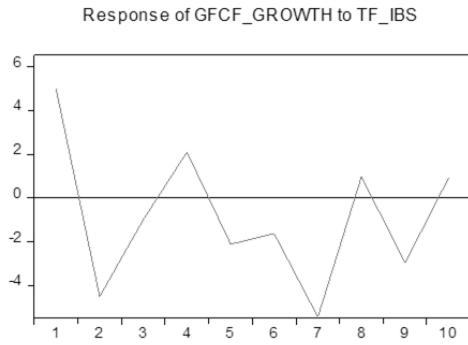
**Figure 3: Response of GDP to IBF.**



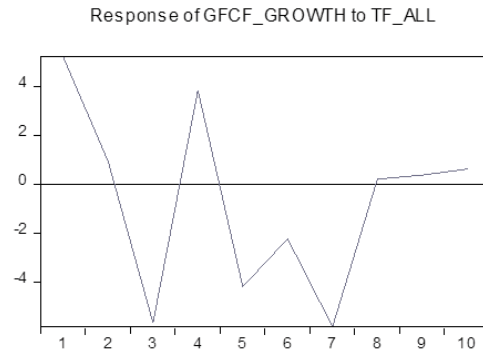
**Figure 4: Response of GDP to TF.**

On the left graphical show the output of response of IBF on GDP growth. IBF effects GDP growth positively as the trend shows a positive trend for the next ten periods. However, IBF still has a negative impact on GDP growth in most periods.

In the right graph output, when the shock is given GDP growth effects the total financing first in a positive way, but after one and a half months, the effect on GDP growth becomes negative for the next two periods until after three and a half periods again, the effect of GDP growth on TF becomes positive. This trend is again observed after 5.5 periods where the GDP growth will have a negative impact on TF and after 9.4 periods the impact becomes positive. Generally, the effect has a negative trend.



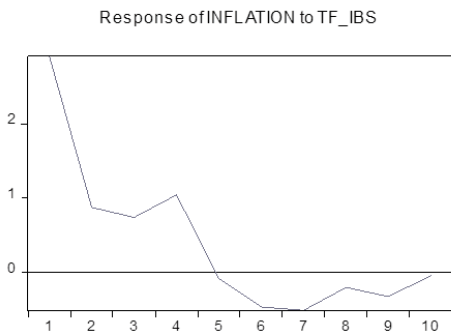
**Figure 5: Response of GFCF to IBF.**



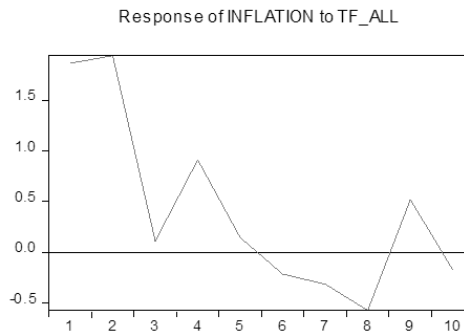
**Figure 6: Response of GFCF to TF.**

On the left graphical show the output of response of IBF on GFCF. IBF effects GFCF negatively as the trend shows a positive trend for the third lag only.

In the right graph, TF effects GFCF first in a positive way, but after one and a half period, the effect on GFCF becomes negative for the next two periods until after three and a half periods again, the effect of GFCF on TF becomes positive The outputs above again in the fourth lag only. The effect after shock on how GFCF affects TF.



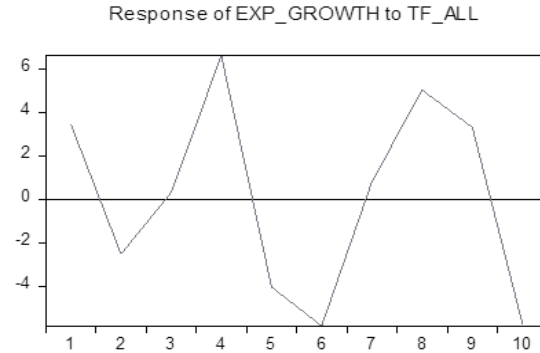
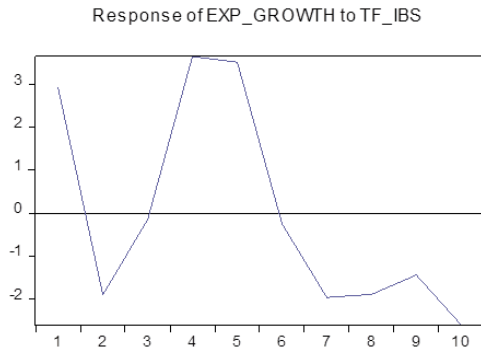
**Figure 7: Response of Inflation to IBF.**



**Figure 8: Response of Inflation to TF.**

On the left graphical show the output of response of IBF on Inflation. IBF effects an inflation positively as the trend shows a positive trend for the beginning fourth and a half periods.

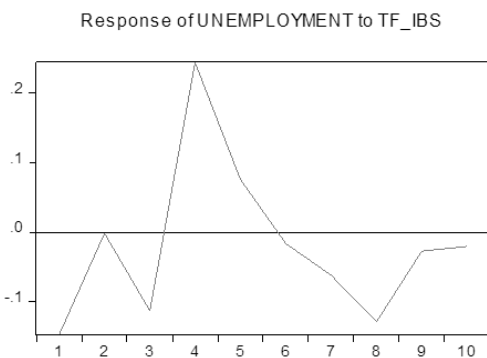
On the left graphical show the output of response of IBF on inflation. IBF effects positively on the inflation as the trend shows a positive trend for the next ten periods.



**Figure 9: Response of International Trade to IBF. Figure 10: Response of IT to TF.**

In left graph shows the IBF not effect on international trade in the beginning, but after three periods the effect of the IBF on international trade becomes positive, until 5.5 periods where the IBF will have a negative impact on IT.

On the left graphical show the output of response of TF on international trade. TF effects IT positively in the beginning, then after the negative sign in period one, show positive increase until the periods five. The trend shows again a positive movement for 4 periods more. At the end return negatively again after periods ten.



**Figure11: Response of Unemployment to IBF. Figure12: Response of LF to TF.**

For both graphical the IBF and total financing effect on unemployment rate only in the fourth lag until 6 lag or expand in the total finance to the seventh and a half, then turn effect negatively again on the unemployment rate.

#### 4.6. The Variance Decomposition

Variance decomposition of the forecast error gives the percentage of expected variance in each variable that is produced by innovation from other variables. The innovation or impulse means shocks in the language of VAR system. The Variance decomposition enables assessment of the economic significance of this impact as a percentage of the forecast error for a variable sum to one. Now, after stating the research objective that using a VAR model to investigate the relation between the IBF and the economic growth, and if there is any significant impact from shocks. Then, performed the unit root test. Also, perform some diagnostic tests, and obtain 4 lags by run the unrestricted VAR model and interpret the result. It is time to perform the variance decomposition in the table below and interpret the result as well.

**Table 20: The Resulte of Variance Decomposition (GDP\_G, IBF)**

Period	S.E.	GDP growth	TF_IBS
1	4.458492	100.0000	0.000000
2	4.500697	99.25016	0.749841
3	4.685726	99.26035	0.739654
4	4.706364	98.96806	1.031939
5	4.725141	98.58443	1.415567
6	4.741329	98.58284	1.417159
7	4.789316	98.24367	1.756326
8	4.850916	97.88895	2.111054
9	4.851092	97.88855	2.111448
10	4.862396	97.73909	2.260912

The period will explain into short run and long run. In the table just select ten years into the future, the short run will be year one to three. The long run will be from year four to ten years.

In the short run, the variance of IBF explained around 0.74 of the variance in the GDP growth. In the period four to ten the variance of IBF explained respectively from 1.03 to 2.26

percentages of the variance in the GDP growth. Clearly, in the long run the shock of IBF can contribute to increase gradually, but still has a weak change in the variance of GDP growth.

**Table 21: The Result of Variance Decomposition (GDP\_G, TF)**

Period	S.E.	GDP growth	TF_ALL
1	3.028517	100.0000	0.000000
2	3.031716	99.96666	0.033339
3	3.576174	94.57668	5.423323
4	3.886199	94.70530	5.294705
5	3.944881	91.97688	8.023119
6	4.016300	92.13766	7.862338
7	4.113385	92.17404	7.825964
8	4.150885	91.92366	8.076339
9	4.389935	92.53076	7.469245
10	4.501515	92.89590	7.104100

In the short run, the variance of TF explained by 5.42 in the periods 3 of the variance in the GDP growth. In the period four to ten the variance of TF moved from 5.3 to around 8.0 percentages or less to 7.1 percentages of the variance in the GDP growth.

**Table 22: The Result of Variance Decomposition (GFCF, IBF)**

Period	S.E.	GFCF	TF_IBS
1	8.891234	100.0000	0.000000
2	9.136392	97.87795	2.122053
3	9.212065	96.27694	3.723057
4	9.301403	94.50859	5.491409
5	9.395764	92.67367	7.326328
6	9.497579	90.75810	9.241900
7	9.607011	88.76621	11.23379
8	9.724607	86.70035	13.29965
9	9.850873	84.56399	15.43601
10	9.986349	82.36132	17.63868

In the short run, the variance of IBF explained around 3.7 of the variance in the GFCF. In the period four to ten the variance of IBF explained respectively from 5.5 to 17.64 percentages of

the variance in the GFCF. Clearly, in the long run, the innovation of IBF can contribute to increase gradually.

**Table 23: The Result of Variance Decomposition (GFCF, TF)**

Period	S.E.	GFCF	TF_ALL
1	6.400114	100.0000	0.000000
2	6.602212	93.97388	6.026119
3	8.710426	77.54918	22.45082
4	9.775941	65.13044	34.86956
5	10.65464	62.75171	37.24829
6	10.88390	62.94495	37.05505
7	12.38095	59.74050	40.25950
8	12.38316	59.72932	40.27068
9	12.39066	59.77488	40.22512
10	12.40832	59.70145	40.29855

In the period 2 and 3, the variance of TF described from 6.0 to 22.45 percentages of the variance in the GFCF. In the period four to ten the variance of TF explained respectively from 34.9 to 40.3 percentages of the variance in the GFCF. Clearly, in the long run, we see the impulse of TF can contribute to increase gradually more than of IBF.

**Table 24: The Result of Variance Decomposition (Inflation, IBF)**

Period	S.E.	INFLATION	TF_IBS
1	3.148101	100.0000	0.000000
2	3.317140	99.66209	0.337909
3	3.430412	99.50148	0.498522
4	3.601755	99.49325	0.506747
5	3.602744	99.47803	0.521972
6	3.638681	99.48681	0.513186
7	3.678572	99.48625	0.513752
8	3.684616	99.48431	0.515692
9	3.699030	99.41921	0.580792
10	3.699543	99.39577	0.604234

In the short run, the variance of IBF explained around 0.3 of focus error variances in the inflation. During the period four to ten the variance of IBF explained respectively from 0.5 to 0.6

percentages of the variance in the inflation that means the IBF variable in the model do not have any strong influence on inflation.

**Table 25: The Resulte of Variance Decomposition (Inflation, TF)**

Period	S.E.	INFLATION	TF_ALL
1	2.201401	100.0000	0.000000
2	2.523950	91.05724	8.942759
3	2.678678	88.45149	11.54851
4	2.746246	87.96332	12.03668
5	2.775828	88.11528	11.88472
6	2.790958	88.20517	11.79483
7	2.802739	87.97997	12.02003
8	2.815755	87.40415	12.59585
9	2.831316	86.54156	13.45844
10	2.849215	85.48876	14.51124

At the end of the short run, the variance of TF clarified around 11.5 percentages of the variance in the inflation. In the period four to ten the variance of TF explained respectively from 12.0 to 14.5 percentages of the variance in the inflation. Clearly, in the long run, the impulse of TF can contributes increase gradually, but still has a weak change in the variance inflation.

**Table 26: The Resulte of Variance Decomposition (IT, IBF)**

Period	S.E.	EXP_GROWTH	TF_IBS
1	4.282806	100.0000	0.000000
2	5.838138	58.40698	41.59302
3	5.840827	58.35680	41.64320
4	7.006885	45.40287	54.59713
5	7.857164	42.74607	57.25393
6	7.873380	42.60484	57.39516
7	8.122744	43.90160	56.09840
8	8.423448	47.34986	52.65014
9	8.654165	50.09988	49.90012
10	9.071186	52.23561	47.76439

In the period 2 and 3, the variance of IBF explained around 41.6 percentages of the variance in the international trade. During the period four to ten the variance of IBF explained around from 54.6 with slow decreasing to 47.76 percentages of the variance in the IT. Clearly, in the long run the shock of IBF can contribute around the average neither strong or weak influence on IT.

**Table 27: The Resulte of Variance Decomposition (IT, TF)**

Period	S.E.	EXP_GROWTH	TF_ALL
1	4.283177	100.0000	0.000000
2	5.002813	96.41896	3.581042
3	5.571044	87.15071	12.84929
4	8.940779	89.45343	10.54657
5	11.23896	90.01368	9.986321
6	12.89535	91.22337	8.776627
7	13.27546	89.52517	10.47483
8	14.68984	91.44371	8.556288
9	15.06263	89.84298	10.15702
10	16.78780	91.75537	8.244632

In the period 2, the variance of TF defined from 3.6 percentages of the variance in the international trade, and the period 3 jumps to 12.8 percentages. During the period four to ten the variance of IT explained by the variance between 10.5 to 8.2 percentages of focus error variance in the IT. Clearly, in the long run, the shock of TF can contribute still has a weak change in the variance IT.

**Table 28: The Resulte of Variance Decomposition (Unemployment, IBF)**

Period	S.E.	UNEMPLOYMEN T	TF_IBS
1	0.227223	100.0000	0.000000
2	0.235435	97.28272	2.717284
3	0.263303	80.91257	19.08743
4	0.359926	67.00499	32.99501

5	0.380168	70.41087	29.58913
6	0.380973	70.12397	29.87603
7	0.385983	69.10011	30.89989
8	0.406781	66.73864	33.26136
9	0.411021	67.31364	32.68636
10	0.412954	67.59228	32.40772

In the short run, the variance of IBF explained in beginning of period 2 around 2.7 percentages of the variance in the unemployment rate and in the next period 3 flying to 19.08 percentages. In the period four to ten the variance of IBF explained quite the same percentage that is 33.0, but there is a little bit decreasing between these two periods the variance in the unemployment rate.

**Table 29: The Resulte of Variance Decomposition (Unemployment, TF)**

Period	S.E.	UNEMPLOYMEN T	TF_ALL
1	0.274361	100.0000	0.000000
2	0.290868	99.93151	0.068492
3	0.292774	99.81374	0.186264
4	0.293093	99.68076	0.319237
5	0.293287	99.54906	0.450936
6	0.293483	99.42441	0.575588
7	0.293678	99.30831	0.691686
8	0.293864	99.20080	0.799201
9	0.294038	99.10143	0.898569
10	0.294199	99.00965	0.990350

In the short run, the variance of TF explained around zero of focus error variation in the unemployment rate. During the period four to ten the variance of IBF explained respectively from 0.32 to 1.9 percentages of the variance in the unemployment rate that means the TF variable in the model do not have any effect on the unemployment rate.

Lastly, the causality test to see the direction impact between the data of the variables in the Saudi Arabia.

#### 4.7. The Granger Causality Test

The causality test is one of the most important parts of the procedure for this particular study. This argument is supported by the fact that the entire study was meant to investigate the causal impacts of Islamic banking activities on each of the selected macroeconomic variables. In essence, the causality test was conducted to investigate the extent to which the Islamic banking effects the macroeconomic variables as well as how the macroeconomic variables effect each other. Therefore, most of the results are meant to either support on refuting the null hypotheses involved. Based on the results, it is worth concluding that the element of causation was observed for both the relationships between the variables and the baking activities as well as between the individual variables. The values of the probabilities indicate not only the existence or nonexistence of causality, but also the direction of the causality. Overall, it is important to note that IBF effect on each the macroeconomic variables. The table below summarizes the findings of the Granger causality test.

**Table 30: The Resulte of Granger Cause test for (GDP\_G, TF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 15

Dependent variable: TF_ALL			
Excluded	Chi-sq	df	Prob.
GDP	0.435035	2	0.8045
All	0.435035	2	0.8045

Dependent variable: GDP			
Excluded	Chi-sq	df	Prob.
TF_ALL	4.981091	2	<u>0.0829</u>
All	4.981091	2	0.0829

Null hypothesis

1. Independent variable does not Granger Cause Dependent variable

Ho: GDP growth does not cause TF

Ha: GDP growth causes TF

2. Ho: TF does not cause GDP\_G

Ha: TF causes GDP\_G

If we reject the null hypothesis, then we can say that Independent variable causes dependent variable

$P < 0.01$  at 1%,  $P < 0.05$  at 5%,  $P < 0.1$  at 10%, Do not reject above 10 percentage.

1.  $P = 0.8045$ ; which is  $> 0.1$

Hence, we do not reject the null. It means that GDP growth does not Granger Cause TF.

2.  $P = 0.0829$ , which is less than 0.10

Hence, we reject the null hypothesis at the 10% significance level, or it means TF causes GDP growth.

Null hypothesis

1. Independent variable does not Granger Cause Dependent variable

Ho: GDP growth does not cause TF

Ha: GDP growth causes TF

2. Ho: TF does not cause GDP growth

Ha: TF causes GDP growth

If we reject the null hypothesis, then we can say that Independent variable causes dependent variable

$P < 0.01$  at 1%,  $P < 0.05$  at 5%,  $P < 0.1$  at 10%, Do not reject above 10 percentage.

1.  $P = 0.8045$ ; which is  $> 0.1$

Hence, we do not reject the null. It means that GDP growth does not Granger Cause TF.

2.  $P = 0.0829$ , which is less than 0.10

Hence, we reject the null hypothesis at the 10% significance level, or it means TF causes GDP growth.

**Table 31: The Resulte of Granger Cause test for (GDP\_G, IBF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 13

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Dependent variable: TF\_IBS

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Excluded	Chi-sq	df	Prob.
GDP	0.626559	4	0.9601
All	0.626559	4	0.9601

---

---

Dependent variable: GDP

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---

Excluded	Chi-sq	df	Prob.
TF_IBS	0.959839	4	<u>0.9158</u>
All	0.959839	4	0.9158

---

---

Null hypothesis

1. Independent variable does not Granger Cause Dependent variable

Ho: GDP growth does not cause IBF

Ha: GDP growth causes IBF

2. Ho: TF does not cause GDP growth

Ha: TF causes GDP growth

If we reject the null hypothesis, then we can say that Independent variable causes dependent variable

1.  $P = 0.9601$ ; which is  $> 0.1$

Hence, we do not reject the null. It means that GDP growth does not Granger Cause IBF.

2.  $P = 0.9158$ , which is more than 0.10

Hence, we do not reject the null hypothesis that mean IBF does not granger causes GDP growth.

**Table 32: The Resulte of Granger Cause test (GFCF, IBF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 16

Dependent variable: GFCF\_GROWTH

Excluded	Chi-sq	df	Prob.
TF_IBS	10.58671	1	<u>0.0011</u>
All	10.58671	1	0.0011

Dependent variable: TF\_IBS

Excluded	Chi-sq	df	Prob.
GFCF_GROWT H	0.006026	1	0.9381
All	0.006026	1	0.9381

Null hypothesis

1. Independent variable does not Granger Cause Dependent variable

Ho: GFCF does not cause IBF

Ha: GFCF causes IBF

2. Ho: IBF does not cause GFCF

Ha: IBF causes GFCF

If we reject the null hypothesis, then we can say that Independent variable causes dependent variable

$P < 0.01$  at 1%,  $P < 0.05$  at 5%,  $P < 0.1$  at 10%, Do not reject above 10 percentage.

1.  $P = 0.7726$ ; which is  $> 0.1$

Hence, we do not reject the null. It means that GFCF does not Granger Cause IBF.

2.  $P = 0.0011$ , which is less than 0.01

Hence, we reject the null hypothesis at the 1% significance level, or it means IBF causes GFCF.

**Table 33: The Resulte of Granger Cause test (GFCF, TF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 13

Dependent variable: TF\_ALL

Excluded	Chi-sq	df	Prob.
GFCF_GROWT			
H	0.185895	4	0.9959
All	0.185895	4	0.9959

Dependent variable: GFCF\_GROWTH

Excluded	Chi-sq	df	Prob.
TF_ALL	22.97275	4	<u>0.0001</u>
All	22.97275	4	0.0001

From the Grange output, the notion that GFCF Grange causes TF only if the null hypothesis below is rejected:

$H_0$ : TF\_IBS does not cause GFCF

$H_1$ : TF\_IBS causes GFCF

From the Grange output, the value has a p-value of 0.0001 which is clearly less than the alpha level of significance of 0.01. Therefore, we sufficiently reject the null hypothesis and conclude that the sample data supports the fact that Grange TF causes GFCF.

From the Grange output above, the notion that GFCF Grange causes TF only if the null hypothesis below is rejected:

$H_0$ : GFCF Grange does not cause TF

$H_1$ : GFCF Grange causes TF

From the Grange output, the value of the t-statistic is 22.9725 and has a p-value of 0.0001 which is clearly less than 0.05, the level of significance. Therefore, we sufficiently reject the null hypothesis and conclude that the sample data supports the fact that TF Grange causes GFCF.

**Table 34: The Resulte of Granger Cause test for (Inflation, TF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 13

Dependent variable: TF\_ALL

Excluded	Chi-sq	df	Prob.
INFLATION	4.091783	4	0.3937
All	4.091783	4	0.3937

Dependent variable: INFLATION

Excluded	Chi-sq	df	Prob.
TF_ALL	3.556911	4	<u>0.4693</u>
All	3.556911	4	0.4693

From the Grange output, the value of the t-statistic is 3.5569 and has a p-value of 0.469 which is clearly more than 0.05, the level of significance. Therefore, we sufficiently do not reject the null hypothesis and conclude that the sample data supports the fact that TF does not cause inflation. Hence, total financing does not Granger Cause inflation.

**Table 35: The Resulte of Granger Cause test for (Inflation, IBF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 13

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Dependent variable: TF\_IBS

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Excluded	Chi-sq	df	Prob.
INFLATION	6.784698	4	0.1477
All	6.784698	4	0.1477

---

Dependent variable: INFLATION

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Excluded	Chi-sq	df	Prob.
TF_IBS	0.356990	4	<u>0.9858</u>
All	0.356990	4	0.9858

---

From the Grange output, the value of the t-statistic is 3.5569and has a p-value of 0.9858 which is clearly more than 0.05, the level of significance. Therefore, we sufficiently do not reject the null hypothesis and conclude that the sample data supports the fact that IBS does not cause Inflation.

**Table 36: The Resulte of Granger Cause test for (International Trade, IBF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 13

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Dependent variable: TF\_IBS

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Excluded	Chi-sq	df	Prob.
EXP_GROWTH	2.274642	4	0.6854
All	2.274642	4	0.6854

Dependent variable: EXP\_GROWTH

Excluded	Chi-sq	df	Prob.
TF_IBS	9.402284	4	<u>0.0518</u>
All	9.402284	4	0.0518

Null hypothesis

1. Independent variable does not Granger Cause Dependent variable

Ho: IT does not cause IBF

Ha: IT causes IBF

2. Ho: IBF does not cause IT

Ha: IBF causes IT

If we reject the null hypothesis, then we can say that Independent variable causes dependent variable

$P < 0.01$  at 1%,  $P < 0.05$  at 5%,  $P < 0.1$  at 10%, Do not reject above 10 percentage.

1.  $P = 0.6854$ ; which is  $> 0.1$

Hence, we do not reject the null. It means that IT does not Granger Cause IBF.

2.  $P = 0.0618$ , which is less than 0.10

Hence, we reject the null hypothesis at the 10% significance level, or it means IBF causes IT.

**Table 37: The Resulte of Granger Cause test for (IT, TF)**

Dependent variable: TF_ALL			
Excluded	Chi-sq	df	Prob.
EXP_GROWTH	10.82868	4	0.0286
All	10.82868	4	0.0286

Dependent variable: EXP_GROWTH			
Excluded	Chi-sq	df	Prob.
TF_ALL	9.399964	4	<u>0.0518</u>
All	9.399964	4	0.0518

Null hypothesis

1. Independent variable does not Granger Cause Dependent variable

Ho: IT does not cause TF

Ha: IT causes TF

2. Ho: TF does not cause IT

Ha: TF causes IT

If we reject the null hypothesis, then we can say that Independent variable causes dependent variable

$P < 0.01$  at 1%,  $P < 0.05$  at 5%,  $P < 0.1$  at 10%, Do not reject above 10 percentage.

1.  $P = 0.0286$ ; which is  $< 0.5$

Hence, we reject the null. It means that IT Granger Cause TF.

2.  $P = 0.0518$ , which is less than 0.10

Hence, we reject the null hypothesis at the 10% significance level, or it means TF causes IT.

**Table 38: The Resulte of Granger Cause test for (Unemployment, IF\_G)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 12

Dependent variable: UNEMPLOYMENT

Excluded	Chi-sq	df	Prob.
IF_G	12.36285	4	<u>0.0148</u>
All	12.36285	4	0.0148

Dependent variable: IF\_G

Excluded	Chi-sq	df	Prob.
UNEMPLOYME NT	1.267762	4	0.8668
All	1.267762	4	0.8668

Null hypothesis

1. Independent variable does not Granger Cause dependent variable

Ho: Unemployment does not cause IBF growth

Ha: Unemployment causes IBF growth

2. Ho: IBF does not cause unemployment rate.

Ha: IBF causes unemployment rate.

If we reject the null hypothesis, then we can say that Independent variable causes dependent variable

$P < 0.01$  at 1%,  $P < 0.05$  at 5%,  $P < 0.1$  at 10%, Do not reject above 10 percentage.

1.  $P = 0.8668$ ; which is  $> 0.1$

Hence, we do not reject the null. It means that unemployment does not Granger Cause IBF.

2.  $P = 0.0148$ , which is less than 0.01

Hence, we reject the null hypothesis at the 1% significance level, or it means IBF data of the growth equation granger causes unemployment rates.

Just only in this case, when change the IBF to the growth equation as a percentage and use the 4<sup>th</sup> lag, as giving in the table 41 above.

**Table 39: The Resulte of Granger Cause test for (Unemployment, TF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 16

Dependent variable: UNEMPLOYMENT			
Excluded	Chi-sq	df	Prob.
TF_ALL	0.714482	1	<u>0.3980</u>
All	0.714482	1	0.3980

Dependent variable: TF_ALL			
Excluded	Chi-sq	df	Prob.
UNEMPLOYME NT	5.920839	1	0.0150
All	5.920839	1	0.0150

Null hypothesis

1. Independent variable does not Granger Cause Dependent variable

Ho: Unemployment does not cause IBF growth

Ha: Unemployment causes TF

2. Ho: TF does not cause unemployment

Ha: TF causes unemployment

If we reject the null hypothesis, then we can say that Independent variable causes dependent variable

$P < 0.01$  at 1%,  $P < 0.05$  at 5%,  $P < 0.1$  at 10%, Do not reject above 10 percentage.

1.  $P = 0.3980$ ; which is  $> 0.1$

Hence, we do not reject the null. It means that TF does not Granger Cause unemployment.

2.  $P = 0.0150$ , which is less than 0.05

Hence, we reject the null hypothesis at the 5% significance level, or it means Unemployment Granger causes TF.

Just only in this case, when using 1<sup>st</sup> lag of the TF, as giving in the table18 above. it has the opposite direction of impact.

#### **4.7.1. The results for the Granger Causality Test**

The table above indicates that the TF has a direct impact on each of the stated macroeconomic variables except the inflation and unemployment factors. The null hypothesis tries to refute the causality between the existence of any causality between the variables stated in each row. However, the truth of the matter can be described by the values of the probability. According to the probability values which are presented in the final column in the tables of Granger Causality, it can be seen that there is a granger causality which exists between the IBF and all the macroeconomic variables except the GDP growth, and inflation. Because the total Islamic financing only for 4 Islamic banks, while for total financing for all 12 banks granger causes the GDP growth. The direction of the causality is also indicated in the tables. The causality emanates from the IBF and moves toward the developmental trends of each variable. Based on the results on the tables, there is a positive granger causality between IBF with

international trade, unemployment, GCFC, and GDP growth. If we consider the F-value of the IBF in the GDP growth in Saudi Arabia. However, the causality does not cause between the financing and inflation in all cases with both the IF and TF, but this negative result cannot be for a long term based on the review that IBPs reduce the inflation rate.

## Chapter Five- Conclusion

### 5.1. Conclusion

The findings, which have been obtained are very instrumental when it comes to answering the study question, the findings that are achieved from the VAR model that IBF does not impact on the GDP growth, but the total financing data of the growth equation have an impact on the GDP growth. As part of the result, the TF appearance influence direction of granger causes on the GDP growth, and the IBF data of the growth equation, existence an influence direction on the unemployment rate based on the result of the Granger Causality test. However, IBF is still a part of the TF data and the eight conventional banks in Saudi Arabia offer Islamic financing windows. Also, The IBF and TF effect on the GFCF, with positive direction impact. Therefore, this impact to the investors will give a positive impact on the future for the economy growth. Nevertheless, IF and TF does not have an impact on the inflation, because both are not significant in all cases of the VAR estimations. Then, IBF has an influence on the international trade, because it is significant as well as total financial growth. These findings emerged accurately resonant with the results come from the Granger causality test that show a positive direction impact on the international trade. As for the IBF effect on the unemployment rate, the study finds a negative and substantial relationship between the TF and the unemployment rate, however the IBF has an influence on the unemployment rate. Hence, the IBF becomes more effective on the macroeconomic in Saudi Arabia rather than TF. This is shown by the IBF data of growth equation that granger causes an impact on the unemployment rate.

The results are in support of the most objectives that the IBF or TF has a positive impression exposed on the GDP growth, GFCF, and international trade facilitators in Saudi Arabia.

## **5.2. Recommendations**

It is important to promote IBF in Saudi Arabia as a means of boosting the country's economy. Based on these findings, it is recommended that the government should encourage the development of more Islamic banks while the conventional banks should have special windows to promote Islamic banking and financing policies. The other method through which the system can be improved involves the minimization of the restrictions imposed on the sector. Saudi Arabia economic Inflation is expected to be more volatile in the coming years due to VAT introduction that will lead to a rise of nearly 5% in 2018 and then gradually decrease to 2% during 2019 to 2020 as the VAT and other reform activities effect is absorbed, (Saudi Arabia's Economic Outlook, 2018). This could be absorbed better by the IBF where money generated or injected in the economy cycle will lead to improved GFCF to create new business that eventually will help improve employment rates means reduce the unemployment rates. From this angle, this study addresses the need to have more research on how to improve IBF to create a positive relationship and impact on the inflation rate in the future economy of Saudi Arabia.

## **5.3. Limitations**

The limitation of this paper is the inability to access consistently flowing data. This is because some of the required information may be difficult to find as in the international trade and the Islamic banking products that took time to collect and calculate manually. The accuracy of information is challenging issue, when data of certain factor differ from one reliable source to

another for the same period of time. Also, the annual report of some Saudi Banks takes a long time to upload. The key limitation to this study is that a large set of financial institutions has to be investigated for one to have a substantive understanding of how the Islamic financial can help the macroeconomic in Saudi Arabia.

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## Appendix

This data that used for the E-views.

	International Trade	TF_All	GFCF	Inflation	Unemployment	GDP_G	TF_IBs	IF_G	TF_All G
2001	-2.815706931	163487.3567	-6.312076762	-1.112515803	4.599999905	-1.21074	36396.248		
2002	-10.27414933	180358.731	22.59986653	0.230120174	5.300000191	-2.81917	37101.817	1.938575081	10.31968138
2003	20.91751149	229269.8296	-0.17055676	0.586734694	5.599999905	11.24206	61955.718	66.98836708	27.11878617
2004	7.734456698	287786.9563	18.45309215	0.329698199	5.800000191	7.958442	73391.683	18.458288	25.52325651
2005	6.701299876	373607.7849	15.78263823	0.699359623	6	5.57385	91109.395	24.14130778	29.82095843
2006	2.195686389	426729.4137	26.19527037	2.207346666	6.199999809	2.788402	108625.48	19.22533506	14.21855511
2007	0.188959182	607395.946	20.44654615	4.168713364	5.699999809	1.84713	126277.99	16.25080048	42.33749221
2008	-1.187134452	787331.959	24.81170919	9.868751965	5.099999905	6.249773	169422.43	34.16623698	29.62417089
2009	-10.7209086	751996.78	-3.69538063	5.066632331	5.400000095	-2.05927	144783.52	-14.54288491	-4.487964523
2010	4.353897728	793211.671	12.05375624	5.343137255	5.100000223	5.039494	172390.41	19.06770315	5.480727058
2011	10.16634636	881788.126	9.214025736	5.823591056	5.800000191	9.996858	208917.11	21.18835924	11.16681187
2012	3.387486399	1036755.529	3.05198831	2.885962454	5.5	5.411445	265180.5	26.93096137	17.57422202
2013	0.178480572	1154206.118	1.10891721	3.506263617	5.599999905	2.699255	296647.95	11.8664257	11.32866772
2014	-1.854912923	1291944.156	6.399908909	2.670525554	5.699999809	3.652482	336493.41	13.43190317	11.93357372
2015	0.687384458	1399781.346	8.382541568	2.184637068	5.599999905	4.106409	351219.22	4.376254475	8.346892511
2016	1.372588834	1425351	-9.932079837	3.523510972	5.599999905	1.74153	382551.87	8.921110297	1.826689152
2017	-3.087353077	1410644.512	-4.407237323	1.988403656	5.573333104	0.177478	404228.54	5.666334286	-1.031780102

The results from E-views.

## 1. The Descriptive Statistics

**Table 4: The Descriptive Statistics for the all Variables**

	Unemployment	IBF	TF	Inflation	GFCF	GDP	IT
Mean	5.539608	192158.4	776567.5	2.939463	8.469584	3.67031	1.643
Median	5.60000	169422.4	787332.0	2.670526	8.382542	3.65248	0.687
Maximum	6.20000	404228.5	1425351.	9.868752	26.19527	11.2420	20.917
Minimum	4.60000	36396.25	163487.4	-1.11251	-9.93208	-2.8191	-10.720
Std. Dev.	0.37070	124481.7	452942.8	2.645964	11.52259	3.95955	7.416
Skewness	-0.7409	0.38706	0.09943	0.877410	0.054652	0.16918	0.680
Kurtosis	3.88055	1.76687	1.64378	3.872127	1.750337	2.40206	4.1700
Jarque-Bera	2.10490	1.50158	1.33087	2.719998	1.114636	0.33435	2.2813
Probability	0.34908	0.47199	0.51405	0.256661	0.572743	0.84605	0.3196
Sum	94.1733	3266693.	13201647	49.97087	143.9829	62.3954	27.94
Sum Sq. Dev.	2.19870	2.48E+11	3.28E+12	112.0180	2124.320	250.849	880.17
Observations	17	17	17	17	17	17	17

## 2. The Unit Root Test

**Table 5: The result of ADF Unit Root, I (0), and I (1)**

Variables	LEVEL I(0)			1 <sup>st</sup> Different I(1)		
	t-statistic	Pro.	Decision	t-statistic	Pro.	Decision
IF	-1.94	0.9942	Do Not Reject	-4.203296	0.0064*	Rejected at 1%
Unemployment	-3.410	0.0653***	Rejected at 10%	-4.4572	0.0040*	Rejected at 1%
Export=IT	-3.65	0.056**	Rejected at 5%	-5.656	0.0005*	Rejected at 1%
GFCF	-4.97	0.0059*	Rejected at 1%	-9.1185	0.0000*	Rejected at 1%
GDP growth	-3.43	0.0823***	Rejected at 10%	-4.9098	0.0018*	Rejected at 1%
Inflation	-2.99	0.2136	Do Not Reject	-4.701005	0.0026*	Rejected at 1%
TF	-0.15898	0.9262	Do Not Reject	-3.005832	0.0587**	Rejected at 5%

## 3. The Lag Selection Criteria

**Table 3: The Resulte of VAR Lag Selection Criteria for GDP\_G with TF, and IBF**

VAR Lag Order Selection Criteria  
 Endogenous variables: GDP TF\_IBS  
 Included observations: 13

Lag	LogL	LR	FPE	AIC	SC	HQ
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0	-200.8722	NA	1.23e+11	31.21110	31.29802	31.19324
1	-172.7849	43.21123	3.07e+09	27.50537	27.76611	27.45177
2	-170.6237	2.659923	4.36e+09	27.78826	28.22284	27.69893
3	-169.8589	0.705999	8.51e+09	28.28598	28.89438	28.16092
4	-153.7170	9.933476*	1.93e+09*	<u>26.41799*</u>	<u>27.20023*</u>	<u>26.25721*</u>

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

VAR Lag Order Selection Criteria  
 Endogenous variables: GDP TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-216.6080	NA	1.39e+12	33.63200	33.71891	33.61413
1	-192.4063	37.23338	6.29e+10	30.52405	30.78479	30.47045
2	-189.2547	3.878910	7.66e+10	30.65457	31.08914	30.56524
3	-184.1469	4.714911	7.66e+10	30.48413	31.09254	30.35908
4	-164.9201	11.83184*	1.08e+10*	<u>28.14156*</u>	<u>28.92380*</u>	<u>27.98077*</u>

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

**Table 4: The Result of VAR Lag Selection Criteria (GFCF, TF)**

VAR Lag Order Selection Criteria  
 Endogenous variables: GFCF\_GROWTH TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-229.2537	NA	9.69e+12	35.57750	35.66441	35.55963
1	-202.4958	41.16607*	2.97e+11*	32.07627	32.33702*	32.02268
2	-201.5904	1.114356	5.11e+11	32.55236	32.98694	32.46304
3	-200.2803	1.209329	9.17e+11	32.96619	33.57460	32.84114
4	-188.4854	7.258396	4.07e+11	<u>31.76698*</u>	32.54922	<u>31.60620*</u>

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

**Table 5: The Result of VAR Lag Selection Criteria (GFCF, IBF)**

VAR Lag Order Selection Criteria  
 Endogenous variables: GFCF\_GROWTH TF\_IBS

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-213.7093	NA	8.87e+11	33.18605	33.27296	33.16818
1	-188.2401	39.18344*	3.31e+10*	<u>29.88309*</u>	<u>30.14383*</u>	<u>29.82949*</u>

2	-188.0333	0.254531	6.35e+10	30.46666	30.90123	30.37733
3	-185.8467	2.018344	9.96e+10	30.74565	31.35406	30.62059
4	-177.7354	4.991560	7.78e+10	30.11314	30.89538	29.95236

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

**Table 6: The Resulte of VAR Lag Selection Criteria for Inflation with TF, and IBF**

VAR Lag Order Selection Criteria  
 Endogenous variables: INFLATION TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-213.3615	NA	8.41e+11	33.13254	33.21945	33.11467
1	-187.6775	39.51385*	3.04e+10*	29.79654	30.05728	29.74294
2	-186.3595	1.622194	4.91e+10	30.20915	30.64372	30.11982
3	-184.8965	1.350385	8.60e+10	30.59947	31.20787	30.47441
4	-172.2754	7.766834	3.36e+10	<u>29.27314*</u>	<u>30.05538*</u>	<u>29.11236*</u>

\* indicates lag order selected by the criterion

VAR Lag Order Selection Criteria  
 Endogenous variables: INFLATION TF\_IBS  
 Included observations: 13

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-197.3422	NA	7.15e+10	30.66802	30.75494	30.65016
1	-171.2098	40.20356*	2.41e+09	27.26305	27.52380	27.20946
2	-169.7472	1.800177	3.81e+09	27.65342	28.08799	27.56409
3	-167.2445	2.310189	5.69e+09	27.88377	28.49218	27.75871
4	-151.8342	9.483265	1.45e+09*	<u>26.12834*</u>	<u>26.91058*</u>	<u>25.96755*</u>

\* indicates lag order selected by the criterion  
 LR: sequential modified LR test statistic (each test at 5% level)

**Table 7: The Resulte of VAR Lag Selection Criteria for IT with TF, and IBF**

VAR Lag Order Selection Criteria  
 Endogenous variables: EXP\_GROWTH TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-223.1310	NA	3.78e+12	34.63554	34.72246	34.61768
1	-199.7922	35.90586*	1.96e+11	31.66034	31.92109	31.60675
2	-194.7644	6.188068	1.79e+11	31.50222	31.93679	31.41289
3	-189.9003	4.489900	1.86e+11	31.36928	31.97769	31.24423
4	-175.2569	9.011347	5.31e+10*	<u>29.73183*</u>	<u>30.51407*</u>	<u>29.57105*</u>

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

VAR Lag Order Selection Criteria

Endogenous variables: EXP\_GROWTH TF\_IBS

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-207.5503	NA	3.44e+11	32.23851	32.32542	32.22064
1	-180.6929	41.31907*	1.04e+10*	28.72198	28.98273*	28.66839
2	-177.2062	4.291281	1.20e+10	28.80096	29.23553	28.71163
3	-174.1282	2.841293	1.64e+10	28.94279	29.55120	28.81774
4	-167.6995	3.956114	1.66e+10	<u>28.56915*</u>	29.35139	<u>28.40836*</u>

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

**Table 8: The Result of VAR Lag Selection Criteria (Unemployment, TF)**

VAR Lag Order Selection Criteria

Endogenous variables: UNEMPLOYMENT TF\_ALL

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-186.5696	NA	1.36e+10	29.01071	29.09763	28.99285
1	-161.6268	38.37362*	5.52e+08*	<u>25.78873*</u>	<u>26.04948*</u>	<u>25.73514*</u>
2	-160.7697	1.054840	9.58e+08	26.27226	26.70684	26.18294
3	-155.0431	5.286103	8.71e+08	26.00663	26.61504	25.88158
4	-150.8111	2.604305	1.24e+09	25.97094	26.75318	25.81015

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

**Table 9: The Result of VAR Lag Selection Criteria (Unemployment, IBF)**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-171.2011	NA	1.28e+09	26.64633	26.73324	26.62846
1	-147.0794	37.11030*	58929734	23.55068	23.81143	23.49709
2	-145.2052	2.306683	87344805	23.87773	24.31231	23.78840
3	-140.4973	4.345757	92912280	23.76882	24.37723	23.64377
4	-130.6756	6.044155	55821976*	<u>22.87317*</u>	<u>23.65540*</u>	<u>22.71238*</u>

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

#### 4. The VAR Model

**Table 10: The Results of VAR Estimation (GDP\_G; IBF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	TF_IBS	GDP
TF_IBS(-1)	0.745079 (0.70264) [ 1.06040]	-6.69E-05 (0.00011) [-0.60428]
TF_IBS(-2)	0.232781 (0.98222) [ 0.23699]	5.29E-05 (0.00015) [ 0.34187]
TF_IBS(-3)	-0.640641 (0.97575) [-0.65656]	4.43E-05 (0.00015) [ 0.28823]
TF_IBS(-4)	0.815512 (0.80538) [ 1.01258]	-3.79E-05 (0.00013) [-0.29884]
GDP(-1)	323.7568 (5299.10) [ 0.06110]	0.308817 (0.83466) [ 0.36999]
GDP(-2)	-339.2505 (4517.76) [-0.07509]	-0.255939 (0.71159) [-0.35967]
GDP(-3)	2224.780 (2954.35) [ 0.75305]	-0.075793 (0.46534) [-0.16288]
GDP(-4)	-642.4256 (2767.79) [-0.23211]	-0.082940 (0.43595) [-0.19025]
C	19579.17 (46550.7) [ 0.42060]	6.603109 (7.33218) [ 0.90057]
R-squared	0.977815	0.271685
Adj. R-squared	0.933444	-1.184944
Sum sq. resids	3.20E+09	79.51262
S.E. equation	28306.15	4.458492
F-statistic	22.03756	0.186516
Log likelihood	-144.0458	-30.21748
Akaike AIC	23.54551	6.033459
Schwarz SC	23.93662	6.424578
Mean dependent	235219.1	3.632680
S.D. dependent	109720.7	3.016254
Determinant resid covariance (dof adj.)		6.75E+08

Determinant resid covariance	63911407
Log likelihood	-153.7170
Akaike information criterion	26.41799
Schwarz criterion	27.20023

**Table 11: The Results of VAR Estimation (GDP\_G; TF\_G)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	GDP growth	TF_ALL_G
GDP(-1)	0.498233 (0.69101) [ 0.72102]	-0.982723 (1.07416) [-0.91488]
GDP(-2)	0.252903 (0.48304) [ 0.52357]	5.884786 (0.75087) [ 7.83731]
GDP(-3)	-0.058189 (0.28092) [-0.20714]	1.672995 (0.43668) [ 3.83118]
GDP(-4)	0.147673 (0.25067) [ 0.58911]	1.953886 (0.38966) [ 5.01432]
TF_ALL_G(-1)	-0.004549 (0.07510) [-0.06058]	0.235334 (0.11674) [ 2.01594]
TF_ALL_G(-2)	-0.215762 (0.07610) [-2.83539]	-0.603763 (0.11829) [-5.10410]
TF_ALL_G(-3)	0.239109 (0.15756) [ 1.51756]	0.089318 (0.24493) [ 0.36468]
TF_ALL_G(-4)	0.011535 (0.16155) [ 0.07141]	1.156949 (0.25112) [ 4.60717]
C	-0.888097 (4.58847) [-0.19355]	-43.27919 (7.13266) [-6.06775]
R-squared	0.813380	0.974625
Adj. R-squared	0.315726	0.906957
Sum sq. resids	19.61214	47.39067
S.E. equation	2.556830	3.974530
F-statistic	1.634430	14.40312
Log likelihood	-19.97472	-25.26838
Akaike AIC	4.829119	5.711396

Schwarz SC	5.192799	6.075076
Mean dependent	3.470916	12.35984
S.D. dependent	3.090915	13.02999
<hr/>		
Determinant resid covariance (dof adj.)		92.87964
Determinant resid covariance		5.804978
Log likelihood		-44.60682
Akaike information criterion		10.43447
Schwarz criterion		11.16183

**Table 12: The Results of VAR Estimation (GFCE; IBF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	GFCF_GROWT H	TF_IBS
GFCF_GROWTH(-1)	-0.155343 (0.21837) [-0.71139]	-36.81216 (474.218) [-0.07763]
TF_IBS(-1)	-7.01E-05 (2.2E-05) [-3.25372]	1.040579 (0.04679) [ 22.2413]
C	23.37480 (5.47022) [ 4.27310]	16071.22 (11879.5) [ 1.35285]
<hr/>		
R-squared	0.456865	0.978182
Adj. R-squared	0.373305	0.974826
Sum sq. resids	1027.702	4.85E+09
S.E. equation	8.891234	19308.87
F-statistic	5.467549	291.4260
Log likelihood	-56.00295	-178.9350
Akaike AIC	7.375369	22.74188
Schwarz SC	7.520230	22.88674
Mean dependent	9.393438	201893.6
S.D. dependent	11.23140	121697.1
<hr/>		
Determinant resid covariance (dof adj.)		2.85E+10
Determinant resid covariance		1.88E+10
Log likelihood		-234.6689
Akaike information criterion		30.08361
Schwarz criterion		30.37333

**Table 13: The Results of VAR Estimation (GFCE; TF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	TF_ALL	GFCF_GROWT H
TF_ALL(-1)	1.249372 (0.62416) [ 2.00169]	2.75E-05 (4.0E-05) [ 0.69500]
TF_ALL(-2)	-0.730572 (0.94801) [-0.77063]	-8.90E-05 (6.0E-05) [-1.47989]
TF_ALL(-3)	0.438299 (0.91941) [ 0.47672]	0.000133 (5.8E-05) [ 2.27774]
TF_ALL(-4)	-0.031198 (0.69965) [-0.04459]	-0.000117 (4.4E-05) [-2.64344]
GFCF_GROWTH(-1)	-928.5851 (5275.77) [-0.17601]	-0.357137 (0.33474) [-1.06690]
GFCF_GROWTH(-2)	165.2692 (4552.27) [ 0.03630]	0.062255 (0.28884) [ 0.21554]
GFCF_GROWTH(-3)	-1499.369 (4162.43) [-0.36021]	-0.572232 (0.26410) [-2.16670]
GFCF_GROWTH(-4)	-518.6071 (3233.80) [-0.16037]	-0.127313 (0.20518) [-0.62049]
C	187422.7 (172923.) [ 1.08385]	43.82831 (10.9718) [ 3.99462]
R-squared	0.974953	0.893037
Adj. R-squared	0.924860	0.679111
Sum sq. resids	4.07E+10	163.8459
S.E. equation	100869.9	6.400114
F-statistic	19.46267	4.174509
Log likelihood	-160.5656	-34.91705
Akaike AIC	26.08701	6.756469
Schwarz SC	26.47813	7.147588
Mean dependent	949288.0	8.416354
S.D. dependent	367981.0	11.29822
Determinant resid covariance (dof adj.)		1.42E+11
Determinant resid covariance		1.34E+10
Log likelihood		-188.4854
Akaike information criterion		31.76698
Schwarz criterion		32.54922

**Table 14: The Results of VAR Estimation (Inflation; IBF)**

Vector Autoregression Estimates  
 Standard errors in ( ) & t-statistics in [ ]

	TF_IBS	INFLATION
TF_IBS(-1)	0.631919 (0.42525) [ 1.48599]	-2.70E-05 (7.2E-05) [-0.37398]
TF_IBS(-2)	0.352262 (0.56413) [ 0.62444]	9.31E-06 (9.6E-05) [ 0.09724]
TF_IBS(-3)	-0.284938 (0.51837) [-0.54968]	4.03E-05 (8.8E-05) [ 0.45741]
TF_IBS(-4)	0.300664 (0.45687) [ 0.65810]	-2.92E-05 (7.8E-05) [-0.37600]
INFLATION(-1)	-3343.374 (3216.51) [-1.03944]	0.473145 (0.54617) [ 0.86630]
INFLATION(-2)	-1532.708 (4010.42) [-0.38218]	0.071185 (0.68098) [ 0.10453]
INFLATION(-3)	3293.599 (3705.66) [ 0.88880]	-0.042382 (0.62923) [-0.06736]
INFLATION(-4)	3757.371 (4022.17) [ 0.93417]	-0.033296 (0.68297) [-0.04875]
C	37187.55 (16590.2) [ 2.24154]	3.560578 (2.81705) [ 1.26394]
R-squared	0.990483	0.393292
Adj. R-squared	0.971448	-0.820123
Sum sq. resids	1.37E+09	39.64215
S.E. equation	18539.83	3.148101
F-statistic	52.03597	0.324120
Log likelihood	-138.5447	-25.69333
Akaike AIC	22.69919	5.337436
Schwarz SC	23.09031	5.728555
Mean dependent	235219.1	3.841295
S.D. dependent	109720.7	2.333448
Determinant resid covariance (dof adj.)		5.05E+08

Determinant resid covariance	47839038
Log likelihood	-151.8342
Akaike information criterion	26.12834
Schwarz criterion	26.91058

**Table 15: The Results of VAR Estimation (Inflation; TF)**

Vector Autoregression Estimates  
Included observations: 13 after adjustments  
Standard errors in ( ) & t-statistics in [ ]

	TF_ALL	INFLATION
TF_ALL(-1)	1.325988 (0.40362) [ 3.28526]	1.77E-05 (1.3E-05) [ 1.33025]
TF_ALL(-2)	-0.468194 (0.69468) [-0.67397]	-3.71E-05 (2.3E-05) [-1.61985]
TF_ALL(-3)	0.447707 (0.71986) [ 0.62193]	3.69E-05 (2.4E-05) [ 1.55544]
TF_ALL(-4)	-0.502405 (0.57640) [-0.87162]	-1.86E-05 (1.9E-05) [-0.97759]
INFLATION(-1)	-12140.68 (11451.5) [-1.06018]	0.352570 (0.37731) [ 0.93443]
INFLATION(-2)	-2452.341 (15064.3) [-0.16279]	0.436137 (0.49635) [ 0.87870]
INFLATION(-3)	-3237.536 (14834.8) [-0.21824]	-0.292923 (0.48878) [-0.59929]
INFLATION(-4)	25592.19 (15807.5) [ 1.61899]	-0.156341 (0.52083) [-0.30017]
C	145913.2 (66422.1) [ 2.19676]	1.761091 (2.18851) [ 0.80470]
R-squared	0.987043	0.650198
Adj. R-squared	0.961130	-0.049405
Sum sq. resids	2.11E+10	22.85596
S.E. equation	72549.39	2.390395
F-statistic	38.08998	0.929382
Log likelihood	-156.2812	-22.11391

Akaike AIC	25.42788	4.786755
Schwarz SC	25.81900	5.177874
Mean dependent	949288.0	3.841295
S.D. dependent	367981.0	2.333448
<hr/>		
Determinant resid covariance (dof adj.)		1.17E+10
Determinant resid covariance		1.11E+09
Log likelihood		-172.2754
Akaike information criterion		29.27314
Schwarz criterion		30.05538

**Table 16: The Results of VAR Estimation (IT; IBF)**

Vector Autoregression Estimates

Standard errors in ( ) & t-statistics in [ ]

	TF_IBS	EXP_GROWTH
TF_IBS(-1)	0.521520 (0.47098) [ 1.10731]	-0.000212 (8.3E-05) [-2.55098]
TF_IBS(-2)	1.200060 (0.92041) [ 1.30383]	0.000336 (0.00016) [ 2.07080]
TF_IBS(-3)	-0.611242 (0.63041) [-0.96959]	9.19E-05 (0.00011) [ 0.82705]
TF_IBS(-4)	-0.131071 (0.77491) [-0.16914]	-0.000257 (0.00014) [-1.87922]
EXP_GROWTH(-1)	3875.022 (2913.79) [ 1.32989]	1.111010 (0.51342) [ 2.16395]
EXP_GROWTH(-2)	-1993.731 (1834.84) [-1.08660]	-0.384379 (0.32330) [-1.18891]
EXP_GROWTH(-3)	-309.8401 (1267.65) [-0.24442]	-0.401670 (0.22336) [-1.79828]
EXP_GROWTH(-4)	-238.3851 (929.185) [-0.25655]	-0.106434 (0.16373) [-0.65008]
C	21087.15 (19909.7) [ 1.05914]	4.297588 (3.50815) [ 1.22503]
R-squared	0.983642	0.758227

Adj. R-squared	0.950926	0.274681
Sum sq. resids	2.36E+09	73.36970
S.E. equation	24306.10	4.282806
F-statistic	30.06594	1.568055
Log likelihood	-142.0652	-29.69485
Akaike AIC	23.24080	5.953054
Schwarz SC	23.63192	6.344173
Mean dependent	235219.1	0.952448
S.D. dependent	109720.7	5.028794

Determinant resid covariance (dof adj.)	5.80E+09
Determinant resid covariance	5.49E+08
Log likelihood	-167.6995
Akaike information criterion	28.56915
Schwarz criterion	29.35139

**Table 17: The Results of VAR Estimation (IT; TF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	TF_ALL	EXP_GROWTH
TF_ALL(-1)	0.946016 (0.30153) [ 3.13739]	-2.98E-05 (2.4E-05) [-1.23518]
TF_ALL(-2)	-2.024210 (0.68795) [-2.94239]	-3.49E-05 (5.5E-05) [-0.63511]
TF_ALL(-3)	0.591022 (0.52577) [ 1.12410]	7.76E-05 (4.2E-05) [ 1.84711]
TF_ALL(-4)	1.648614 (0.72542) [ 2.27264]	-1.25E-05 (5.8E-05) [-0.21630]
EXP_GROWTH(-1)	-24822.69 (10467.8) [-2.37134]	-0.261843 (0.83660) [-0.31298]
EXP_GROWTH(-2)	4391.312 (3358.24) [ 1.30762]	0.148047 (0.26839) [ 0.55160]
EXP_GROWTH(-3)	3919.154 (2356.56) [ 1.66308]	-0.063320 (0.18834) [-0.33620]
EXP_GROWTH(-4)	4421.643 (2107.38) [ 2.09817]	-0.084895 (0.16842) [-0.50405]
C	329870.0	8.742272

	(111710.)	(8.92801)
	[ 2.95290]	[ 0.97920]
R-squared	0.992930	0.758185
Adj. R-squared	0.978789	0.274555
Sum sq. resids	1.15E+10	73.38241
S.E. equation	53592.57	4.283177
F-statistic	70.21849	1.567697
Log likelihood	-152.3441	-29.69598
Akaike AIC	24.82217	5.953227
Schwarz SC	25.21329	6.344346
Mean dependent	949288.0	0.952448
S.D. dependent	367981.0	5.028794
Determinant resid covariance (dof adj.)		1.86E+10
Determinant resid covariance		1.76E+09
Log likelihood		-175.2569
Akaike information criterion		29.73183
Schwarz criterion		30.51407

**Table 18: The Results of VAR Estimation (Unemployment; IBF)**

Vector Autoregression Estimates  
Standard errors in ( ) & t-statistics in [ ]

	UNEMPLOYME NT	TF_IBS
UNEMPLOYMENT(-1)	0.355614 (0.29900) [ 1.18936]	6905.054 (33525.2) [ 0.20597]
UNEMPLOYMENT(-2)	-0.339368 (0.32992) [-1.02865]	9305.816 (36992.1) [ 0.25156]
UNEMPLOYMENT(-3)	0.081428 (0.28310) [ 0.28763]	-31675.05 (31743.0) [-0.99786]
UNEMPLOYMENT(-4)	-0.551476 (0.22927) [-2.40534]	138.5494 (25707.2) [ 0.00539]
TF_IBS(-1)	2.00E-06 (4.2E-06) [ 0.47290]	0.738222 (0.47359) [ 1.55879]
TF_IBS(-2)	-7.76E-06 (5.6E-06) [-1.39579]	0.328234 (0.62323) [ 0.52667]
TF_IBS(-3)	1.55E-05 (6.1E-06) [ 2.51806]	-0.397102 (0.68827) [-0.57696]

TF_IBS(-4)	-1.09E-05 (5.1E-06) <u>[-2.13837]</u>	0.430942 (0.57258) [ 0.75263]
C	8.134738 (2.15427) [ 3.77611]	109566.0 (241549.) [ 0.45360]
R-squared	0.817286	0.982027
Adj. R-squared	0.451858	0.946081
Sum sq. resids	0.206521	2.60E+09
S.E. equation	0.227223	25477.56
F-statistic	2.236517	27.31971
Log likelihood	8.478762	-142.6771
Akaike AIC	0.080191	23.33494
Schwarz SC	0.471309	23.72606
Mean dependent	5.605641	235219.1
S.D. dependent	0.306906	109720.7
Determinant resid covariance (dof adj.)		19491558
Determinant resid covariance		1845355.
Log likelihood		-130.6756
Akaike information criterion		22.87317
Schwarz criterion		23.65540

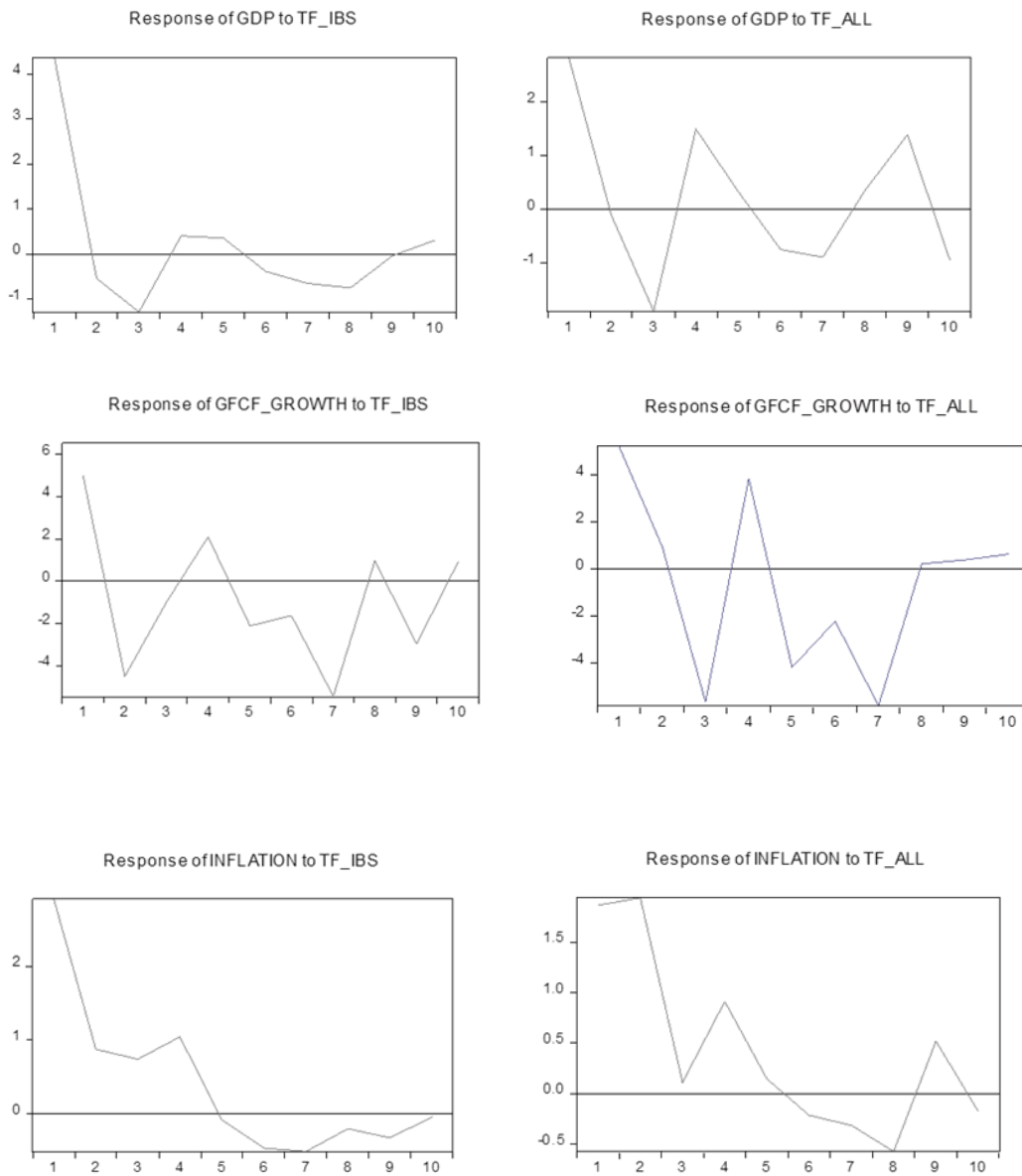
**Table 19: The Results of VAR Estimation (Unemployment; TF)**

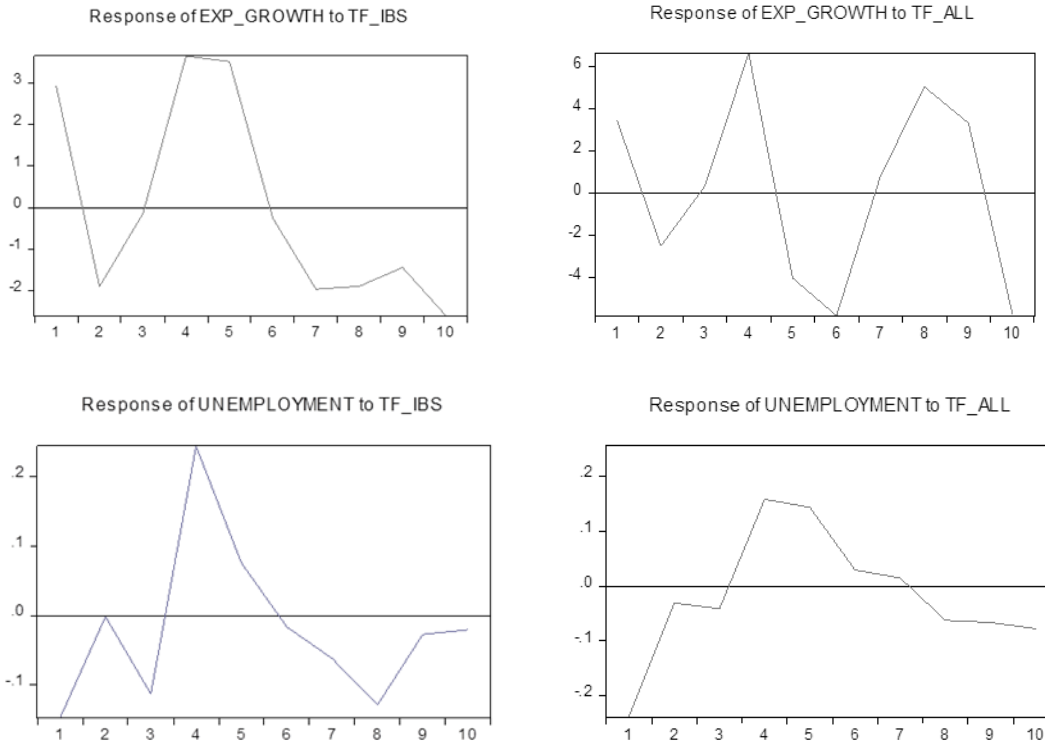
Vector Autoregression Estimates  
Included observations: 16 after adjustments  
Standard errors in ( ) & t-statistics in [ ]

	UNEMPLOYME NT	TF_ALL
UNEMPLOYMENT(-1)	0.341484 (0.18646) [ 1.83140]	96216.19 (39541.8) [ 2.43328]
TF_ALL(-1)	-1.38E-07 (1.6E-07) <u>[-0.84527]</u>	0.983381 (0.03469) [ 28.3484]
C	3.809260 (1.02718) [ 3.70846]	-442602.7 (217829.) [-2.03188]
R-squared	0.223773	0.984736
Adj. R-squared	0.104353	0.982388
Sum sq. resids	0.978563	4.40E+10
S.E. equation	0.274361	58182.44
F-statistic	1.873839	419.3476
Log likelihood	-0.348947	-196.5833
Akaike AIC	0.418618	24.94792
Schwarz SC	0.563479	25.09278

Mean dependent	5.598333	814885.0
S.D. dependent	0.289904	438418.0
<hr/>		
Determinant resid covariance (dof adj.)	2.28E+08	
Determinant resid covariance	1.51E+08	
Log likelihood	-196.0482	
Akaike information criterion	25.25603	
Schwarz criterion	25.54575	
<hr/>		

## 5. The Impulse Response Function





## 6. The Variance Decomposition

**Table 20: The Result of Variance Decomposition (GDP\_G, IBF)**

Period	S.E.	GDP growth	TF_IBS
1	4.458492	100.0000	0.000000
2	4.500697	99.25016	0.749841
3	4.685726	99.26035	0.739654
4	4.706364	98.96806	1.031939
5	4.725141	98.58443	1.415567
6	4.741329	98.58284	1.417159
7	4.789316	98.24367	1.756326
8	4.850916	97.88895	2.111054
9	4.851092	97.88855	2.111448
10	4.862396	97.73909	2.260912

**Table 21: The Result of Variance Decomposition (GDP\_G, TF)**

Period	S.E.	GDP growth	TF_ALL
1	3.028517	100.0000	0.000000
2	3.031716	99.96666	0.033339
3	3.576174	94.57668	5.423323
4	3.886199	94.70530	5.294705
5	3.944881	91.97688	8.023119

6	4.016300	92.13766	7.862338
7	4.113385	92.17404	7.825964
8	4.150885	91.92366	8.076339
9	4.389935	92.53076	7.469245
10	4.501515	92.89590	7.104100

**Table 22: The Result of Variance Decomposition (GFCF, IBF)**

Period	S.E.	GFCF	TF_IBS
1	8.891234	100.0000	0.000000
2	9.136392	97.87795	2.122053
3	9.212065	96.27694	3.723057
4	9.301403	94.50859	5.491409
5	9.395764	92.67367	7.326328
6	9.497579	90.75810	9.241900
7	9.607011	88.76621	11.23379
8	9.724607	86.70035	13.29965
9	9.850873	84.56399	15.43601
10	9.986349	82.36132	17.63868

**Table 23: The Result of Variance Decomposition (GFCF, TF)**

Period	S.E.	GFCF	TF_ALL
1	6.400114	100.0000	0.000000
2	6.602212	93.97388	6.026119
3	8.710426	77.54918	22.45082
4	9.775941	65.13044	34.86956
5	10.65464	62.75171	37.24829
6	10.88390	62.94495	37.05505
7	12.38095	59.74050	40.25950
8	12.38316	59.72932	40.27068
9	12.39066	59.77488	40.22512
10	12.40832	59.70145	40.29855

**Table 24: The Result of Variance Decomposition (Inflation, IBF)**

Period	S.E.	INFLATION	TF_IBS
1	3.148101	100.0000	0.000000
2	3.317140	99.66209	0.337909
3	3.430412	99.50148	0.498522
4	3.601755	99.49325	0.506747
5	3.602744	99.47803	0.521972
6	3.638681	99.48681	0.513186
7	3.678572	99.48625	0.513752

8	3.684616	99.48431	0.515692
9	3.699030	99.41921	0.580792
10	3.699543	99.39577	0.604234

**Table 25: The Resulte of Variance Decomposition (Inflation, TF)**

Period	S.E.	INFLATION	TF_ALL
1	2.201401	100.0000	0.000000
2	2.523950	91.05724	8.942759
3	2.678678	88.45149	11.54851
4	2.746246	87.96332	12.03668
5	2.775828	88.11528	11.88472
6	2.790958	88.20517	11.79483
7	2.802739	87.97997	12.02003
8	2.815755	87.40415	12.59585
9	2.831316	86.54156	13.45844
10	2.849215	85.48876	14.51124

**Table 26: The Resulte of Variance Decomposition (IT, IBF)**

Period	S.E.	EXP_GROWTH	TF_IBS
1	4.282806	100.0000	0.000000
2	5.838138	58.40698	41.59302
3	5.840827	58.35680	41.64320
4	7.006885	45.40287	54.59713
5	7.857164	42.74607	57.25393
6	7.873380	42.60484	57.39516
7	8.122744	43.90160	56.09840
8	8.423448	47.34986	52.65014
9	8.654165	50.09988	49.90012
10	9.071186	52.23561	47.76439

**Table 27: The Resulte of Variance Decomposition (IT, TF)**

Period	S.E.	EXP_GROWTH	TF_ALL
1	4.283177	100.0000	0.000000
2	5.002813	96.41896	3.581042
3	5.571044	87.15071	12.84929
4	8.940779	89.45343	10.54657
5	11.23896	90.01368	9.986321
6	12.89535	91.22337	8.776627
7	13.27546	89.52517	10.47483
8	14.68984	91.44371	8.556288

9	15.06263	89.84298	10.15702
10	16.78780	91.75537	8.244632

**Table 28: The Resulte of Variance Decomposition (Unemployment, IBF)**

Period	S.E.	UNEMPLOYMEN	
		T	TF_IBS
1	0.227223	100.0000	0.000000
2	0.235435	97.28272	2.717284
3	0.263303	80.91257	19.08743
4	0.359926	67.00499	32.99501
5	0.380168	70.41087	29.58913
6	0.380973	70.12397	29.87603
7	0.385983	69.10011	30.89989
8	0.406781	66.73864	33.26136
9	0.411021	67.31364	32.68636
10	0.412954	67.59228	32.40772

**Table 29: The Resulte of Variance Decomposition (Unemployment, TF)**

Period	S.E.	UNEMPLOYMEN	
		T	TF_ALL
1	0.274361	100.0000	0.000000
2	0.290868	99.93151	0.068492
3	0.292774	99.81374	0.186264
4	0.293093	99.68076	0.319237
5	0.293287	99.54906	0.450936
6	0.293483	99.42441	0.575588
7	0.293678	99.30831	0.691686
8	0.293864	99.20080	0.799201
9	0.294038	99.10143	0.898569
10	0.294199	99.00965	0.990350

## 7. The Granger Causality

**Table 30: The Resulte of Granger Cause test for (GDP\_G, TF\_G)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 15

Dependent variable: TF\_ALL

Excluded	Chi-sq	df	Prob.
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GDP	0.435035	2	0.8045
All	0.435035	2	0.8045

Dependent variable: GDP

Excluded	Chi-sq	df	Prob.
TF_ALL	4.981091	2	0.0829
All	4.981091	2	0.0829

**Table 31: The Result of Granger Cause test for (GDP\_G, IBF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 13

Dependent variable: TF\_IBS

Excluded	Chi-sq	df	Prob.
GDP	0.626559	4	0.9601
All	0.626559	4	0.9601

Dependent variable: GDP

Excluded	Chi-sq	df	Prob.
TF_IBS	0.959839	4	<u>0.9158</u>
All	0.959839	4	0.9158

**Table 32: The Result of Granger Cause test (GFCF, IBF)**

VAR Granger Causality/Block Exogeneity Wald Tests  
Included observations: 16

Dependent variable: GFCF\_GROWTH

Excluded	Chi-sq	df	Prob.
TF_IBS	10.58671	1	<u>0.0011</u>
All	10.58671	1	0.0011

Dependent variable: TF\_IBS

Excluded	Chi-sq	df	Prob.
GFCF_GROWT H	0.006026	1	0.9381
All	0.006026	1	0.9381

**Table 33: The Result of Granger Cause test (GFCF, TF)**

VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: TF\_ALL

Excluded	Chi-sq	df	Prob.
GFCF_GROWT H	0.185895	4	0.9959
All	0.185895	4	0.9959

Dependent variable: GFCF\_GROWTH

Excluded	Chi-sq	df	Prob.
TF_ALL	22.97275	4	<u>0.0001</u>
All	22.97275	4	0.0001

**Table 34: The Result of Granger Cause test for (Inflation, TF)**

VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: TF\_ALL

Excluded	Chi-sq	df	Prob.
INFLATION	4.091783	4	0.3937
All	4.091783	4	0.3937

Dependent variable: INFLATION

Excluded	Chi-sq	df	Prob.
TF_ALL	3.556911	4	<u>0.4693</u>

All	3.556911	4	0.4693
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**Table 35: The Resulte of Granger Cause test for (Inflation, IBF)**

VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: TF\_IBS

Excluded	Chi-sq	df	Prob.
INFLATION	6.784698	4	0.1477
All	6.784698	4	0.1477

Dependent variable: INFLATION

Excluded	Chi-sq	df	Prob.
TF_IBS	0.356990	4	<u>0.9858</u>
All	0.356990	4	0.9858

**Table 36: The Resulte of Granger Cause test for (International Trade, IBF)**

VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: TF\_IBS

Excluded	Chi-sq	df	Prob.
EXP_GROWTH	2.274642	4	0.6854
All	2.274642	4	0.6854

Dependent variable: EXP\_GROWTH

Excluded	Chi-sq	df	Prob.
TF_IBS	9.402284	4	<u>0.0518</u>
All	9.402284	4	0.0518

**Table 37: The Resulte of Granger Cause test for (IT, TF)**

VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: TF\_ALL

Excluded	Chi-sq	df	Prob.
EXP_GROWTH	10.82868	4	0.0286
All	10.82868	4	0.0286

Dependent variable: EXP\_GROWTH

Excluded	Chi-sq	df	Prob.
TF_ALL	9.399964	4	<u>0.0518</u>
All	9.399964	4	0.0518

**Table 38: The Resulte of Granger Cause test for (Unemployment, IF\_G)**

VAR Granger Causality/Block Exogeneity Wald Tests

Included observations: 12

Dependent variable: UNEMPLOYMENT

Excluded	Chi-sq	df	Prob.
IF_G	12.36285	4	<u>0.0148</u>
All	12.36285	4	0.0148

Dependent variable: IF\_G

Excluded	Chi-sq	df	Prob.
UNEMPLOYME NT	1.267762	4	0.8668
All	1.267762	4	0.8668

**Table 39: The Resulte of Granger Cause test for (Unemployment, TF)**

VAR Granger Causality/Block Exogeneity Wald Tests

Included observations: 16

Dependent variable: UNEMPLOYMENT

Excluded	Chi-sq	df	Prob.
TF_ALL	0.714482	1	<u>0.3980</u>
All	0.714482	1	0.3980

Dependent variable: TF\_ALL

Excluded	Chi-sq	df	Prob.
UNEMPLOYME NT	5.920839	1	0.0150
All	5.920839	1	0.0150

## ملخص الرسالة

المصرفية الإسلامية عنصر سريع النمو من النظام المالي في المملكة العربية السعودية وله تأثير على الأداء الاقتصادي بشكل عام وذلك من حيث أهميته البالغة بالنسبة للنمو الاقتصادي. تهدف هذه الدراسة إلى المساعدة في سد الفجوة البحثية القائمة في استكشاف كيف يساهم النظام المصرفي الإسلامي على النمو الاقتصادي الكلي في المملكة العربية السعودية.

قامت الدراسة بشكل رئيسي على استخدام التحليل الإحصائي للتحقيق في تأثير تمويل البنوك الإسلامية على الاقتصادي الكلي السعودي في الفترة ما بين عام 2001 ميلادي إلى عام 2017 ميلادي من خلال النظر في المتغيرات المستقلة لتمويل البنوك الإسلامية والتمويل الكلي بجميع البنوك السعودية مقابل عوامل الاقتصاد الكلي وهي كالتالي: الإجمالي المحلي المنتج، تكوين رأس المال الثابت الإجمالي، التضخم، التجارة الدولية، ومستوى البطالة في المملكة العربية السعودية. يتم الحصول على البيانات التي تم تحليلها من مواقع الإلكترونية وهي: بنك سكوب Bankscope، وقواعد بيانات بلومبيرغ Bloomberg، و صندوق النقد الدولي (IMF) International Monetary Fund.

تظهر النتائج الرئيسية لهذه الدراسة من نموذج Vector Auto Regression (VAR) بناء على تحليل برنامج إيفيز E-views أن كلا من التمويل الكلي لجميع البنوك السعودية و تمويل البنوك الإسلامية فقط لهما تأثير على تكوين رأس المال الثابت الإجمالي، ولكن ليس على مستوى التضخم بالمملكة. كما تظهر النتائج أن تمويل البنوك الإسلامية لها تأثير إيجابي على مستوى البطالة و على التجارة الدولية ولاكن ليس لها تأثير كبير على نمو الناتج المحلي الإجمالي، على الرغم من أن بيانات نمو التمويل الكلي لجميع البنوك السعودية تظهر تأثيرًا إيجابيًا على نمو الناتج المحلي الإجمالي وعلى التجارة الدولية. بالإضافة إلى أن التمويل الإسلامي له تأثير على تكوين رأس المال الثابت الإجمالي و هو المستثمر فإن هذا التأثير سوف يؤدي على المدى البعيد بتأثير إيجابي كذا لك على نمو الناتج المحلي الإجمالي للدولة المملكة العربية السعودية.

جامعة عفت

جدة ، المملكة العربية السعودية

عمادة الدراسات العليا و البحث العلمي

قام بكتابة هذه الرسالة الطالبة فاطمه سالم ابالحارث ، تحت إشراف المشرف المكلف بالإشراف على رسالتها/رسالته، وتم إجازتها من قبل لجنة التحكيم، و تم تقديمها إلى عميدة الدراسات العليا و البحث العلمي بجامعة عفت، كجزء من متطلبات الحصول على درجة الماجستير في العلوم، برنامج الإدارة المالية الإسلامية، وقد تم الموافقة على الرسالة و إجازتها بتاريخ:

أعضاء لجنة التحكيم

المشرف على الرسالة

الاسم: دكتور حكيم شبير

التوقيع:.....

المشرف المشارك (إن وجد)

الاسم: دكتور جمال الدين فليل

التوقيع:.....

رئيسة القسم

الاسم: دكتور طاهر الطياشي

التوقيع:.....

العضو الخارجي

الاسم: دكتور رامي عبد الكافي

التوقيع:.....

عميدة الكلية

الاسم: دكتورة سمر خان

التوقيع:.....

عضو

الإسم:.....

عميدة الدراسات العليا والبحث العلمي

الاسم: دكتورة عقيلة سريرات

التوقيع:.....

التوقيع:.....



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كلية الأعمال

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## تأثير تمويل البنوك الإسلامية على الاقتصاد الكلي في المملكة العربية السعودية

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شهر رمضان 1439 هـ / يونيو 2018 م

إعداد  
الطالبة فاطمة سالم ابالحارث

إشراف  
الدكتور حكيم شبير