DETERMINANTS OF ECONOMIC GROWTH: EVIDENCE OF SINGAPORE (Q1 2003-Q4 2014)

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

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TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

LIST OF APPENDIX

Page

LIST OF ABBREVIATIONS

AIC – Akaike Information Criterion
ARCH – Autoregressive Conditional Heteroscedasticity
BG – Breush-Godfrey
BOP – Balance of Payment
CLT – Central Limit Theorem
CPI – Consumer Price Index
DW – Durbin-Watson
EDB – Economic Development Board
EX – Export
FDI – Foreign Direct Investment
GDP – Gross Domestic Product
GLS – Generalized Least Squares
GOV – Government Expenditure
GST – Goods and Services Tax
JB – Jarque-Bera
K – Kurtosis Coefficient
LM – Lagrange Multiplier
M – Money Supply
MNE – Multinational Enterprise
MSE – Mean Square Error
MSR – Mean Square Regression
NCB – National Computer Board
NPM – New Public Management
OLS – Ordinary Least Square
P – Average Price Level
R. A. Fisher – Ronald Aylmer Fisher
RESET – Regression Error Specification Test
S – Skewness Coefficient
SE – Standard Error
SGD – Singapore Dollar
SIC – Schwarz Criterion
T – Volume of Transactions of Goods and Services
TEDU – Total Government Expenditure on Education
TRA – Theory of Reasoned Action
V – Velocity of Circulation
VAT – Value Added Tax
VIF – Variance Inflator Factor
WLS – Weighted Least Squares

PREFACE

We come across this study as we notice some strange and noteworthy situation in Singapore. Singapore has been recognized as one of the country that not achieved its potential in economic development during 1960-s. However, it showing the trend of developing and even overtook other nations in recent decade. Lots of researches has been conducted on the reason behind the advancement of the economy of Singapore, where the concern we conducting this research is no longer trying to find out the reason that how Singapore is capable to build up its economy and becomes a strong economic base country. This study is concerning on the determinants of Singapore's economic growth, in other words, what factors will bring impact towards the economic growth. Firstly is did government expenditure, goods and services tax, inflation, foreign direct investment and export affecting the economic growth? Secondly which variable is significantly affecting the economic growth and which is not? By understanding these two questions, it might help in constructing a better policy that will better shaping the country towards the economic condition.

ABSTRACT

This study attempts to investigate the relationship between the economic growth and the independent variables, such as, government expenditure, goods and services tax, inflation, foreign direct investment and export, in Singapore. Secondary data was sourced within the period of 2003 to 2014. By obtaining quarterly data, the data was collected from Data Stream statistical bulletin. On the other hand, the technique that implemented to estimate the model was Ordinary Least Square. The result showed that the determinants factors of economic growth in Singapore through government expenditure, goods and services tax, inflation, foreign direct investment and export is capable of influencing which has an direct relationship and statistically significant to the economic growth. However, one of the variables showed a distinctive result with the expected sign. As predicted by the theory, inflation is actually bringing a negative impact to economic growth. In other words, when inflation goes up, there is a decline in the purchasing power where it will slow down the economic growth. Yet, this study investigates an inverse result with compare with the pasted researches. Although this study experienced some limitations (lack of data and journals, etc), thence the recommendations have been suggested to the future researchers. Regardless of limitation occurred this study is still applicable for government, policy maker and even macroeconomists.

Chapter 1: Research Overview

1.0 Introduction

Chapter 1 is presenting the research overview which consist the subtopics of research background of Singapore and its economic growth. Besides, the problem statement and research questions are set up as well. Moreover, the research objectives and relevant hypotheses will be presented in this chapter. After that, the significant of the research is stated based on the information from the past empirical studies. Chapter layout of this research will briefly explain the progress of this study. The conclusion will present the summary of this chapter.

1.1 Research Background

1.1.1 Background of Singapore

Singapore is a small country with the total area is about 224.5 square miles. It is situated at the apex of the Malay Peninsula in the Malacca strait. A huge amount of carriage passes through the Straits, which serves as a passageway between the Indian and the Pacific oceans (History & Background, n.d.).

In 1819, Singapore was set up as a British trading colony and it joined with Malaysian Federation in 1963. However two years later, there are separation between Singapore and Malaysian Federation. Singapore had become an independent country. Year by year, Singapore went on to become one of the most prosperous countries in the world, and has a strong international trade relation. Before Sir Stamford founded Singapore in 1819 Singapore was a fishing village with a population of just 500. Besides, free port was set

up in a year and then the amount of population was soared into 5,000 people. As the economy continued grows rapidly, it's attracting people from everywhere, especially Malaya, China, and South India.

In 1965, Singapore was a modern industrial country. It took the decision to transform from free port market to manufacturing and service industry economy. Singapore is one of the leading countries in the area of South-east Asia in the field of economy, communication or education. Next, Singapore has yearned for a global leader in peculiar areas, especially in information technology. Since 1960s, Singapore's leadership was concentrated on education sector and viewed it as an orientation of achieving their goals. The government had put a high priority on education and invests heavily in education for their people (History & Background, n.d.).

The former Prime Minister of Malayan, Tunku Abdul Rahman suggested the merged Federal of Malaya, Singapore, Brunei, Sarawak and North Borneo on 27 May 1961 for a closer political and economic co-operation. This merged has been agreed by Tunku Abdul Rahman and Mr. Lee Kuan (Brief History of Singapore, n.d.). They planned to have a central government whereby it has the responsibility of defences, foreign affairs and internal security. On 1st September 1962, a plebiscite on the merger's plan held in Singapore and it showed that majority of people supported the plan to merge.

Previously, Singapore was under the control of British for over a hundred years. However, during World War II, when Japanese invaded into Southeast Asia, Singapore had lose the protection from British and suffered within the period of invasion. It has stimulated a nationalist sentiment and strong anti-colonial in people that after led Singapore to the independence (Zhou, n.d.). In year 1990, Singapore gained its independence which was the third demographic census. Singapore enforces a mid-decade census based on annual projections in the year of 1995. Since Singapore independence, it is strived harder to set up a balance between national fusion with a common identity and the opportunity for variety ethnic groups to sustain their personal heritage.

Furthermore, the government has paid extra attention on the education especially at the primary and secondary levels. It emphasis on this context as an essential vehicle to attain harmony and separate ethnic identities. Chinese, Malay, Tamil and English are the officially languages for education in Singapore. However, English is the language that more often used for business purposes or even daily purposes (History & Background, n.d.). For more than a decade, Singapore, along with Taiwan, South Korea, Shanghai, Japan, Hong Kong and Finland, has reached or near the top of the league of nations table to measure children's ability in reading, knowledge of science and mathematics. As time goes by, Singapore has developed into a powerful shaping of institutional arrangement in the teaching system. Singapore has developed a centralized, unified, coherent and well-funded education system (Hogan, 2014).

Today, Singapore is a super industrialized society. Singapore's transhipment port is the world's second busiest port in term of merchandise trading, exceeding Hong Kong and Rotterdam, which behind only the Port of Shanghai. Its transhipment trade will continue to act as a major character in the economy. Even though the merchandise increases in Singapore yet it still left behind the Port of Shanghai (Zhou, n.d.). Singapore's port is the one of the world's most important port in term of tonnage processing and with per capita GDP equal to the major country of Western Europe. Even though Singapore has a fewer number of labour force with 3 million people, it still has the ability to generate an annual GDP with more than $300 billion dollars (Zhou, n.d.).

In conclusion, Singapore is a powerful developed country today although it just has a small area of land. Although Singapore is a small country, it is the fifteenth largest partner of trading with United States. In addition, Singapore also has been created powerful trade of agreements with some countries in Asia, Europe, and South America whenever those countries are dealing in the activity of export or foreign direct investment. The economy in Singapore is very controversial and serious free discussion. But regardless of philosophy, the effect of the course is undeniable.

1.1.2 Background of Economic Growth in Singapore

Singapore was a developing country with a GDP per capital of lower than $320 fifty years ago. After separated from Malaysia in 1965, the condition had brought the unemployment rate become high. Besides that, Singapore also lack of adequate hygiene facilities, less supply in drinkable water and having conflict problem within the ethnic. All these circumstances had brought many problems to Singapore (Rastin, 2003).

Singapore is a country that shorts of territory and natural resources. Nevertheless, Singapore is able to solve their disadvantages on the geographic by willing to be capitalism in free market and globalization. Meanwhile it also enhances the education by improving the quality of it and launched rigorous pragmatic policies that made Singapore transformed into a more systematic country (Zhou, n.d.). Today, Singapore is a country that having a rapid in economic growth among the world. It also becomes a leader in global business trading. The reason that it can be so successful is because it is a highly developed trade-oriented market economy. Now, economy of Singapore has been ranked as the third highest per capital GDP in the world. Rastin (2003) mention that in order to explain Singapore's economic success, it is important to realize the main themes that have distinguished its governance from less successful third world countries.

To solve the high levels of unemployment problems, the leaders of Singapore involved in advocating "globalization" before it became trendy to do so (Hayk, 2013). Dr. Albert Winsemius, the Singapore's economic advisor, suggested Singapore to construct and establish a mechanism that would take care in foreign investment. Thereby, Economic Development Board (EDB) was set up with the main objective to draw the attention of foreign capital to invest in the market of Singapore. Besides that, to ensure that Singapore has a better economy, government had promoting the Jurong Industrial Estate. It means that by giving the foreign corporations a 'pioneer' status with benefits on tax within a five years period. As the consequences, many foreign organizations came into Singapore, owing that there was a 20% drop on their production costs. The entry of foreign

organizations into Singapore which enables it to adopt new and advance technology that has been brought in by the foreign investors (Cahyadi, Kursten, Weiss & Yang, 2004).

In 1970s, there was a relative high grew in Singapore's GDP which is average of 6% per annum, however its unemployment rate was still high which around 10%. Thus, Singapore government not only provides the tax incentives, they even set up more supporting institutions in order to enhance the country's welfare. They took over the sectors of investment which was lacked of local private expertise. Not only that, the government of Singapore also oversees the condition of labour in the country and intend to provide an energetic labour environment that would attract foreign investors (Cahyadi et al., 2004). In the 1970s, the rate of unemployment had decline to 3.5% and the GDP growth rate per annum in Singapore had rose 10% due to Singapore began to obtain international recognition.

In the 1980s, Singapore faced a very tight labour market which means that there were more jobs available in the country which was much higher than the human capital. Therefore, the wages of workers have been pushed up with high pressure. Thence, Singapore planned to upgrade its level of skills of worker to enable the country transform into the service industry. Hence, the government has established the National Computer Board (NCB) in 1981 to ensure that the IT-related workers have a good knowledge by providing them training. This enables the Singapore's business to be linked up with the West. By applying these various economic strategies, GDP of Singapore was continuously grown at an average of 7.3% during the 1980s. Meanwhile, the scale of skilled employees in 1985 is 22% which had risen from 11% in 1979 (Cahyadi et al., 2004).

However, Singapore is dependent capitalist economy. To chalk out a path of independent development, Singapore's lack of native capitalists marks. In order to have a sufficient power of manage over major competencies of the business, Singapore has to well develop its technology and products. Since multinational companies of the mid-sixties have moved to Singapore which has been compel to increase in wages, competition and the

saturated of domestic markets. For this reason, Singapore has change qualitatively into an international economy. This inordinate of foreign involvement has been accomplished within a generation, mostly is because of massive in capital inflows (Siddiqui, 2010).

One of the important strategies that implemented by Singapore is to discover the necessity to enlarge the activities of economy in the area in 1990s. Therefore, Singapore had expressed a plan for an economic cooperation among Indonesia, Malaysia and itself. From the regional cooperation, Johor and Riau which located in Malaysia would supply Singapore with the space needed, labour force and natural resources as water, food and natural gas. Meanwhile, Malaysia and Indonesia would profit from it due of development of economic growth, infrastructure, and the lessons from Singapore's financial professional knowledge as overflow effects in both position. According to the agreement, Singapore would assist the foreign investors to build their manufacturing industrial bases in Johor and Riau by providing the network and financial services. For foreign companies to migrate their manufacturing industrial bases from Singapore, the state of Johor and Riau would offer incentive on taxes and financial (Cahyadi et al., 2004).

Singapore has a huge inflow of foreign capital which was the highest percentage of investment for the past forty years of the world and has approximately of having about 5, 000 multinational enterprises (MNEs). In the beginning of 2001, MNEs reported for 85.3 % of Singapore's direct manufactured exports and three-quarters of manufactured output. The government of Singapore implemented the active polices such as investment incentives provided subsidies to private investors and high quality infrastructure provisions. Since Singapore was concerned on the education sector, of course the subsidies are provided as well in the education. On the other hand, the aim of the government was to attract foreign investors, thus subsidies were focused on the potential and ability industrial clusters. In year 2009, exports contribute a heavily amount to the Singapore economy, which contributed of $268.9 billion to the net earnings of country (Siddiqui, 2010).

Singapore has done well over the last forty years, even though it is just a country that lacks territory and natural resources. The human resources of Singapore and the foreign investors are the major reason of success. Singapore has successfully turned its people into assets of the country which as the supporting structure of its economic development. In order to ensure the Singapore's economy maintain the standard of level, the government of Singapore have worked together with the residents all the years round.

1.2 Problem Statement

From most perspectives Malaysia and Singapore generally could be considered as in similar conditions. Besides from the geographic neighbourhood of these two countries, there are also similarities from the ethnic, linguistic and cultural environments. Moreover, the weather condition, as well as the disease environment and other even more detailed features, is also the same in Malaysia and Singapore (Hu, 2010). These similarities make the Singapore be the emphasized country for this study.

The economy of Singapore is extremely depending upon exports, as exports contributed a large portion to the net earnings of country in year 2009. Singapore has favourable government policies assisting to attract foreign investment. For example, export-oriented economic policy and pro-foreign investment are enforces by government (Siddiqui, 2010).

Recently, Singapore is facing certain challenges that would influence the growth in economy. For instance, in year 2012, Singapore's inflation rises more than the expectation of economists. This is due to the higher contribution from costs of transport and accommodation. This has made the economists to ease tight monetary policy in order to support the economic growth (Adam & Yoo, 2012).

Furthermore, the major natural resource of Singapore that did have to create the growth was its people which a strong work ethic combined with a non-corrupt government and well thought out long-term policies. This natural resource was importance to Singapore historical success but is today also a weakness moving forward. Singapore suffers a serious demographic strait, there is problem with an ageing and declining population. Singapore with only 3 million citizens and a fertility rate of only 1.2 and nearly half the level required for a sustainable population, Singapore left alone will face a natural decline in the output of economy (Zhang, 2015).

Throughout the world, there are many countries that have a good and stable performance yet this study tend to focus on Singapore is due to their rapid economic growth. Even though, Singapore is a country that lacks of territory and natural resources, yet they still able to against all odds and does become a strong economic base country (Zhou, n.d). This study might help to improve the performance of institutional and policies related, and indirectly help in the economic growth.

1.3 Research Questions

This research project is set to answer the research question below:

i. What is the relation between economic growth and government expenditure?
ii. What is the relation between economic growth and Goods and Services Taxes?
iii. What is the relation between economic growth and inflation?
iv. What is the relation between economic growth and foreign direct investment?
v. What is the relation between economic growth and export?

1.4 Research Objectives

The following are the objectives of this study:

1.4.1 General Objective

This study is to investigate the relation between the economic growth and the five independent variables as government expenditure, goods and services taxes, inflation, foreign direct investment and export in Singapore from Q1 2003 to Q4 2014.

1.4.2 Specific Objectives

i. To observe the relation between the economic growth and government expenditure (GOV) in Singapore from Q1 2003-Q4 2014.
ii. To observe the relation between the economic growth and Goods and Services Taxes (GST) in Singapore from Q1 2003-Q4 2014.
iii. To observe the relation between the economic growth and inflation (CPI) in Singapore from Q1 2003-Q4 2014.
iv. To observe the relation between the economic growth and foreign direct investment (FDI) in Singapore from Q1 2003-Q4 2014.
v. To observe the relation between the economic growth and export (EX) in Singapore from Q1 2003-Q4 2014.

1.5 Hypotheses of the Study

1.5.1 Government Expenditure (GOV)

H_0: Government expenditure does not influence economic growth.
H_1: Government expenditure does influence economic growth.

According to Kogid, Mulok, Beatrice and Mansur (2010), the GOV is not the main determinant factors for the growth of economic in Malaysia. However, the GOV exert a short-run effect of positive on production which has stated by Alshahrami and Alsadiq (2014). In addition, this effect was mainly derived from current spending. In another study, the researcher stated that the GOV will significantly influence GDP and their correlation is positive (Dalamagas, 2000). The total government spending towards the social and economic growth also shows a positive relationship.

On the other hand, Chude and Chude (2013) stated that total government expenditure on education has a significant impact on GDP. There is long-term relation between the GDP and GOV in Pakistan (Attari & Javed, 2013). There is also a unidirectional causality between GOV and GDP. Butkiewicz and Yanikkaya (2008) indicated that the total GOV have a small negative growth effect in developed countries.

Furthermore, there was obvious proven showed in both long and short-term in Ethiopia, a significant and statistically positive relation was found between GOV a38nd GDP (Menyah & Wolde-Rufael, 2013). Moses (2013) supported that GOV have a positively significant influence on GDP in Nigeria. There was a significant negative impact existed in government expenditure on social and general development towards GDP. However, GOV on GDP demonstrates a significant positive impact on GDP (Pham, 2009). Moreover, Hidayat, Suman and Kaluge (2014) indicated that both direct and indirect GOV have significantly positive impact toward GDP.

1.5.2 Goods and service tax (GST)

H_0: Goods and services tax does not influence economic growth.
H_1: Goods and services tax does influence economic growth.

In other country, Goods and services tax (GST) also named as Value Added Tax (VAT). According to Emmanuel (2013), GST has a significant effect on GDP. This also means that increasing the rate of GST would have a very significant increase on GDP. Next, GST is greatly significant to the total government tax revenue through the expansion of the growth of Nigeria. The changes of GST and GDP of Nigeria have a significant relationship (Onwuchekwa & Aruwa, 2014). Furthermore, Moses (2013) also stated that the value of GST has brought a positively significant effect toward GDP in Nigeria. Besides that, Ebiringa and Yadirichukwu (2012) justified that GST has significantly affected the rate of growth in the economy.

Chigbu and Ali (2014) showed that the GST has positive influence on GDP. However, the researchers had mentioned that there has no long-run relationship existed between GST and GDP even though GST has exerted a positive impact on GDP. However, the researchers found out that the changes of GST in short-run had a negative yet non-significant impact on short-run changes in real GDP. In other words, GST does not impact GDP in the short-run. The researchers' study had shown that although GST contributes to GDP growth but that the magnitude of its contribution is small.

The researcher implied that GST had a positive impact on GDP in Nigeria. Moreover, GST is sustainable and productive in Nigeria. GST has a significant contribution to total government revenues and thereby it would dedicate the growth of economy. It can be said that GST has the potential and ability to improve in the revenue sources diversification, by providing sufficient funds for the development of GDP (Stephen, 2013). Besides that, there is another researcher has supported the statement of GST has a positively effect on GDP. The researcher has revealed that GST enhanced the country's economic growth. For example, the economy of Ethiopia is highly supported by GST (Jalata, 2014).

1.5.3 Inflation (CPI)

H_0: Inflation does not influence economic growth.
H_1: Inflation does influence economic growth.

Inflation is a circumstance in the depression of currency that cause an increasing the level of price for the goods and services. According to Hafer (1989), he mentioned that the fall in value of dollar would cause pushing the inflation become higher. In order to measure inflation, there are two measurement tools can be used, there are Consumer Price Index (CPI) and Producer Price Index (PPI). The reason behind of selecting CPI is because the researcher is more focus on the consumer's perspective and it is widely apply in academic field. Meanwhile, inflation rate is being used to deliver the degree of inflation.

According to Hidayat et al. (2014), inflation rate has brought significantly positive influence on GDP. In Pakistan, there is a long-run relationship exists between GDP and rate of inflation. There is unidirectional causality between rate of inflation and GDP (Attari & Javed, 2013). In addition, inflation possessed a positive impact on GDP (Umaru & Zubairu, 2012). Besides, Elryah (2014) indicated that the inflation will bring a direct and significant influence on GDP. On the other hand, the relationship between inflation, unemployment and GDP is positive (Umaru, Donga & Musa, 2013).

However, uncertainty of inflation has brought a negatively significant impact to the GDP during recessions while this effect is negative but insignificant during expansions (Caglayan, Kandemir & Mouratidis, 2012). According to Kasidi and Mwakanemela (2013), the inflation has brings a negative effect to GDP. Besides, they also reviewed that there was no co-integration between inflation and the GDP with the study period. In Tanzania, there has no long-term relationship exist in inflation and GDP. Whereas according to Inyiama (2013), the researcher found that the connection between inflationary rate and GDP is negatively related. Moreover, Andres and Hernando (1999) have stated that inflation also has a negative impact upon long term growth rates. In other words, the correlation between inflation and GDP is negative.

1.5.4 Foreign direct investment (FDI)

H_0: Foreign direct investment does not influence economic growth.
H_1: Foreign direct investment influence economic growth.

A growth of a nation will be affected by the increasing assets and base installation, as well as investments. Hussin and Saidin (2012) indicated that FDI is a most significant element to determining the economic growth. The rise in FDI will stimulate the GDP. Gyebi, Owusu and Etroo (2013) mentioned that the GDP most impacted by FDI among other independent variables.

A well trend of investment reflects by the FDI in an economy which eventually cause the GDP to grow in the nation. There is a significantly positive relation exist between FDI and GDP of a nation (Abbas, Akbar, Nasir, Ullah &Naseem, 2011). According to Moghaddam and Redzuan (2012), the increase of FDI inflows positively influence to the GDP of the country, as a massive of FDI inflows since year 1980 had grown the economic in China and Singapore. Agrawal and Khan (2011) proved that FDI positively influenced on the growth of economy by conducting the Ordinary Least Square (OLS) regression. Mehra (2013) also stated that inflows of FDI will boost economic growth of the nation.

However, according to Gaikwad and Fathipour (2013) the impact of FDI on GDP in India is positive however the relationship is less significant. Moreover, Adewumi, Hacker and Dzansi (2006) mentioned that the benefaction of FDI is positively to grow the economy in most of the nations, but there is insignificant. Borensztein, De Gregorio and Lee (1998) stated that FDI boosts the GDP only if the host country available adequate ability of take in advanced technologies.

1.5.5 Export (EX)

H_0: Export does not influence GDP.

H_1: Export does influence GDP.

According to Livia (2012), the EX has positively significant to contribute the real GDP. This is because when the contraction of imports is much greater than the EX, then it will lead to a considerable trade imbalance of a nation. Next, Szkorupova (2014) showed that the relation between GDP and EX is positively correlated. In addition, Sahoo, Sahoo and Sahu (2014) also determined that both mining export and index of production to be significant determinant of GDP. Since it is acceptable, a huge volume of exports can speed up the economic growth. Therefore the Croatian's economic policy which emphasize on the forwarding of exports has become one of the most significant duties (Dritsaki & Stiakakis, 2014).

On the other hand, Sheridan (2014) discovered that there was no relationship existed between total EX and GDP. This is due to the relation between manufacturing exports and GDP is negative and the spread is relatively large. As mentioned by Shihab, Soufan and Abdul-Kaliq (2014) GDP is the most important determinants of economic welfare. The ability of export goods could support and assist an economy to grow by selling more overall goods and services. Not only that, Bahmani-Oskooee and Oyolola (2007) mentioned that the countries which involve more on export oriented would enjoyed relatively more economic growth which is a pattern that is in accordance and consistent with economic theory.

1.6 Significant of the Study

1.6.1 Government

There are several empirical researches have presented some implications for policy formulation and implementation which might able to help the government to strengthen their economy (Ebiringa & Yadirichukwu, 2012). Polard, Piffault and Shackman (2012) stated that nations that have implemented a good institution and economic reforms will enhance the growth of economy. As for government, this study will assist them to embark on labour intensive technique of production against capital intensive which able to reduce the inflation but at the same time it is able to increase the economic growth.

Emmanuel (2013) supported that by determine the relation between the economic growth and goods and services tax is able to increase the awareness of the government in order to improve the performance of operations and utility. It also will assist the government in policy formulation as it relates to goods and services tax as the nation's revenues will able to be broadened (Moses, 2013). The raising of additional finance will moderate the positive effects of expenditure (Bose & Osborn, 2007). This study also helps the government to spend the right money at the right place and it is useful in the sense of recognizing the real expenditure that triggers economic growth.

The purpose for Singapore government's policy is tends to encourage primary export-led growth. Besides, in order to draw the attention of foreign investors, the country should be transform into a more attractive place. Furthermore, the policy decision stands a line with the restructured production system in the developed countries. Due to the rise in the production costs, high taxes and activities trade union, thus corporate sector should move the production to a low cost area in order to have a profitable business (Siddiqui, 2010). Therefore, MNEs found that Singapore is more attractive to invest in and it has benefited from the specific international situations.

In general, in order to obtain a further improvement of the country's economic growth, it is more advisable if taxing authority and the government able to create a strong cooperation among tax payers supported by strong and efficient administrations of tax systems. As a consequence, it has the ability to encourage national economic goals such as capital accumulations and economic growth (Jalata, 2014).

1.6.2 Policy maker

Policy makers should put in more effort to keep the inflation stable in order to attain a sustainable growth of economic. A stable inflation is enables the nation to minimize the volatility and risks in the sector of finance which able foster capital formation. Thus it may exert a positive effect on the economy (Ayyoub, Chaudhry & Farooq, 2011). The researchers also mentioned that it is important to take appropriate actions and rationalize the strategies in controlling and reducing the inflation rates. Moreover, this study is that concerted effort will made by policy maker to gain the output level by enhancing productivity or supply to prevent the inflation as well as to increase the economic growth (Umaru & Zubairu, 2012).

Furthermore, by identifying the relationship between the economic growth and government expenditure will provide a reference to policy maker in shaping country's future without wasting the unnecessary resources. It also helps the policy maker to examine the current policy by weighting its strength of influence towards the results they may want to achieve (Dalamagas, 2000). Throughout the research of Salih (2012), he emphasized that by understanding the relationship between the macroeconomic variable and economic growth is important, as this will ensure the implementation of macroeconomic stabilization policies especially to policy makers.

Ray (2012) discovered that policy makers and researchers placed more attention and significant on foreign direct investment, exports and economic growth. This is due to the effects usual belief of foreign direct investment in the host economy that will decrease in the unemployment rate and accelerate the productivity level. It also encourages in exports and magnifies the speed to transfer the technology. Foreign direct investment able to introduce the modern techniques of management and marketing and promotes the utilization and development of domestic raw materials. Foreign direct investment has the ability to access to advance technologies and foreign inflows can be applied when the current account become deficits. The flow of foreign direct investment does not create interests and initial investment value and increases the inventory of human capital through the job training.

In the developing countries, it is a challenging work for the policy makers. It is a need to go on for more complicated and comprehensive policies to review the strategy changes in the organization and the activity of the regulation. In addition, to get the attention of foreign investors with high quality, policy makers could enhance the competitiveness and develop the internal capabilities to encourage the development accordance to the nations' own purposes (Pelinescu & Radulescu, 2009).

In the statement of Stephen (2013) stated that the policy makers should manage effectively with tax agents in order to assure that a proper implementation of tax. Not only that, they also need to ensure the keeping of tax was recorded properly. However, until the point in time under the discussion, this monitoring not really effective, even though the managing of tax agent is consisted in the law and regulation.

1.6.3 Macroeconomists

This research is useful to macroeconomists as they require the understanding of reactivity of economic growth to the changes in price level. With this, relevant policies will be arising to keep the price level at a reasonable rate that able to boost up the production level. Not only that, the researchers indicated that inflation has become an issue and might bring harmful to economic growth (Kasidi and Mwakanemela, 2013).

For the macroeconomists, foreign direct investment has greater attention and significant since it able to mitigate the economic growth, especially for the developing countries. This is because it enables the developing countries to ascertain and learn more new technology. Moreover, the improvement of labour skill and management would make the developing countries to perform more effective. Besides that, the foreign direct investment allowed the countries to expand the capital account become surplus and assist to strengthen the trade balances. Normally there is a low rate of capital commutation in the developing countries, where foreign direct investment supported the domestic investment to which helped to boost economy (Iqbal, Ahmad, Haider & Anwar, 2014).

1.7 Chapter Layout

This research project has organized in five different chapters.

Chapter 1 is about the research overview which includes the subtopics of background of research, problem statement, research question, research objectives, the hypothesis and significant for study and chapter layout. The researchers presented the background of economic growth in Singapore and also set the research questions to be answered. Besides that there are research objectives to be achieved, and the hypotheses to be tested.

Chapter 2 is the literature review which the researchers summarized the past researches that have read through. Moreover, the researchers presented the theoretical and empirical on the relationship between GOV, GST, CPI, FDI and EX toward GDP. The research framework was set up.

Chapter 3 focus on methodology studied which the researchers investigated the methodology and model being used. It included the research design, data collection method, sampling design, sampling technique and also research instrument.

Chapter 4 conducted the empirical analyses by using the data and methods that had described in chapter 3. The researchers analysed the result to answer the research question and hypothesis that presented in chapter 1.

Chapter 5 is the last chapter, which discussed on key findings, the practical implications and the conclusions of this research project. This chapter summarized the whole study and discourse the major findings. Besides, recommendations were the researchers also provided some recommendations to the policy makers, politicians and development economists based on the result obtained in the research.

1.8 Conclusion

This research project is to discuss the determinants of economic growth in Singapore that the researchers are interested in. By conducting the research, there are five factors that might have high possibility to influence economic growth have been selected to examine their relationship. The five determinants that concerned by the researchers are government expenditure, goods and services tax, inflation rate, foreign direct investment and export which is based on the secondary data from year 2003 to year 2014 in a quarterly basis. This study might able to help the Singapore government to understand more about the determinants which might assist them to improve the future performance in world economic. By understanding more on the determinants of economic growth, the government is able to apply an appropriate way to enhance the performance of the economy. The next chapter summarized all the relevant past researchers' work on the relation between economic growth and the five determinants.

Chapter 2: Literature Review

2.0 Introduction

Chapter 2 will present the review of literature which is the summarize of journal which related to economic growth (GDP), government expenditure (GOV), goods and services taxes (GST), inflation (CPI), foreign direct investment (FDI) and export (EX) in Singapore of past researches that had read through. Moreover, the researchers present the empirical on the relationship between the dependent and independent variables. The relevant theory for each independent variable also will be explained in this chapter. The proposed framework had been set up and will be present at the end of the chapter.

2.1 Review of the Literature

2.1.1 Economic Growth (GDP)

Everyone, even the common people is at least remotely familiar with the term of economic growth even if they never study economics before. Regularly, people may not use this term quite accurately, but people has to admit that most of the time they are never too far from the mark. Basically, economic growth is a long-term enlargement of a productive potential of a country. It delegated the rise in the value of the goods and services that an economy produced. In other words, economic growth is a positive change in the production of an economy. For this description, it is actually involves all aspects of the economy, from profits to taxes and wages such as production rates.

Gross domestic product (GDP) has been used to evaluate the performance of a country. According to Abbas et al. (2011), GDP reflects the value of the market for all the finished goods and services are produced by a country over a period of time. The GDP is the main indicators used to evaluate the country's economy health. In Singapore, GDP represents the total aggregate output of the economy which shows the economic growth of a country.

There was a rapid economic development in the period of 1960s to 1990s, thus Singapore had raise the living quality of the residents in the country. Hsueh, Hu and Tu (2013) stated that there were many researchers had figured out that a stable macroeconomic condition. For instance, the significant elements for economic growth are balance in fiscal policy, a huge numbers of foreign exchange, and low inflation rate. Due to the effort of government which involves in the country's economic development, thus Singapore achieved successful economic transformation. Especially in facilitating free trade and stimulating foreign direct investment (FDI) in conformity with its outward-oriented industrialization policy (Daquila & Huy, 2003).

Under the guides of Deputy Prime Minister Lee distributed a series of proposal which related to the issues of human capital, knowledge-based industries, entrepreneurship, taxation, and pension funds, in order to assist reconstruct Singapore's competitiveness. The government has begun to scour for new industries, but it is depended on the FDI. Throughout 2002, Singapore continued to focus on the implementation of the Association of Southeast Asian Nations (ASEAN) Free Trade Area. Therefore it reasserts the nation become an efficient operation base for foreign investors. Meanwhile, Singapore has promoted the ASEAN-China Free Trade Area as a method of forging new synergies with China's market (Case, 2003).

The Ministry of Manpower released data in the first quarter of 2012 which showed that the unemployment rate was rising from 2% to 2.1% in the fourth quarter of 2011. The growth in jobs was affected, due to companies anxious about the economic slowdown. For the purpose to against the problem of unemployment, in February the Tharman

Shanmugaratnam, Finance Minister has announced that Singapore government tends to reduce the percentage of foreign workers that the companies allowed to employ. Then Singapore's economy had strongly rebound in the first quarter to avoid a recession. The GDP had increased by 9.9% in the quarter compared to the previous quarter which is decline by 2.5% (Prasad, 2012).

Over the last forty years, Singapore had done well in their economic by depending on its manpower capital and the resources from foreign investors. Singapore also succeeds in bringing its people into assets as the starting point of its economic development. Singapore government has been working together with the people over the years to ensure that Singapore's economy is still competitive.

2.1.2 Government Expenditure (GOV)

All country not only spends on its own maintenance on other countries but also spending on defense, education, and other social services. By concluding it, government expenditure can be defined as it is an expenses that occur when government spend for its own maintenance and the cost on the society and economy (Chinweoke, Ray & Paschal, 2014).

Total GOV on GDP shows a positive relationship. As Dalamagas (2000) had stated that there is a significant and positive relation between the GOV and GDP. Furthermore, the researchers had proved that in both long term and short term, there is a clear evidence showed that a positively significant relationship exist between government expenditure and economic growth (Menyah & Wolde-Rufael, 2013). Government expenditure on production has plays a positive short-run effect which also had been mentioned by Alshahrani and Alsadiq (2014). Moreover, Attari and Javed (2013) justified that the relationship is existed between GDP and GOV in long run.

On the other hand, Chude and Chude (2013) stated that total GOV that spend on education has significantly affected the GDP. Besides that, Moses (2013) and Pham (2009) had stated that the GOV has significantly influence the GDP positively. In the view of Hidayat et al. (2014) had clarified the variable of government direct expenditure and variable of government indirect expenditure has significantly positive impact toward GDP.

However, there are some researchers that were not agreed with the statement above. They have indicated that there is a significant negative impact of government expenditure on social and general development towards GDP. According to Kogid et al. (2010) says that GOV is not the main portion of determinant factors to the GDP in Malaysia. Butkiewicz and Yanikkaya (2008) also mentioned that the total GOV have a small negative growth effect in developed countries. There is also is unidirectional causality between GOV and GDP.

According to Carter, Craigwell and Lowe (2013), they showed that different GOV gives out different result. The relation of government expenditure on education and the growth of economy are insignificant. On the other hand, government spending on social security is statistically significant and positive to GDP in the short run. Besides that, Conte and Darrat (1988) also indicated that the effect of GOV on GDP is different for every country. They further explained that this is due to the government structure constant, policy makers' priorities that will influence the policy. Thus this has affected the growth of economic.

In a nutshell, throughout the past research, this study expect that the relation between the GDP and GOV to be significantly positive. As it will reduce the number of unemployment when there is an increase in government expenditure and it will rise up the profits for the firms. Ultimately it will reflect on the GDP. The positive relationship between GOV and GDP is supported by Dalamagas (2000); Menyah and Wolde-Rufael, (2013); Alshahrani and Alsadiq (2014).

2.1.3 Goods and Services Tax (GST)

Goods and services tax (GST) in some country is called as Value Added Tax (VAT). Whenever value is added at a final stage of production and sale is known as GST. In other words, it is a type of tax consumption that is imposed on a product. The amount of GST that the consumer is going to pay is the product cost, less by of the costs of materials that have been taxed. GST is an indirect tax, which applied on goods and services at every phase of production, which beginning from raw materials to finish goods. GST is imposed on the additional value at the different stages of production (Value Added Tax Definition, 2010).

In European countries, GST is widely implemented. Nowadays GST is no longer an unfamiliar tax system. Thence, the tax system is adopted by various numbers of countries across the globe, including Malaysia which applied in 1st of April, 2015. Rising GDP in measuring the efficiency of national economy are becoming increasingly significant if determine tax share in the amount as well. Rovcanin and Karalic (2010) had illustrated that there is a significant relation between GDP and GST. According to Emmanuel (2013), GST has a significant effect on GDP. This also implied that by increasing the rate will have a significant increase on economic growth.

Next, GST also contributed a significant portion to the total government tax revenue by expand the GDP of Nigeria. There is a significant relation between the changes of GST and GDP in Nigeria (Onwuchekwa & Aruwa, 2014). Furthermore, Moses (2013) also mentioned the GST value has a positive significant impact on GDP in Nigeria. Besides that, Ebiringa and Yadirichukwu (2012) stated that GST has significantly affected the rate of GDP in the country.

On the other hand, Adam, Kammas and Lapatinas (2013) had investigated whether it is the whole tax structure or solely the tax burden fallen on capital that affects GDP including Labour Tax Rate, GST Tax Rate and other taxes. Focusing on the past empirical results, the analysis suggests that the tax rates do not exert a significant effect on growth of economy.

The reason is because Labour Tax Rate, GST Tax Rate and other taxes enter with non-significant coefficients on the per capita growth regression (Adam et al., 2013).

By comparing those researches, this study found that there has a high possibility that GST will influence the GDP positively. As supported by Emmanuel (2013); Moses (2013) when GST increase which means that the tax revenue of government will increase thus the GDP of the country will increase as well. This is due to GST is a replacement tax that will lead to competitive pricing and at last it will rise the economic growth.

2.1.4 Inflation (CPI)

Inflation is determined as the change of percentage in the price for the goods and services on year-on-year basis. Inflation is generated by the imbalance of the demand and supply of money in the economy. For instance, increase in taxes on products, changes in production and distribution costs, all these actions might be the factors that cause inflation happen. Besides that, if the value of home currency depreciates, it will cause the rise of the domestic inflation rate as well (Hafer, 1989).

The price level of goods and services will increase when the taxes on the product increase. From the macroeconomics' view of point, the demand of the goods and services will reduce due to the price of the products increase. At the same time, the demand of the home currency will decline which this will lower down the value of home currency. This means that each unit of currency can only purchase fewer goods and services. When inflation goes up, the purchasing power of money would show a decline where the GDP will be affected as well. As Mwase (2006) indicated that a decrease in inflation rate associated the appreciation of currency. When there is inflation in the economy, the currency value of the country does not stay constant. In other words, the currency value can be observed in terms of purchasing power.

According to Elryah (2014) indicated that the inflation has a direct and significant relationship with GDP. Moreover, Attari and Javed (2013) mentioned that there was unidirectional causality between rate of inflation and GDP. Besides that, Hidayat et al. (2014) supported that inflation rate has significantly positive impact on GDP. In addition, inflation possessed a positive impact on economic growth (Umaru & Zubairu, 2012). On the other hand, Umaru, Donga and Musa (2013) also supported there is a positive relation between inflation and GDP.

However, inflation uncertainty has brings a negative and significant impact on output growth during recessions while this effect is negative but insignificant during expansions (Caglayan, Kandemir & Mouratidis, 2012). According to Inyiama (2013), the researcher stated that the study has discovered the inflationary rate is negatively influence the real GDP. Moreover, inflation rates also have a negative temporary impact upon long term GDP which is stated by Andres and Hernando (1999). In other word, there is a negative correlation among inflation and the GDP.

According to Kasidi and Mwakanemela (2013), the inflation in the economy has a negative impact on the GDP. As Quartey (2010) indicated that the economic performance is higher when inflation rate is low compared to high inflation rate. Whereas, the study also discovered during the period of study that there has no co-integration between inflation and the GDP. Similarly, the relationship between inflation and GDP has been argued in various economic literatures and all these argument shown differences in relation with the order of world economy's condition (Kasidi & Mwakanmela, 2013).

The empirical results that shown in the selected articles supported that there is a positive relation exist between inflation and the GDP (Hidayat, et al., 2014; Umaru, et al., 2012; & Umaru, et al., 2013). However, some of the empirical research indicated that the inflation has a negative impact on GDP (Caglayan, et al., 2012; Inyiama, 2013; Andres, et al., 1997; Kasidi, et al., 2013; & Quartey, 2010). By considering the accuracy of the empirical results with the economy theory, this research expects that there is a negative relation between inflation and GDP.

Inflation occurs when there is an increase on price of goods and services and the value of currency decline. As a result of purchasing power would decline at the same time. When people tend to spend less, this action will bring down the GDP. Therefore, this study expects that the inflation would bring negative impact to GDP.

2.1.5 Foreign Direct Investment (FDI)

The World Bank has defined Foreign Direct Investment (FDI) as the "investment was made to obtain a long lasting management in an enterprise operating in a country and other than that of the investor" (Hung, 2005). FDI is directly dedicates to economic growth by providing opportunities of jobs. It's also indirectly by increase of employment opportunities in other corporations. FDI is an important technology method that transferred from developed countries to developing countries.

Not only that, FDI also stimulates the domestic investment and fosters the enhancement in institutions and human capital in the host countries (Makki & Somwaru, 2004). From the view of Acaravci and Ozturk (2012), they discovered that FDI is a vital indicator as it offers a source of capital, complements domestic private investment. Besides, it also creates more opportunities of new job as well as transfers new technologies and encourages GDP in the host countries. In the 1990s, FDI was the main inflows to developing countries. Compare to the other capital flows, FDI is less fluctuates. Therefore, it has known as the "favourite capital inflows" for many countries especially developing countries.

Zhang (2006) stated that FDI promotes the GDP which the positively affect seems to gain over time. FDI dedicated to GDP through direct effects as bring up the productivity and promoting export. Leitao and Rasekhi (2013) showed that FDI has influences on the GDP. Acaravci and Ozturk (2012) supported that FDI has a positive effect on GDP. Besides that, Pelinescu and Radulescu (2009) showed that there was a direct relation between the FDI flow and the GDP for the developed and developing countries. Indeed,

the experience that acquired shows that FDI greatly strengthen the national economies' re-specialization processes all over the world. FDI growth leads to increase in the quantity of manufactured production.

Researcher discovered that there is a positive link existed between investment and GDP (Muritala, 2011). FDI may have a positive relation with economic growth lead to expand the size of the market, which to attract more FDI. However, the influence of FDI is different between industries and countries, according on the country's features and the policy environment. FDIs have positive impact on GDP (Sandalcilar & Altiner, 2012). By entering to energy sector FDI has played a significant role in overcoming insufficiency of sources and it can also increase the employment rate. With the formulation of legal framework related to FDI inflow, the amount of FDI entering to these countries has increased. One of the positive influences of FDI inflow is the acceleration of the transition of these countries into open market economies.

Growth of any country mostly depends on the investments, increasing of assets and infrastructure. The increase of the GDP in the country is due to the increasing trend of FDI. FDI shows a good investment trend in economic which basically results in increasing the GDP (Abbas et al., 2011). Nosheen (2013) discovered that the FDI and GDP are important implications for empirical modelling and policy in macroeconomics and international finance. The researcher had proved that the long-term relation existed between the FDI and GDP. It also supported by GuechHeang and Moolio (2013) whereby they proved that there was long run significantly positive relationship between FDI growth rate and the growth rate of GDP. The major point emerging is that FDI is positively affected on developing countries' GDP. (Ekanayake & Ledgerwood, 2010).

Throughout all the researchers' results, FDI is expects have a positive relationship between the GDP. FDI in any country plays an important role in GDP. The past decades shown the GDP is affected by FDI significantly and positively (Iqbal, Ahmad, Haider and Anwar, 2014). This is because when FDI is entering to the country, it means that there is increasing of employment rate which will contribute the profit to a firm and eventually will contribute a growth in an economy.

2.1.6 Export (EX)

One of the traditional forms of economic transfer is EX which takes place on a large scale between nations. For instance, one country produced and shipped the goods to another country for future trade. The relation between EX and GDP is one of the frequent and popular topics that will be used by the economists when they are trying to explain the different levels of GDP between countries. It is because export of goods and services indicate and insinuate one of the most important sources for foreign exchange income and creates employment opportunities that alleviate the pressure on the balance of payments (Shihab, Soufan, & Abdul-Khaliq, 2014).

Many studies have found that EX are actually affecting the GDP favourably even in different countries and regions. Zaheer, Khattak, Ashar and Khanzaib (2014) investigated that EX have significant relation with GDP. The empirical results indicated that EX have brought a positive and significant impact to the GDP in the four Arab Gulf countries (Al-Yousif, 1997). Besides that, Ahmed, Hoque and Jobaer (2013) also supported that EX actuate a positive impact to GDP.

Moreover, Chemeda (2001) found that the growth of EX and GDP has a positive association. A rise in the demand for the country's output would cause the growth of EX, and this will be realized in the GDP. Thus, in the context of the Ethiopian economy the real EX growth rate has affected the economic growth rate positively (Chemeda, 2001).

The result arising from Ugochukwu and Chinyere (2013) indicated that EX would positively and significantly influence the Nigeria's GDP for the period under review.

This study expects that there is a positive relation between EX and GDP which the expectation is based on the consideration of the accuracy of the empirical result with the economy theory. A rise in demand of country's output will eventually lead to rise in export. When the number of export has been increase, lastly it will reflect the rise in the economic growth as well. As Iqbal, Hameed and Devi (2012) mentioned observable improvement of EX, specialization economic gains, entailment of the higher GDP levels, thus the EX are directly promoting the country income's growth. Thence, there is a heavy contribute to the earnings of foreign exchange and enhancing the balance of payment circumstances.

2.2 Review of Relevant Theoretical Model

2.2.1 Government Expenditure (GOV)

Keynesian Theory

This study is using Keynesian Theory as the guide in the government expenditure. This theory is named after a British economist, John Maynard Keynes in 1936. Basically, the concept of this theory is explained about in order to ensure an economy in a country to grow and stable, an active government intervention is necessary to be applied. According to Keynes, when there is an increase in government expenditure, it will boost up the economic growth by injecting power into it (Mitchell, 2005). Keynes defined government expenditures as an exogenous factor which it can be utilized as a policy instruments in order to promote economic growth in a nation. In another way to easy understand is that government expenditure can contribute positively to economic growth (Chude & Chude, 2013).

Not only that, Srinivasan (2013) stated that the government expenditure, as one of the fiscal policy instrument, is powerful to achieve stability in short-run and higher long-term growth rate in Keynesian Theory. Thus, the theory has been widely used as government interventions in the economy as this plays a significant character in the process of development. Besides that, from the view of Keynes, expansionary fiscal policies can advance the economic growth and the causality runs to economic growth which from the government expenditure. Therefore, government expenditure can be adopted as an effective policy instrument for boosting economic growth if there is causality runs from the government expenditure to growth of economy (Menyah & Wolde-Rufael, 2013).

Moreover, the Keynesian model indicates that during a recession period, budgetary expansion should be undertaken as a policy to increase the aggregate demand in the economy by boosting the GDP. The increasing in government expenditure will lead to increase employment in public sector and firms in the business sector. Once the employment has been rise, income and profits of the firms will increase as well. Thus, this would contribute the result of hiring more workers in firms in order to produce the goods and services needed by the government. Finally, this result will promote the growth of an economy (Muthui, Kosimber, Maingi & Thuku, 2013).

2.2.2 Goods and Services Tax (GST)

Theory of Reasoned Action (TRA)

Value added tax was first introduced by a French economist, Maurice Laure, in 1954 as TVA (*taxe sur la valeur ajoutee*). In 10th April 1954, Maurice Laure was initiated the concept of VAT. VAT can be applied on goods as well as services, thus it has also termed as goods and services tax (GST). It initially introduced for large businesses with the passage of time. GST was imposed for all the sectors of business in the nation. In France, GST is one of the important sources in the state of finance. GST would increase the burden which necessity to be bear by final consumers. GST has become a significant tool

of indirect taxation during the last four decades and there are 130 countries applied. GST also becomes one-fifth tax revenue of the world. There are many developing countries reformed their tax structure by moving into GST. Most of these countries have earned profit from the implementation of GST therefore the researcher also estimating that other countries would gain from the application of GST (Chadha, 2009).

The theory of Reasoned Action (TRA) is used to meet the objective by observing the role of attitude and subjective norms in influencing intention to comply with GST. TRA focused on the behavioural intention as precedent to actual behaviour. Its intention indicates on how hard individuals are willing to try or how much effort they would disburse to perform the behaviour. The theory's application is still need to improve even though it is widely used by the behaviour of society. For example, the study of GST was conducted out based on the TRA whereby intention to obey with GST (Bidin & Shamsudin, 2013).

By implementing TRA, the research of Bidin and Shamsudin (2013) examined the factors that impact on GST commitment intention behaviour among manufacturers. The attitude and subjective norm were the examined factors. Results of the study showed that subjective norm and attitude affected the intention of manufacturers to obey the GST. Subjective norm was discovered to be the most powerful element that affected the intention to obey with the GST (Bidin & Shamsudin, 2013).

2.2.3 Inflation (CPI)

Quantity Theory of Money

Ever since the financial panic of 1793, a concept of a modern central bank has been introduced by Henry Thornton, yet it wasn't given much important until John Maynard Keynes published "A Tract on Monetary Reform" in year 1923. This classical theory of inflation is applied to explain the most crucial and long-term determinants of inflation rate and price level (Classical Theory of Inflation, 2010). Similarly, it indicates how the

aggregate price level has been defined through the interaction between the supply and demand of money (Ireland, 2014). The theory is very well respected and is heavily used to control inflation in the market. The theory's calculation is expressed as,

MV=PT

Where,
M represents money supply,
V represents velocity of circulation,
P represents average price level, and
T represents the volume of transactions of goods and services.

The theory stated that by raise the volume of money supply in the economy would actually lead the price of goods and services to have an equal proportion rise. Besides, there are few assumptions added to the equation of exchange in order to make it logic. At first, the theory makes an assumption on the V and T which are constant in short run. However this assumption has been criticized by argue that the V could not be constant due to the V is depends on consumer and business spending impetus.

Moreover, this theory also makes an assumption on the quantity of money and stated that is the main element influence to the economic activity in a society which means it is determined by outside forces. A change in the money supply would bring an outcome of change in price level or even the supply of goods and services. Basically the changes in the inventory of money would cause a change in public spending behaviors. Whereas, the V is not depends on the quantity of money available in the market or on the current price level. Yet, it is depends on the price level changes (Heakal, n.d.). The transaction number is defined by labour, knowledge, organization and natural resources. Thus, this theory also assumes that the economy is in state of equilibrium and no unemployment.

Originally, one of the assumptions in the theory indicated that the quantity of money available in the market would determine the currency value. When the money supply increase, the currency value would decline due to the increase in money supply causes the inflation to rise. As inflation increases would lead a downward movement on purchasing powers and the value of currency as well.

2.2.4 Foreign Direct Investment (FDI)

The Internalization Theory

In 1976, Buckley and Casson developed the theory which named The Internalization Theory. Buckley and Casson who were the founder of the theory, they demonstrated it for multinational companies which were organizing the internal activities and developed specific advantages. This theory illustrated the multinational companies' growth and their motivations to accomplish foreign direct investment. Morgan and Katsikeas (1997) justified that internationalization theories were used to illustrate the reasons and provide solutions for the company to operate in foreign activities. Additionally, this theory also explains the way that can be used to conceptualize the behaviour of the dynamic nature.

A firm which engaged in research and development may create an advance technology or process. It may face difficulty to transfer the technology or sell the inputs to other unrelated companies due to those transaction costs are too high. Backward and forward integration can be chosen by a firm to internalize when they are facing such situation. FDI means the internalization involves operations in different countries. Moreover, Buckley and Casson determined there are five natures of market imperfections that bring the consequence of internalization. There are the resources co-ordination which need take a longer time, discriminatory pricing is required for the efficient exploitation of market power, an unstable negotiation situations produced by bilateral monopoly. In addition, a purchaser inaccurately identified the price of the sale goods and also the interventions of government in international markets to generate an incentive for price

transfering. Although Buckley and Casson recognized the uncertainty of host government intervention but they did not premeditate the difference in the dimension of this risk across all of the industries (Nayak & Choudhury, 2014).

Johanson and Vahlne (1977) supported that this theory stated the available external market unable to offer an efficient environment in which the company can gain by using its resources of production. An MNE internalizes its foreign operations globally through a centralized structure of governance and common ownership is known as the activity of internalization. However, there are some argument on this theory is that internalization establish "contracting" through a centralized, integrated intra-firm governance structure. The transactions cost was conducted at arm's length in an external market. For example transactions within an intra-organizational market may be lower than a fair price in an open market. Besides, internalization theory also notices that the common governance of activities in different locations is likely to result in transaction gains.

Through internalization, global competitive advantages were developed by the forming of international economies of scale and triggering organizational learning across national markets. In order to maintain the operational flexibility in global business activities, the resources had been allocated and dispersal to serve as a primary device. By allocating the flow of resources, an MNE may shift its activities in response to changes in the structures of tax, exchange rates, governmental policy, labour rates, the movement of competitor, or other uncertainties. Therefore, flow of resources is a necessary term for attaining either competitive advantages or location-specific in global business. Internalization requires a centralized decision-making authority and responsibility. Nevertheless, control should be segmented by product line and allocated among different branches which depend on certain environmental conditions and capabilities (Johanson & Vahlne, 1977).

Basically, this theory is a comparative institutional method to analysis of MNE behaviour. In order to manage the economic interdependencies, the internalization theory is applicable to apply. As it is allows to assessing the relative effectiveness and efficiency of alternative mechanisms of governance. Internalization theory can be easily expand and

linked to the analysis of network. It is fully compatible with explaining the firm's boundaries, and the distinctions of organizational between joint ventures, hierarchy, markets, and other form of organizations (Rugman & Verbeke, 2007).

2.2.5 Export (EX)

Staple Theory

An economist W.A Mackintosh and Harold Innis, Canadian economic historian has generated the staple thesis. They have explained on the way for settlement practice and Canada economic development was affected by the export and development of natural resources. Although its premier objective was to model the evolution of Canada's economic history, this thesis also can be used to any country with a successful, export-heavy economy (Boame, 1998; Watkins, 1963). The staple theory is generated to illustrate the growth and economic development of resource rich economies (Altman, 2003).

A staple is a main product that has a huge and increasing demand in global markets and it does not require a complicate processing. It also has a sufficient value-to-weight (volume) ratio to undertake transportation costs. The staple theory focused on the fact that staple exports are the leading sector of the economy which is set the step for economic growth. In other words, the primary export sector brings a consequence of the trickle-down effects to economic growth.

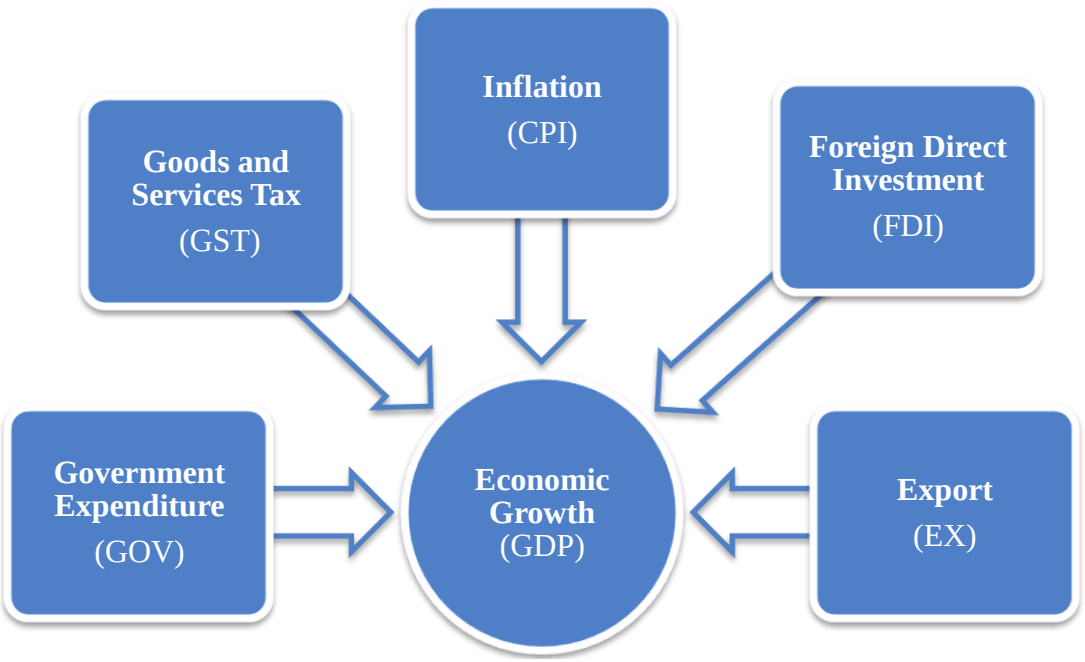
Boame (1998) indicated that due to the dependence on primary commodities export, it has influenced most of the developing countries' growth. The staple theory of growth is used to explain the relevant theory of economy underlying this primary-export-led growth. It highlights three kinds of advantages to trading country which are to improve the efficient of using the existing resources, linkage effects and expanded productions factor.

The staple theory of primary-export-led growth is appropriate to the economic growth process. It makes an assumption that export advancement is one of the key indicators of growth. It encourage that adding the number of human capital and investment within the economy is not the only way to ensure the overall performance in the countries, but through the increasing of exports also able to ensure the overall performance (Iqbal et al, 2012). Growth is originated by a rise in demand for a main export product. When the export sector and the domestic sectors grow, it will lead to the raise of demand for the factors such as labour and capital which will cause the growing of economy simultaneously (Boame, 1998).

The fundamental assumption of this theory is illustrates that main export product is the factor that lead the growth of economy. In other words, the export sector acts as a hinge driving sector which can propelling the other sectors of the economy forward. Economic development would embody the diversification from the export base. The primary concept of the staple theory of growth is effect of export activity on domestic society and economy.

2.3 Proposed Framework

Figure 2.1: Research's Model



Title: Determinants of Economic Growth: The Evidence of Singapore (Q1 2003 – Q4 2014)

2.4 Conclusion

In this chapter researchers had done the literature review of related journal article. Therefore, the definition of economic growth (GDP), government expenditure (GOV), goods and services taxes (GST), inflation (CPI), foreign direct investment (FDI), and export (EX) are presented in this chapter. Besides, the relationship of the five determinants toward the economic growth was stated. Meanwhile, the relevant theory of those determinants was explained in the second part of this chapter. Lastly, the proposed framework was prepared. The next chapter will carry out the research methodology with the collected data to determine the dependent and independent variables.

Chapter 3: Methodology

3.0 Introduction

Chapter 3 will present the methods that been used by the researchers in this study. This chapter will describe the types of methods that been choose to carry out throughout this study. Besides, this chapter will also consists of the data collection methods, sampling design and the flows which are about how the researchers collected the data. Last but not least, it also included the data analysis for what have the researchers found in the methods.

3.1 Data Collection Method

3.1.1 Secondary Data

In the study, GDP has been chosen to represent the dependent variable which is measured in Singapore Dollar. Besides that, the selected independent variables included government expenditure (GOV), Goods and Services Tax (GST), Foreign Direct Investment (FDI) and Export (EX) are measured in Singapore Dollar as well, yet the inflation (CPI) is measured in index. All of the data are obtained from the Data Stream, which the data is an indispensable source of technical and financial assistance to all the countries around the world. The data that used by this study is time series data which is based on quarterly and time span of 2003 to 2014 which include 48 observations. Ahmed and Uddin (2009); Acaravci and Ozturk (2012); Shan and Sun (1998) and some other researchers also conducted similar research by using the quarterly data. Kouritzin and Heunis (1992) stated that as long as the sample size is large enough (usually the sample size should exceed 30), then the sample means is tends to be normally distributed around

the population mean regardless of the population distribution model, which this theory is known as Central Limit Theorem (CLT).

Table 3.1: The explanation of dependent and independent variables.

Variable	Proxy	Explanation	Unit	Sources
Economic Growth	GDP	Gross Domestic Product - the rate of change in real GDP.	Constant price (SGD)	Data Stream
Government Expenditure	GOV	All government consumption, investment and transfer payments	Total final consumption expenditure (SGD)	Data Stream
Goods and Services Tax	GST	Taxes that charged on goods and services which is used to produce government revenue	Current price (SGD)	Data Stream
Inflation	CPI	Consumer Price Index – weighted average in the price level of consumer goods and services purchased	Index 2009=100	Data Stream
Foreign Direct Investment	FDI	Investment made to acquire a long lasting management in a country.	Singapore BOP (SGD)	Data Stream
Export	EX	Selling goods and services produced in home country to other markets.	Constant Price (SGD)	Data Stream

3.2 Sampling Design

3.2.1. Target Population

Economic Growth in Singapore

Among the countries in East Asian which are newly developed such as Hong Kong, South Korea, Singapore, and Taiwan, the growth of economic in Singapore gets the most attention from all over the world. Recently, among all the top Asian country Singapore has the rank of the highest living standard. The electronics manufacturing sector is actually comprises the bulk of earnings. Based on its manufacturing and services sectors, Singapore has replaced its mechanism into a system with twin pillars for the growth of economic (Cahyadi, Kursten, Weiss & Yang, 2004).

Even though Singapore is a small size country that lacks of nature resources but they are able to overcome the geographic disadvantages by implement globalization, highly education, market capitalism and market policy. Not only that, Singapore also able to turning their people into assets including foreign workers is the path that leading Singapore becomes a successful country. Therefore, Singapore had become a success country (Zhou, n.d.).

Most of the developing countries came together with heavy external debt. For instance, fifty years ago the developing countries have to applied privatization and deregulation, liberalized investment and trade, yet Singapore is able to release from external debt. The reason why Singapore is free from external debt is because they reorganized their state bureaucracy which is accordance to the principles of the "New Public Management" (NPM) in their country. This principle had response to the conditions that implement by international aid agencies (Menon 2007).

3.2.2 Sampling Technique

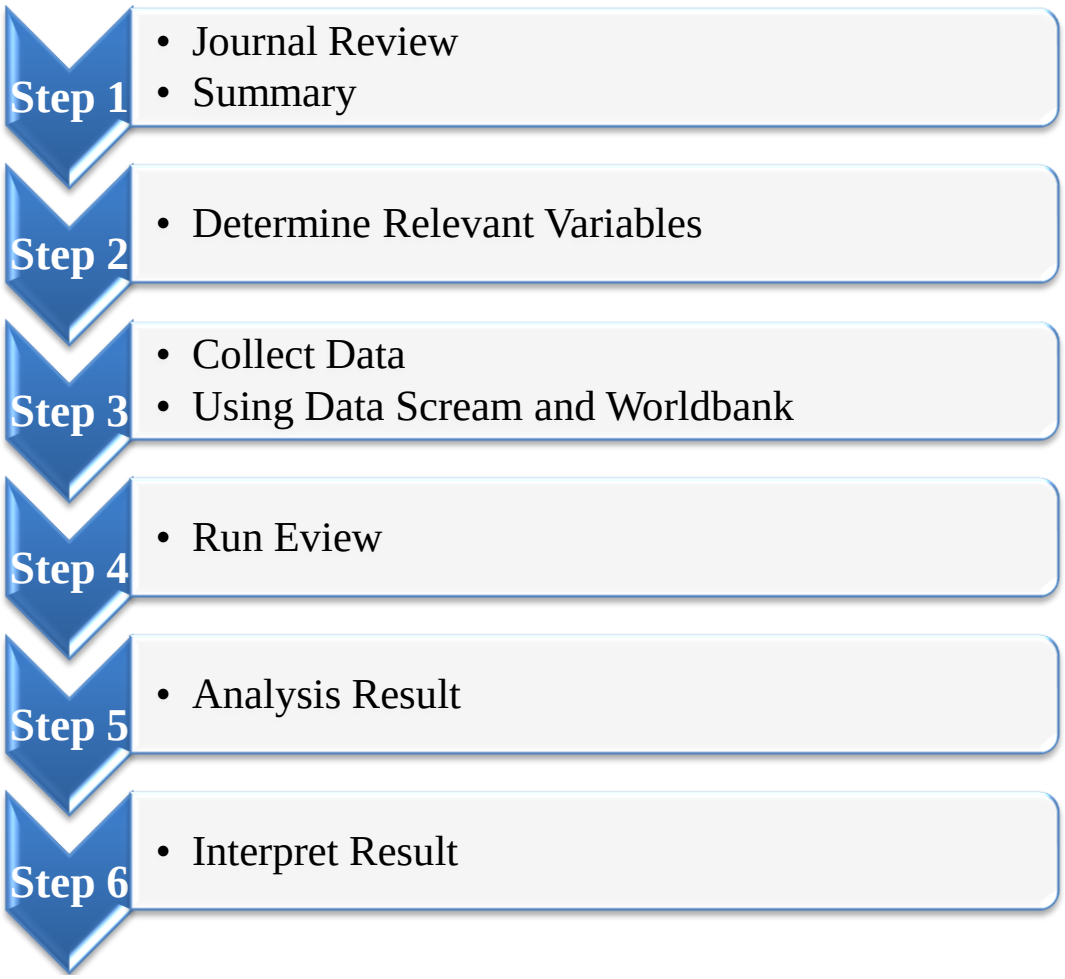
Background of EView

EViews is a best-known proprietary econometrics program for personal computer which is having useful function in estimation of macroeconomic, financial analysis, simulation, scientific data analysis and evaluation, cost analysis, and prediction of sales. EViews is wide-ranging used in teaching and in several places around the Internet. EViews is come up with forecasting tools, sophisticated data analysis and regression on Windows-based computers. By using EViews, the data can be quick develops a statistical relation and the relation is able to use to estimate the future values of the data (Schwert, 2010).

EViews is a set of new edition instruments for operating time series data which formally developed in the Time Series Processor software for large computers. MicroTSP was the old edition of EViews, which had first launched in 1981. Version 1.0 of EViews was released in March 1994 and replaced MicroTSP. EViews was created by the economists where most of its functions are applicable in economics, it not only efficacy to economic time series, there is also quite large cross-section projects can be processed by it (Schwert, 2010). On the other hand, this study adopts EView 7 to run the collected data to get a statistical relation between variables. The version 7.0 of EView was released in January 2010.

3.3 Flow of Data Processing

Figure 3.1: The flow chart of work procedure of this study.



Firstly, this study had reviewed several past researches in order to obtain the advisable variables which is fully supported and proved by past investigators. It will help to define the most relevant explanatory variables. Once few variables had been chosen, the researchers try to collect the data by using two different sources which are Data Stream and World Bank database. The researchers had gathered the monthly, quarterly, and annually data for each of the relevant variables. After that, the researchers check all the data and indicators used and make sure the data are accordance with the past researchers

previously used. Next, the researchers apply EView 7 and run the data intend to get an accurate result. The researchers had constantly checked through, update and modify the data in order to ensure that the data is latest. After obtain a final result, an analysis and interpretation have been carry out.

3.4 Data Analysis

In a linear regression model, Ordinary Least Squares (OLS) is used to forecast the unknown parameters. Its purpose is to minimize the gaps between the observed responses and the responses estimated by the linear approximation of the data. The OLS provides a minimum-variance mean-unbiased estimation and the estimator of OLS is constant when the errors are homoscedasticityity and no autocorrelated even there is not ideal multicollinearity. Meanwhile, OLS is applicable in economics, political science and among many other areas of application (Gujarati & Porter, 2009).

Ordinary least-squares (OLS) regression is known as a general linear model method that can be used to model a single response variable which has been recorded on at least an interval scale. The method can be employed to single or multiple explanatory variables and also categorical explanatory variables that have been properly coded (Gujarati & Porter, 2009). The following represents the multiple linear regressions.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_t$$

$$\boldsymbol{log\ GDP} = \beta_0 + \beta_1 \boldsymbol{log\ GOV} + \beta_2 \boldsymbol{log\ GST} + \beta_3 \boldsymbol{log\ CPI} + \beta_4 \boldsymbol{log\ FDI} + \beta_5 \boldsymbol{log\ EX} + \boldsymbol{\varepsilon_t}$$

Where,

Y = GDP = Gross Domestic Product (Constant price)

X_1 = GOV = Government Expenditure (Total Final Consumption Expenditure)

X_2 = GST = Goods and Services Tax (Current price)

X_3 = CPI = Consumer Price Index (Index 2009 = 100)

X_4 = FDI = Foreign Direct Investment (Singapore BOP)

X_5 = EX = Export (Constant price)

3.4.1 F-test

Basically, whichever statistical test also has an F distribution in the null hypothesis which is named as F-test. The F distribution is called after the famous statistician, R.A. Fisher which it also known as the Fisher F Distribution or the Snedecor-Fisher F distribution (Gujarati & Porter, 2009). It is a statistical test that contrasts the variances of two samples as long as to test the hypothesis that the samples is taken from populations with different variances. In general, the objective of it is to examine the gaps between the sample's variance (Gujarati & Porter, 2009). Based on the following formula, it can be used to determine the statistical significance of the overall relation between the dependent variable and a group of independent variables (Gujarati & Porter, 2009). The following is the formula of F test:

$$\boldsymbol{F = \frac{MSR}{MSE}}$$

Where,

MSR = Mean Square Regression

MSE = Mean Square Error

H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$

$H_{1:}$ At least one of β_i is different from zero, where $i = 1, 2, 3, 4, 5.$

The null hypothesis is represent the meaning of the overall model is not significant, where the alternative hypothesis represent the overall model is significant. In significance tests, if the test statistic value is lies in the critical region which means that the test is statistically significant. Thence, the null hypothesis will be rejected. Nevertheless, the test will be insignificant if the test statistic value lies in the acceptance region. Under this circumstance, if F test statistic is more than upper critical value then the null hypothesis will be rejected. Otherwise, do not reject null hypothesis. On the other hand, the P-value also consider as another method that can be used to determine the significance of hypothesis testing. For instance, reject null hypothesis when P-value less than the significant level. Thence, if null hypothesis has been rejected, this means that the overall model is significant.

3.4.2 T-test

In 1908, William Sealy Gosset had developed the t-test. According to Gujarati and Porter (2009), it is one of the simplest analyses which widely used by many researchers. Even it is a common used parametric statistic, yet there are several assumptions that must be practice. For instance, first assumption will be the points in the data represent a random sample of population studies. Besides that, the sample's mean distribution must be normal. Lastly, the different groups' variances should be very similar. The following formula is used to compute the t-statistic, in order to determine the statistical significance of the individual relation between the dependent variable and independent variable.

$$\mathbf{t} = \frac{\widehat{\boldsymbol{\beta}}_{\mathbf{i}} - \boldsymbol{\beta}_{\mathbf{i}}}{\mathbf{SE}(\widehat{\boldsymbol{\beta}}_{\mathbf{i}})}$$

Where,

$\hat{\beta}_i$ = Estimator of parameter β

β_i = Actual parameters β

$SE(\hat{\beta}_i)$ = Standard error of estimator $\hat{\beta}$

H_0: $\beta_i = 0$

H_1: $\beta_i \neq 0$, where $i = 1, 2, 3, 4, 5$

The null hypothesis represents the meaning of insignificant relationship between dependent and independent variable, where the alternative hypothesis means that there is a significant relation between the dependent and independent variable. In significance tests, if the test statistic value lies in the critical region which means that the test is statistically significant where the null hypothesis will be rejected. Nevertheless, the test will be insignificant if the test statistic value lies in the acceptance region, in other words it fall between the upper and lower critical value (Gujarati & Porter, 2009). Under this circumstance, if t-statistic is more than upper critical value or less than lower critical value then the null hypothesis will be rejected. Otherwise, do not reject null hypothesis. Moreover, the P-value also can be used to determine the significance of hypothesis testing. Reject null hypothesis when P-value less than the significant level. As a result, if null hypothesis is rejected which means that the given independent variable has significant relationship with the dependent variable.

3.4.3 Normality Test

Normality test are used to determine whether the set of data is well modelled by normality distribution. According to Gujarati and Porter (2009), normality test also used to find out whether the error term is normally distributed. The normality distributed will show a bell shaped frequency distribution data. The Jarque-Bera (JB) test is use to examine whether the model is normality distributed. This test of normality is an asymptotic normally or large sample and it also depend on the OLS residuals. The test is first computes the skeweness and kurtosis measures of the OLS residuals and use the following test statistic formula:

$$\boldsymbol{JB = n\left[\frac{S^2}{6} + \frac{(K-3)^2}{24}\right]}$$

Where,

n = sample size

S = skewness coefficient

K = kurtosis coefficient

In econometrics, normality test is usually performed by means of the skewness-kurtosis test. The main reason for the generally use is its blunt performance and interpretation. The skewness-kurtosis test statistic is the sum of the squared of the sample skewness and the excess kurtosis coefficient of standardized asymptotic appropriately (Lobato & Velasco, 2004). It is difficult to estimate kurtosis test which does not constitute a normal size problem, however. The coefficient of skweness which combined with the kurtosis by JB test is still useful for time series data, once the limit considering variance serial data. In spite of this, the main source of the power in the normal test is deriving from the skewness testing (Bai & Ng, 2005).

H_0: Error terms are normality distributed.

H_1: Error terms are NOT normality distributed.

In significance tests, if the test statistic value is lies in the critical region which means that the test is statistically significant. Thus, the null hypothesis will be rejected. Nevertheless, the test will be insignificant if the test statistic value lies in the acceptance region. Under this circumstance, if JB test statistic is more than upper critical value then the null hypothesis will be rejected. Otherwise, do not reject null hypothesis. Besides test statistic, P-value also can be used to evaluate the significance of the hypothesis testing. Reject null hypothesis when P-value less than significant level. In conclusion, the error terms are normality distributed if the null hypothesis is not rejected.

3.4.4 Multicollinearity

Uekia and Kamasaki (2013) mentioned that when linear relations exist in between independent variables then the multicollinearity problem will occurs. There has no formal method to detect multicollinearity. However, it can be investigate by suspecting the multicollinearity problem may be happen through high R^2 but few significant t ratios, high pair-wise correlation between independent variables and compute Variance Inflator Factor (VIF) (Gujarati & Porter, 2009).

According to Gujarati and Porter (2009), multicollinearity can be overcome by several methods. One of the ways to overcome multicolliearity is to drop variable(s). When dropped a variable, it would make the model become a significant coefficient, but this method is not encouraged to be use. This is because it will cause the model become specification bias whereby it may lose the information. If an important variable has been omitted and this will misleads the true values of the parameters. On the other hand, by adding new variables also can solve the problem of multicollinearity. This will be a more

preferable method to be obtained. This is because by adding new data, it could generate more accurate estimated parameter with lower standard errors.

Moreover, the variables in the time series data will move in the same direction thus multicollinearity problem could occur in time series data. Besides that, by assuming that the model has the cross-sectional and time series data, the model can be combining into panel data so that the problem can be reduce. Sometimes by increasing the sample size might able to reduce the multicollinearity problem as well. This happens if increase the sample size, the standard error will be decrease since the standard error is based on the variable and sample size. Furthermore, by using the transformation of variables, the model can be transform into first differences form or ratio transformation. With this method, the regression could run based on the gaps of successive values variables instead of using the original variables (Gujarati & Porter, 2009).

3.4.5 Heteroscedasticity

Gujarati and Porter (2009) had supported that the error terms do not have a constant variance or equal spread is known as heteroscedasticity. There are several methods can be used to detect the presence of heteroscedasticity, which included Park test, Glejser test, White test, Breusch-Pagan, Goldfeld-Quandt test and ARCH test. Even though heteroscedasticity does not undermine the unbiasedness and conformity properties of the OLS estimators, yet they are no longer efficient.

When heteroscedasticity occurs, it brings few consequences to the OLS estimators. For instance, OLS estimators are no longer the best because it violates the minimum variance. Not only that, the OLS method would underestimate the variances. If heteroscedasticity happen, variance of estimated slope coefficient will decrease and the standard error of estimated slope coefficient will decrease as well. This would cause the value of t-test statistic and F-test statistic increase. Therefore the hypothesis testing will become invalid.

However, the OLS estimators are still unbiased and consistent because there are no independent variables correlated with the error term.

Besides, there have some methods can be used to overcome the heteroscedasticity problem. For instance, by using the Generalized Least Squares (GLS), which mean divide the whole model with variance, it could restrain the heteroscedasticity problem. Not only GLS method, Weighted Least Squares (WLS) also one of the remedy that may use to overcome the heteroscedasticity problem. It is just multiply a certain number with whole model which can make the variance become constant or White's heteroscedasticity-corrected variances and standard error by using EViews.

H_0: The model is homoscedasticity.
H_1: The model is heteroscedasticity.

In significance tests, the null hypothesis will be rejected if the test statistic value lies in the critical region which means that the test is statistically significant. Nevertheless, the test will be insignificant if the value of the test statistic lies in the acceptance region (Gujarati & Porter, 2009). In this study, the null hypothesis will be rejected if ARCH statistic is more than upper critical value. Otherwise, do not reject null hypothesis. Additionally, the P-value also consider as another method to determine the significance of hypothesis testing. Reject null hypothesis when P-value less than significant level. Thus, if null hypothesis is rejected, then the model is suffering from the heteroscedasticity problem.

3.4.6 Autocorrelation

As mentioned by Gujarati and Porter (2009), autocorrelation is defined as the correlation between error terms in the past and at present time. It can be divided into pure autocorrelation and impure correlation. Pure autocorrelation is caused by the distribution of error term where there is a problem happen in a variable or data measurement. Impure autocorrelation is caused by specification bias which is error make by human being such as omitted important variable, included unimportant variable in the model, incorrect functional form of the model or cobbled phenomena.

If there is autocorrelation problem in the error terms, some consequences will happen in the OLS estimators. The OLS estimators are still unbiased which is the mean of estimated parameter is equal to the actual parameter, because it is not influence by variance, it only influence by the sample size. However, the OLS estimators will be inefficient, therefore it is no longer the best, due to the variances is no longer minimum. It may cause all the hypothesis testing become invalid due to the OLS method underestimate or overestimate the variance.

Where, before overcome the autocorrelation problem, it is a must to identify the autocorrelation problem whether it is pure or impure autocorrelation. In order to confirm there is pure autocorrelation, it must be make sure that there is no specification bias in the model which the residual without any patterns. After confirm the autocorrelation problem is pure, there are two methods can be used to overcome it which are Cochrane-Orcutt procedure or Newey-West to adjust the standard errors. If the sample size is large enough, then it is appropriate to use Newey-west to adjust standard errors by using EVeiws to overcome it (Gujarati & Porter, 2009).

The Durbin-Watson (DW) test which published in 1950 and it is possibly the best known serial correlation test. The limitations mentioned that DW statistic cannot be used to estimate the residual autocorrelation when an explanatory variable is a lagged dependent variable in the regression (Levich & Rizzo, 1998). For the sake of overcome

this problem, Durbin (1970) put forward the modification, the h test which under the null hypothesis is approximately normally distributed with unit variance. In addition to avoid several the traps of the DW d test of the autocorrelation, statisticians Breusch and Godfrey have developed a test of autocorrelation that is general in the sense that it allows for random variable, order autoregressive schemes and simple or higher-order moving averages of white noise error terms. The Breush-Godfrey (BG) test also called the Lagrange Multiplier (LM) test (Gujarati & Porter, 2009).

H_0: The model is no autocorrelation.

H_1: The model is autocorrelation.

In significance tests, if the test statistic value is lies in the critical region which means that the test is statistically significant where the null hypothesis will be rejected. Nevertheless, the test will be insignificant if the test statistic value lies in the acceptance region. On the other hand, P-value also acted as another method to determine the significance of hypothesis testing. Reject null hypothesis when P-value less than significant level. Thus, if does not reject the null hypothesis which means that the model is no suffered from autocorrelation.

3.4.7 Specification Bias

Gujarati and Porter (2009) indicated that when the model had omitted the relevant variable(s), include irrelevant variable(s), application of the wrong functional form or having an error of measurement then there have high possibility the specification bias might occurs. If the model exclude important variable, it might bring a much more serious consequences which compare with include unimportant variable into the model.

The consequences will exist if exclude the important variable which the OLS estimators will become biased and inconsistent. However, if unimportant variables had been added into the model, the OLS estimators will still unbiased and consistent. Not only that, no matter the model includes unimportant variables or excludes important variables, the OLS estimators will not having a minimum variance which means that it is no longer the best estimators. Thence, it might make the hypothesis testing become invalid.

In order to ensure that whether the model is correctly specified, the Ramsey's RESET test could be used to investigate it. The problem of specification bias happens when choosing a wrong model. Thus, by obtaining the other form of model such as log-lin model, lin-log model or log-log model can overcome the problem.

H_0: The model specification is correct.
H_1: The model specification is incorrect.

In significance tests, the null hypothesis will be rejected if the test statistic value is lies in the critical region which means that the test is statistically significant. Nevertheless, the test will be insignificant if the test statistic value lies in the acceptance region (Gujarati & Porter, 2009). For this test, the null hypothesis will be rejected if test statistic more than upper critical value. Otherwise, null hypothesis will not be rejected. Moreover, P-value method is also applicable to determine the significance of hypothesis testing. Reject null hypothesis when P-value less than significant level. If the null hypothesis is rejected, the model specification is incorrect.

3.5 Conclusion

This chapter presented the type of data collection method which carries out throughout the study. The proxy, explanation, unit and sources of all the variables were show in table form (Table3.1). Besides, the economic growth in Singapore and the background of EViews are discussed in the section of sampling design. After that, the flows of how the researchers collect data also presented in Figure 3.1 and follow by a detail description. The data analysis of this study had been discussed at the end of this chapter. Meanwhile, the next chapter will convey the data analysis and also carry out a series of test by using the EView 7.

Chapter 4: Data Analysis

4.0 Introduction

The data analysis will be completely present in this chapter. First of all the multiple linear regression and the explanation of Ordinary Least Square (OLS) is presented. Besides, this chapter also indicated the expected relation between the dependent variable and the independent variables which had supported by some strong empirical evidence. Moreover, the EView 7 had been used to carry out a list of test to analysis the data.

4.1 Ordinary Least Square (OLS)

In a linear regression model, Ordinary Least Squares (OLS) is applicable to forecast the unknown parameters. In order to model a recorded single response variable on an interval scale, OLS regression which known as generated linear modeling technique is applicable to do so. The technique can be adopted to single or multiple explanatory variables and also categorical explanatory variables which have been code appropriately (Gujarati & Porter, 2009). The following represents the multiple linear regressions.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_t$$

$$\boldsymbol{log\ \text{GDP}} = \beta_0 + \beta_1 \boldsymbol{log\ GOV} + \beta_2 \boldsymbol{log\ GST} + \beta_3 \boldsymbol{log\ CPI} + \beta_4 \boldsymbol{log\ FDI} + \beta_5 \boldsymbol{log\ EX} + \boldsymbol{\varepsilon_t}$$

Where,
Y = GDP = Gross Domestic Product (Constant price)

X_1 = GOV = Government Expenditure (Total Final Consumption Expenditure)

X_2 = GST = Goods and Services Tax (Current price)

X_3 = CPI = Consumer Price Index (Index 2009 = 100)

X_4 = FDI = Foreign Direct Investment (Singapore BOP)

X_5 = EX = Export (Constant price)

The relationship between Government Expenditure (GOV) and Gross Domestic Product (GDP)

The expected relation between the GOV and GDP in this study is significantly positive. As backed by the research of Moses (2013) and Pham (2009) which had showed that the GOV has brought positive impact towards the GDP. Moreover, there is a significant and positive conjunction between GOV and GDP (Dalamagas, 2000; Menyah & Wolde-Rufael, 2013). They mentioned that this relation is existed in both long and short run. Furthermore, Alshahrani and Alsadiq (2014) justified that there is a positive connection between GOV and GDP is a short run effect. Besides that, Hidayat, Suman and Kaluge (2014) indicated that both of the direct and indirect GOV also significantly positive impact toward the GDP.

The relationship between Goods and Services Tax (GST) and Gross Domestic Product (GDP)

In this study, the expected impact of GST on the GDP is significantly positive. According to Emmanuel (2013), when the rate of GST is increasing at the same time, the rate of GDP will also become higher. Furthermore, Ebiringa and Yadirichukwu (2012) indicated that GST has significantly influence the rate of GDP in the economy. In addition, Moses (2013) stated that GST is significantly positive influence the GDP in Nigeria. The positive impact of GST towards the GDP was also supported by the research of Stephen (2013). Stephen (2013) had showed that GST is a factor to diversify the revenue sources of government. Thereby it would contribute the growth of economy. Besides that, the researcher has disclosed that GST had raised the growth of economic in the country. As mentioned by Jalata (2014), the economy of Ethiopia is highly supported by GST.

The relationship between Consumer Price Index (CPI) and Gross Domestic Product (GDP)

According to the past empirical studies, the inflation and GDP is expected to have a negative relationship. As supported by Hefer (1989), when the country's price of goods and services increase and the currency value depreciate, then the inflation is going to happen in that particular country. Hence, consumers will head for less in spending and this behavior will affect the growth of economic negatively which means that it will slow down the progress rate of economic. Therefore, this study expects that the inflation will bring negative impact to GDP. As supported by Caglayan, Kandemir and Mouratidis (2012), the rate of inflation will influence the real GDP negatively. In addition, Kasidi and Mwakanemela (2013) also supported that the inflation would bring a negative impact toward the GDP. In other words, the rise of inflation rate might decelerate the growth of economic. In addition, the researcher, Inyiama (2013) had also investigated that the inflation and GDP has negative correlation.

The relationship between Foreign Direct Investment (FDI) and Gross Domestic Product (GDP)

Based on the past studies, the researchers expected that there are positive relation between FDI and GDP. This is because for every country's economic growth is depends on the investments which are by increasing in assets and infrastructure. Additionally, when FDI increase it will also increase the GDP of the country. Iqbal, Ahmad, Haider and Anwar (2014) were supported that the relation between FDI and GDP is positively significant in the past decades. Besides, GuechHeang and Moolio (2013) also stated that there is a significantly positive relation between FDI and GDP in the long run. In addition, FDI has influence the GDP positively which this statement is supported by Sandalcilar and Altiner (2012).

The relationship between Export (EX) and Gross Domestic Product (GDP)

In this study, the expected relationship that has been found is positive and significant. EX is an activity by selling more goods and services which consequently it will helps an economy to grow. Export is an activity that every country will adopt no matter is a developed or developing country. This statement has been supported by Abou-Stait (2005). He justified that EX will lead to a significant and positive response in GDP. In his research, he also mentioned that exports of goods remain as one of the important source to enhance the growth of economic. As the researcher investigated that, EX have influence the GDP positively and significantly (Al-Yousif, 1997).

On the other hand, Sahoo et al. (2014) also determined that both mining export an index of production to be positive significant determinant of GDP. A larger volume of EX can speed up the GDP and the forwarding of EX has been one of the most significant duties in economic policy (Datsaki & Stiakakis, 2014). Ray (2012) discovered that EX and GDP are important for a country. In the normalization of the long run equation, EX brings

positive impact on the economy throughout the period (Ismail, Zaman, Atif, Jadoon & Seemab, 2010).

Econometric Model: *(Please refer to Appendix: Table I)*

$$\widehat{log\ GDP} = 0.385058 + 0.032263\ log\ GOV + 0.036921\ log\ GST + 0.766567\ log\ CPI + 0.021193\ log\ FDI + 0.571402\ log\ EX$$

SE = 0.011474 0.013862 0.056643 0.004546 0.035098

t stat = 2.811813 2.663373 13.53337 4.661564 16.28009

Prob. (t-test) = 0.0075 0.0109 0.0000 0.0000 0.0000

F stat = 1541.640

Prob. (F-test) = 0.0000

R^2 = 0.994581 $\bar{R}^2$ = 0.993936

Where,

Y = GDP = Gross Domestic Product (Constant price)

X_1 = GOV = Government Expenditure (Total Final Consumption Expenditure)

X_2 = GST = Goods and Services Tax (Current price)

X_3 = CPI = Consumer Price Index (Index 2009 = 100)

X_4 = FDI = Foreign Direct Investment (Singapore BOP)

X_5 = EX = Export (Constant price)

Time period, *t* = Quarter 1, 2003 – Quarter 4, 2014

Interpretation:

$\hat{\beta}_0$ = $\mathbf{0.385058}$. Given that there has no GOV, GST, CPI, FDI and EX, the estimated GDP in Singapore is $\mathbf{0.385058}$.

$\hat{\beta}_1$ = $\mathbf{0.032263}$. If the GOV in Singapore increases by 1 percentage, the estimated GDP in Singapore will increase by $\mathbf{0.032263}$ percentage, holding other variables constant.

$\hat{\beta}_2$ = $\mathbf{0.036921}$. If the GST in Singapore increases by 1 percentage, the estimated GDP in Singapore will increase by $\mathbf{0.036921}$ percentage, holding other variables constant.

$\hat{\beta}_3$ = $\mathbf{0.766567}$. If the CPI in Singapore increases by 1 percentage, the estimated GDP in Singapore will increase by $\mathbf{0.766567}$ percentage, holding other variables constant.

$\hat{\beta}_4$ = $\mathbf{0.021193}$. If the FDI in Singapore increases by 1 percentage, the estimated GDP in Singapore will increase by $\mathbf{0.021193}$ percentage, holding other variables constant.

$\hat{\beta}_5$ = $\mathbf{0.571402}$. If the EX in Singapore increases by 1 percentage, the estimated GDP in Singapore will increase by $\mathbf{0.571402}$ percentage, holding other variables constant.

R^2 = **0.994581**. There are **99.46%** of the GDP in Singapore is explained by the GOV, GST, CPI, FDI and EX.

$\bar{R}^2$ = **0.993936**. There is **99.39%** of the GDP in Singapore is explained by the GOV, GST, CPI, FDI and EX, after the degree of freedom is taken into account.

Correlation Analysis:

	LOG(GOV)	LOG(GST)	LOG(CPI)	LOG(FDI)	LOG(EX)
LOG(GOV)	1.000000	0.452448	0.559799	0.301446	0.503824
LOG(GST)	0.452448	1.000000	0.879623	0.461556	0.913122
LOG(CPI)	0.559799	0.879623	1.000000	0.506892	0.870137
LOG(FDI)	0.301446	0.461556	0.506892	1.000000	0.566126
LOG(EX)	0.503824	0.913122	0.870137	0.566126	1.000000

Coefficient of correlation(r_{X_i, X_j}) , where i = 1, 2, 3, 4, 5 & j = 1, 2, 3, 4, 5

(I) Relationship between GOV and GST

(r_{X_1, X_2}) = **0.452448**. It indicates that the correlation between GOV and GST is **0.452448**. There is a positive correlation between GOV and GST. Therefore, GOV and GST have positive relationship.

(II) Relationship between GOV and CPI

(r_{X_1, X_3}) = **0.559799**. It indicates that the correlation between GOV and CPI is **0.559799.** There is a positive correlation between GOV and CPI. Therefore, GOV and CPI have positive relationship.

(III) Relationship between GOV and FDI

(r_{X_1, X_4}) = **0.301446**. It indicates that the correlation between GOV and FDI is **0.301446**. There is a positive correlation between GOV and FDI. Therefore GOV and FDI have positive relationship.

(IV) Relationship between GOV and EX

(r_{X_1,X_5}) = **0.503824**. It indicates that the correlation between GOV and EX is **0.503824**. There is a positive correlation between GOV and EX. Therefore GOV and EX has positive relationship.

(V) Relationship between GST and CPI

(r_{X_2,X_3}) = **0.879623**. It indicates that the correlation between GST and CPI is **0.879623**. There is a positive correlation between GST and CPI. Therefore, GST and CPI has positive relationship.

(VI) Relationship between GST and FDI

(r_{X_2,X_4}) = **0.461556**. It indicates that the correlation between GST and FDI is **0.461556**. There is a positive correlation between GST and FDI. Therefore, GST and FDI has positive relationship.

(VII) Relationship between GST and EX

(r_{X_2,X_5}) = **0.913122**. It indicates that the correlation between GST and EX is **0.913122**. There is a positive correlation between GST and EX. Therefore, GST and EX has positive relationship.

(VIII) Relationship between CPI and FDI

(r_{X_3,X_4}) = **0.506892**. It indicates that the correlation between CPI and FDI is **0.506892**. There is a positive correlation between CPI and FDI. Therefore, CPI and FDI have positive relationship.

(X) Relationship between CPI and EX

(r_{X_3, X_5}) = **0.870137**. It indicates that the correlation between CPI and EX is **0.870137**. There is a positive correlation between CPI and EX. Therefore, CPI and EX has positive relationship.

(XI) Relationship between FDI and EX

(r_{X_4, X_5}) = **0.566126**. It indicates that the correlation between FDI and EX is **0.566126**. There is a positive correlation between FDI and EX. Therefore, FDI and EX has positive relationship.

4.1.1 F-test *(Please refer to Appendix: Table I)*

$\boldsymbol{H_0}$: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$

$\boldsymbol{H_1}$: At least one of the β_i is different from zero, where *i* = 1, 2, 3, 4, 5

$\propto$ = 0.05

Decision Rule: Reject H_0, if P-value less than significant level at 0.05. Otherwise, do not reject H_0.

P-value = 0.0000

Decision Making: Reject H_0, since P-value is 0.0000 which it is less than significant level at 0.05.

Conclusion: There is sufficient and adequate evidence to conclude that the whole model is significant.

4.1.2 T-test *(Please refer to Appendix: Table I)*

Relationship between Gross Domestic Product growth (GDP) and Government Expenditure (GOV):

$\boldsymbol{H_0}$: $\beta_1 = 0$

$\boldsymbol{H_1}$: $\beta_1 \neq 0$

$\propto = 0.05$

Decision Rule: Reject H_0, if P-value less than significant level at 0.05. Otherwise, do not reject H_0.

P-value = 0.0075

Decision Making: Reject H_0, since P-value is 0.0075 which it is less than significant level at 0.05.

Conclusion: There is sufficient and adequate evidence to conclude that relation between GDP and GOV is significant. Thus, there is a positive relationship between them.

Relationship between Gross Domestic Product growth (GDP) and Goods and Services Tax (GST):

$\boldsymbol{H_0}$: $\beta_2 = 0$

$\boldsymbol{H_1}$: $\beta_2 \neq 0$

$\propto = 0.05$

Decision Rule: Reject H_0, if P-value less than significant level at 0.05. Otherwise, do not reject H_0.

P-value = 0.0109

Decision Making: Reject H_0, since P-value is 0.0109 which it is less than significant level at 0.05.

Conclusion: There is sufficient and adequate evidence to conclude that the relation between GDP and GST is significant. Thus, there is a positive relationship between them.

Relationship between Gross Domestic Product growth (GDP) and Consumer Price Index (CPI):

$\boldsymbol{H_0}$: $\beta_3 = 0$

$\boldsymbol{H_1}$: $\beta_3 \neq 0$

$\propto = 0.05$

Decision Rule: Reject H_0, if P-value less than significant level at 0.05. Otherwise, do not reject H_0.

P-value = 0.0000

Decision Making: Reject H_0, since P-value is 0.0000 which it is less than significant level at 0.05.

Conclusion: There is sufficient and adequate evidence to conclude that the relation between GDP and CPI is significant. Thus, there is a positive relationship between them.

Relationship between Gross Domestic Product growth (GDP) and Foreign Direct Investment (FDI):

$\boldsymbol{H_0}$: $\beta_4 = 0$

$\boldsymbol{H_1}$: $\beta_4 \neq 0$

$\propto = 0.05$

Decision Rule: Reject H_0, if P-value less than significant level at 0.05. Otherwise, do not reject H_0.

P-value = 0.0000

Decision Making: Reject H_0, since P-value is 0.0000 which it is less than significant level at 0.05.

Conclusion: There is sufficient and adequate evidence to conclude that the relation between GDP and FDI is significant. Thus, there is a positive relationship exist between them.

Relationship between Gross Domestic Product growth (GDP) and Export (EX):

$\boldsymbol{H_0}$: $\beta_5 = 0$

$\boldsymbol{H_1}$: $\beta_5 \neq 0$

$\propto = 0.05$

Decision Rule: Reject H_0, if P-value less than significant level at 0.05. Otherwise, do not reject H_0.

P-value = 0.0000

Decision Making: Reject H_0, since P-value is 0.0000 which it is less than significant level at 0.05.

Conclusion: There is sufficient and adequate evidence to conclude that the relation between GDP and EX is significant. Thus, a positive relationship is existed between them.

4.1.3 Normality Test *(Please refer to Appendix: Graph I)*

$\boldsymbol{H_0}$: Error terms are normality distributed.

$\boldsymbol{H_1}$: Error terms are not normality distributed.

$\propto = 0.05$

Decision Rule: Reject H_0, if P-value less than significant level at 0.05. Otherwise, do not reject H_0.

P-value = 0.552252

Decision Making: Do not reject H_0, since P-value is 0.552252 which it is more than significant level at 0.05.

Conclusion: There is insufficient evidence to conclude that the error terms are not normality distributed. In other words, the error terms are normality distributed.

4.1.4 Multicollinearity *(Please refer to Appendix: Table II)*

From the result, it shows that the coefficient of determination (R^2) is 0.994581. It can consider that the overall regression is fit into the data. In other words, there are 99.46% of the changes in GDP is explained by the changes in GOV, GST, CPI, FDI and EX in Singapore. Besides, the overall model is significant whereby it can be seen from the result, the P-value is 0.0000 which is less than significant level at 0.05. From these results, this study can be concluded that all of the independent variables are significant to GDP. These had shown us that there is no multicollinearity in the model, because most of the t tests are significant. It is also consistent with the F- test.

By using Variance-Inflating Factor (VIF): *(Please refer to Appendix: Table II)*

$$\text{VIF} = \frac{1}{1-\text{R}^2_{\text{GOV}}} = \frac{1}{1-0.333220} = 1.499745$$

$$\text{VIF} = \frac{1}{1-\text{R}^2_{\text{GST}}} = \frac{1}{1-0.872523} = 7.844552$$

$$VIF = \frac{1}{1-R^2_{CPI}} = \frac{1}{1-0.824204} = 5.688412$$

$$VIF = \frac{1}{1-R^2_{FDI}} = \frac{1}{1-0.348335} = 1.534531$$

$$VIF = \frac{1}{1-R^2_{EX}} = \frac{1}{1-0.873677} = 7.916215$$

The calculation above shows that is mutlicollinearity happen in this model, however it is not that serious. This is due to the VIF of each pair independent variable is less than 10. Therefore, we are able to process to another diagnostic test.

4.1.5 Heteroscedasticity *(Please refer to Appendix: Table III)*

ρ	P-value	AIC	SIC	Conclusion
1	0.0918	-13.53984	-13.46111	Homoscedasticity
2	0.1856	-13.48764	-13.36839	Homoscedasticity
3	0.2757	-13.44150	-13.28090	Homoscedasticity
4	0.2139	-13.44247	-13.23972	Homoscedasticity
5	0.3269	-13.38627	-13.14052	Homoscedasticity

H_0: The model is homoscedasticity.

H_1: The model is heteroscedasticity.

$\propto = 0.05$

Decision Rule: Reject H_0 if P-value is less than significant level at 0.05. Otherwise, do not reject H_0.

P-value: 0.0918

Decision Making: Do not reject H_0 since the P-value is 0.0918 which is more than significant level of 0.05.

Conclusion: There is insufficient evidence to conclude that the model is heteroscedasticity which also means that the model is homoscedasticity.

4.1.6 Autocorrelation *(Please refer to Appendix: Table IV)*

ρ	P-value	AIC	SIC	Conclusion
1	0.1327	-5.274815	-5.001931	No autocorrelation
2	0.2109	-5.251952	-4.940086	No autocorrelation
3	0.3719	-5.210694	-4.859844	No autocorrelation
4	0.4982	-5.174340	-4.784506	No autocorrelation
5	0.1508	-5.244750	-4.815933	No autocorrelation

H_0: The model is no autocorrelation.

H_1: The model is autocorrelation.

$\propto = 0.05$

Decision Rule: Reject H_0 if P-value is less than significant level at 0.05. Otherwise, do not reject H_0.

P-value: 0.1327

Decision Making: Do not reject H_0 since the P-value is 0.1327 which is more than significant level of 0.05.

Conclusion: There is insufficient evidence to conclude that the model is autocorrelation. Thence, the model is no autocorrelation.

4.1.7 Specification Bias *(Please refer to Appendix: Table V)*

ρ	P-value	AIC	SIC	Conclusion
1	0.6433	-5.231877	-4.958994	No specification bias
2	0.1411	-5.282844	-4.970977	No specification bias

H_0: The model specification is correct.

H_1: The model specification is incorrect.

$\propto = 0.05$

Decision Rule: Reject H_0 if P-value is less than significant level at 0.05. Otherwise, do not reject H_0.

P-value: 0.1411

Decision Making: Do not reject H_0 since the P-value is 0.1411 which is more than significant level of 0.05.

Conclusion: There is insufficient evidence to conclude that the model specification is incorrect. Therefore, the model specification is correct.

4.2 Conclusion

The beginning of this chapter had presented the explanations of Ordinary Least Square (OLS). Besides, this chapter also delivered the prospective relation between the GDP and the independent variables, such as GOV, GST, CPI, FDI, and EX individually. Assuredly, those expected relationship was supported by the past empirical evidence. This study had used EView 7 to compute and analysis a list of test where most of the results and opinions are in accordance and tally with the past researches. Yet, there are one variable showed a conflict result with the expected relationship. Thus, the next chapter will present the further explanation on this conflict.

Chapter 5: Discussion, Conclusion and Implication

5.0 Introduction

This chapter will first present the statistical analyses and followed by a detail discussion on the major findings. This is used to verify the divergence between the expected relation and hypotheses statistical result. In addition, this chapter will also present the implication of study that is practically significance for policy makers and practitioners. The limitations of the study discussed in this chapter are the problem encountered during the progress of the research. This chapter will come out some of the recommendations and suggestions for the future researchers.

5.1 Statistical Analyses

Table 5.1: The expected and statistical result

Test	Result	Expected Relation	Major Findings
GDP and GOV	Positive significant	Positive	Dalamagas, (2000); Menyah and Wolde-Rufael (2013); Alshahrami and Alsadiq (2014); Moses (2013), Pham (2009); Hidayat, Suman and Kaluge (2014)
GDP and GST	Positive significant	Positive	Emmanuel (2013); Moses (2013); Chigbu and Ali (2014); Ediringa and Yadirichukwu (2012); Jalata (2014)

GDP and CPI	Positive significant	Negative	Hidayat, Suman and Kalude (2014); Umaru and Zubairu (2012); Umaru, Donga and Musa (2013); Caglayan, Kandemir and Mouratidis (2012)
GDP and FDI	Positive significant	Positive	Muritala (2011); Sandalcilar & Altiner (2012); GuechHeang and Moolio (2013); Ekanayake & Ledgerwood (2010); Iqbal, Ahmad, Haider and Anwar (2014)
GDP and EX	Positive significant	Positive	Chemeda (2001); Ugochukwu and Chinyere (2013); Al-Yousif (1997); Ahmed, Hoque and Jobaer (2013)

5.2 Major Finding

5.2.1 Government Expenditure

The study showed a positive result between GOV and GDP. According to Menyah & Wolde-Rufael (2013), in both long and short run, GOV has significantly brings a positive impact towards the GDP. Dandan (2011) also found that the Keynesian Theory can be fully used to explain the causality relationship between GOV and GDP. The Keynesian Theory had stated that increasing in GOV will lead to growth of economic. GOV had a positive short-run effect on production which it had been also mentioned by Alshahrani and Alsadiq (2014). Moreover, Attari and Javed (2013) justified that the existence between the GDP and GOV in the long relationship.

From the research of Jiranyakul (2013) which proved that GOV has brings a positive impact towards the GDP. The result also supported by the Keynesian approach which prescribes that the causality runs from GOV to GDP. Furthermore, from the perspective of Alexiou (2009) and Srinivasan (2013) they also stated that there is a positively significant effect between GOV and GDP which might enhance the economic performance of a nation. According to Al Bataineh (2012), the researcher also found that at the aggregate level the GOV has brings a positive impact towards the growth of GDP which is the concept is consistent with the Keynesians theory. It showed that when there is an increase in government expenditure, it will increase the employment rate in public sector as well. When there are more people in public sector, they can produce more goods and services that needed by government where it will contribute profit for the firms. Eventually it will boost up the economic growth.

5.2.2 Good and Services Tax

The statistical result indicated that there is a positive relation between the GST and GDP. According to Stephen (2013), GST act as one of the revenue of government, it assists the government to diversify their sources of revenue, in order to ensure that the government has enough funds for development. Besides that, there is another researcher supported that the statement of GST has influence the GDP positively. Thence, the researcher has investigated that GST enhanced the country's GDP. For instance, the economy of Ethiopia is one of the examples, which their economy is highly supported by GST (Jalata, 2014). According to Emmanuel (2013), GST has a significant effect on GDP. This also means that by increasing the rate of GST, the GDP will increase significantly. GST is also greatly significant to influence the total government's tax revenue and GDP expansion.

As mentioned by Onwuchekwa and Aruwa (2014), there is a significant relation between the changes of GST and GDP. Furthermore, Moses (2013) had stated that the value of GST has brings a positive impact towards the GDP. In order to attain the economy to be

developed, GST is actually plays a crucial role. Khan and Shadab (n.d) stated that GST is a further significant improvement towards a comprehensive of tax reform. Eventually, in the fiscal history, it has the potential to become the important initiative to enhance the GDP. It also could build up a path for tax administration's modernization by modelling it to be a transparent, simpler and significant compliance. GST is a replacement of other tax, thus the price for certain goods and services might be lower. Consequently, it might lead to a more competitive pricing that will increase the GDP.

5.2.3 Consumer Price Index

Some of the past researchers discovered that the relation between inflation and GDP is positive, yet most of the past researchers supported that the inflation would influence the GDP negatively. Nevertheless, the statistical result in this study showed an inconsistent outcome with majority researches in the past which they are positively correlated. According to Hidayat, Suman and Kalude (2014), inflation has positively influence the GDP. Therefore, there is a positive relation existed between CPI and GDP. In addition, inflation possessed a positive effect on GDP (Umaru & Zubairu, 2012). In further explanation, Umaru, Donga and Musa (2013) supported that there is a positive relationship between inflation and GDP. From the perspective of Mallik and Chowdhury (2001), inflation and GDP are positively correlated. Moreover, they had mentioned that the sensitivity of inflation to the changes in the rates of GDP is much larger than the sensitivity of GDP to the change of inflation rates.

Hussain and Malik (2011) verified that the inflation and GDP is actually positive related to each other. The researchers justified their result by the proven of Tobin portfolio-shift effect, in other words, when there is inflation happen, people will tend to invest more in physical capital rather than spending or saving. Moreover, during inflation, the currency value will depreciate and it will encourage more foreign investors to set up factory in that particular country for the purpose of reducing cost of production. Meanwhile, the foreign

investors are injecting money into the country. Thus, it might boost up the country's economy.

5.2.4 Foreign Direct Investment

In this study, the relationship that formed between FDI and GDP is a positive relationship. This statement has been supported by GuechHeang and Moolio (2013) whereby they proved that in long run, there is a positive correlated between growth rate of FDI and GDP. There have some researchers found that GDP has greater influence by FDI when compared to other factors (Gyebi, Owusu & Etroo, 2013). Besides that, Abbas et al. (2011) investigated that positive relation existed between FDI and GDP. They mentioned that the relation between FDI and GDP is significantly positive. As mentioned by Moghaddam and Redzuan (2012), the increasing of FDI inflows would positively influence the GDP in the country. When the FDI inflows increased significantly, it does exert an impact on the development of economic as the movement of FDI is under the influence of globalization (Carp, 2013).

Moreover, the positive effect was also found by Olusanya (2013) when there is an inflow of FDI into economy. This is due to FDI has become an important source of capital contribution for many countries especially for the developing countries. As it is a long lasting management investment for the business operation. In the research of Szkorupova (2014), the researcher discovered that FDI is a positive force in order to enhance the growth of economy. Thus the FDI will significantly influence the GDP positively. In other word to explain the positive relationship between the FDI and GDP is that when there is more foreign company set up their business in the country, the demand of home currency will increase and simultaneously the value of home currency will also increase. Correspondingly the economic growth of a country will grow.

5.2.5 Export

The statistical result that has been investigated in this study showed a positive relation between GDP and EX. Since export plays an important role and it acts as an instrument for the development of economic growth (Pandhi, 2007). It has been proved by the researchers such as Zaheer, Khattak, Ashar and Khanzaib (2014). They investigated that EX have significant relationship with GDP. Not only that, there are also an empirical result indicated that EX bring a significantly positive effect towards the GDP (Al-Yousif, 1997). Besides that, Ahmed, Hoque and Jobaer (2013) also supported that the impact of EX on GDP that has been found is positive.

In addition, the result from Ugochukwu and Chinyere (2013) proved that EX is actually positively and significantly impacted on the GDP. Through the research of Ismail, Zaman, et al. (2010), they verified that the relationship between GDP and EX is positive. Not only that, Elbeydi, Hamuda and Gazda (2010) also discovered that during the long-run and short-run, EX also contributed a positive influence towards the GDP. The idea is also the same with Mofrad (2012), as the researcher determined that the existence between EX and GDP is positive and significant. This means that when there is an EX, there will be an ability to offer and sell goods thence the country has the possibility of demanding and supplying goods which would contribute the growth of economic.

5.3 Implication of Study

The finding in this study showed that economic growth of a country is positively influence by the independent variables which are government expenditure, goods and services tax, consumer price index, foreign direct investment and exports of the country. The result of this study would contribute greatly to the various sectors as follows:

5.3.1 Government

The growth of economy will be enhancing if the nation have implemented a good institution and economic reforms (Polard, Piffault & Shackman, 2012). In order to increase the economic growth, this study can be used as a reference for government to take control on the expenditure to accelerate economic growth. Although the government expenditure has only a small portion of contribution, it also leads the economy to grow (Hsieh & Lai, 1994).

There are several researches proved that taxation as GST is an instrument for the economic growth in a country and assist government to appropriately redistribute income in the economy (Ihenyen & Mieseigha, 2014). Emmanuel (2013) has stated that there is an impact of GST on the economic growth, which able to raise the consciousness of government in order to enhance the utility and the performance of GST system.

Moreover, through referring the result of inflation in this study, there is a positive relation between inflation and economic growth. Thence, the inflation would bring a positive effect to the growth of economy if the nation's inflation rate is relative small which is below 10% (Hidayat, Suman & Kalude, 2014). Thus, government can enhance the economic growth by control the inflation rate to increase constantly gradual and below a certain level to achieve sustainable economic development (Ayyoub, Chaudhry & Farooq, 2011).

The major findings of this study stated that the economic growth of the nation could be increase by attracting more foreign direct investment inflows. There is some suggestion for government to increase the effectiveness of the implementation of laws and regulations, resist corruption, and improve institutional frameworks (GuechHeang & Moolio, 2013). In additional, this study indicated that exports has positive effect toward economic growth of the nation, the government should pay more awareness to enhance their export products and improve their competitiveness in the international market (Riaz, 2010).

5.3.2 Policy maker

According to the findings in this paper, policy maker should make sure that government expenditure emphasize on shaping country's future without wasting the unnecessary resources. In addition, this study would help the policy maker to examine the ability of the current policy. By weighting the current policy's strength to achieve their targeted results of influence towards the results they want to achieve (Dalamagas, 2000). Besides, this study also assist policy maker in policy formulation of GST (Moses, 2013) and enhance administration of GST (Afolayan & Okoli, 2015) which as approaches to broaden the revenues of the nation.

The effect of inflation toward economic growth in this study is not consistent with policy recommended by international agencies, to boost the economic growth the inflation has to minimize at a very low degree. Although increase the inflation is an effective approach to faster the growth of economy, rather than grow the economy consistence with a stable inflation Nonetheless, the intention to attain the rapid growth of economic may overheat the country's inflation which cause the economy of the country becomes unstable (Hussain & Malik, 2011).

Foreign direct investment, exports and economic growth are importance and draw the attention among policy makers and researchers (Ray, 2012). The findings in this study had showed more clear evidence in the relation of foreign direct investment and economic growth. In order to enhance the economic growth, policy maker should base on the evidence to make some adjustment on the provision of law. For examples, increase the subsidies on foreign direct investment, it would encourage the foreign investors to set up their business in that country. Therefore, to remove unsuitable guidelines for the law on foreign direct investment, periodic amendment on the provision of law is required (Thai, 2005).

Moreover, this study proves that the theory of export-led growth is existed in the economy. Basically, exports influence the economic growth positively. Therefore, the policy maker should endure ameliorate on investment climate in order to enhance the countries' abilities thus it able to respond to the export market opportunities. Besides, it could help to convergence the trade performances of the countries with different levels of market access (Seker, 2011).

5.3.3 Macroeconomists

This study is significant to macroeconomists as they are necessary to assess the responsiveness of economic growth to the events of the nation. The results of government expenditure, goods and services tax, foreign direct investment and exports is comply with most of the previous researches' result, therefore that this study could be used as a reference for economists to come out with the relevant policies so as to stimulate grow on the economy.

Besides that, macroeconomists also require the understanding of the effect for the changes in price level toward the economic growth in the country. However, the positive influence of inflation on the economic growth is only comply with the logic of some economists, there are also other researches stated that inflation does have real consequences for other macroeconomic variable which have adverse effect on nation's growth rate (Datta & Mukhopadhyay, 2011). Despite of this, most of the researches agree that the inflation have to control below a certain level. Thus, this study brings economists attention to the movement and the level of inflation.

5.4 Limitation

In this study, the researchers are suffered from a few limitations. The researchers are suffered from the limitation in obtaining large sample of data. In year 1994 Singapore started to implements the GST. Thence the annual data for the percentage of GST that available in Data Stream is only from year 1994 to year 2013 which the observation is less than 30. As a result, the researchers tend to concern on the GST revenue data which covered from the 1st quarter of year 2003 to 4th quarter of year 2014, that consist of 48 observations instead of obtaining the percentage of GST data. This is because the small sample size data might cause the process of estimate and analysis data become difficult which might affect the evidence of this study.

In addition, there is limited journal can be found to support the result. For instance, most of the journal in the past were proves that the inflation and economic growth is significantly negative correlated. However, the result in this study showed a positive relationship which it is just supported by limited empirical researches that investigated the same evidence. Besides, most of the authors found that goods and services tax has less impact on the growth of economic, whereby majority of them mentioned that economic growth is one of the factor that bring impact to goods and services tax revenue. The inadequate journals might affect the evidence of this study.

Furthermore, there is another limitation that occurred in this study. Due to the insufficient time consume which is just allowed the researchers to focus in one country. Therefore, this study is conducted by using the time series approach which is only concern in between year 2003 to year 2014 in Singapore. Based on the Centre Limit Theorem, the sample size of this study is considered large enough, so that the result is accurate and applicable. However, this study might just capable to be executing by the Singapore governance but it might not appropriate to implement by other countries. The reason behind is due to different countries have different economy circumstances.

5.5 Recommendations

Future researchers shall investigate by retrieve more data from some other sources instead of using one source. Since some of the data are not available in Data Stream but it might be available in other sources. In order to construct a more accurate research it is advisable to increasing the sample size. For example, future researchers can access data from International Monetary Fund (IMF), Organization De Cooperation Et De Development Economiques (OECD) and others.

The journals provided in UTAR online library's E-Resources and Ebscohost might not enough to support the research. In order to seek more empirical evidence, the researchers cannot just look for one source. For instance, Google Scholar and The Edge will be another access that can be used to retrieve more journals, although some of them provided priced journals. By retrieving more journals it might able to improve the research's evidence as well as its accuracy level.

On the other hand, the future researchers are strongly recommended to conduct similar research which need to include others countries' data. By comparing different countries' economic conditions, the result of the research would be more appropriate to be use by other countries as a reference. This would effectively help the governance to determine the significant factors that might bring impact to the economic growth. They are able to reduce the uncertainty of the economic movement and thus they can improve their policy to ensure that the economy have a gradual development.

5.6 Conclusion

According to the study, the major finding in this chapter illustrated that government expenditure (GOV), goods and services tax (GST), inflation (CPI), foreign direct investment (FDI) and export (EX) have the positive relationship towards gross domestic product (GDP). In addition, government, policy maker and macroeconomists play an important role in raising the economic growth, which emphasis on shaping the country's future and evaluate the economic growth respond to events of the country. Besides, researchers have stated some limitation that faced during the progress of the research. For instance, the sample size of the data is consider small, limitation of the journals and insufficient time consume thus the study is just concern within the year from 2003 to 2014 in Singapore. Based on the limitation, the researchers have provides several recommendations in order to overcome the limitations.

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Appendix:

Table I: *(Original Model)*

Dependent Variable: LOG(GDP)

Method: Least Squares

Date: 08/31/15 Time: 14:56

Sample: 2003Q1 2014Q4

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	0.032263	0.011474	2.811813	0.0075
LOG(GST)	0.036921	0.013862	2.663373	0.0109
LOG(CPI)	0.766567	0.056643	13.53337	0.0000
LOG(FDI)	0.021193	0.004546	4.661564	0.0000
LOG(EX)	0.571402	0.035098	16.28009	0.0000
C	0.385058	0.303659	1.268061	0.2118

R-squared	0.994581	Mean dependent var	11.17788
Adjusted R-squared	0.993936	S.D. dependent var	0.210423
S.E. of regression	0.016387	Akaike info criterion	-5.268248
Sum squared resid	0.011278	Schwarz criterion	-5.034348
Log likelihood	132.4380	Hannan-Quinn criter.	-5.179857
F-statistic	1541.640	Durbin-Watson stat	1.580922
Prob(F-statistic)	0.000000		

Graph I: *(Normality Distributed)*

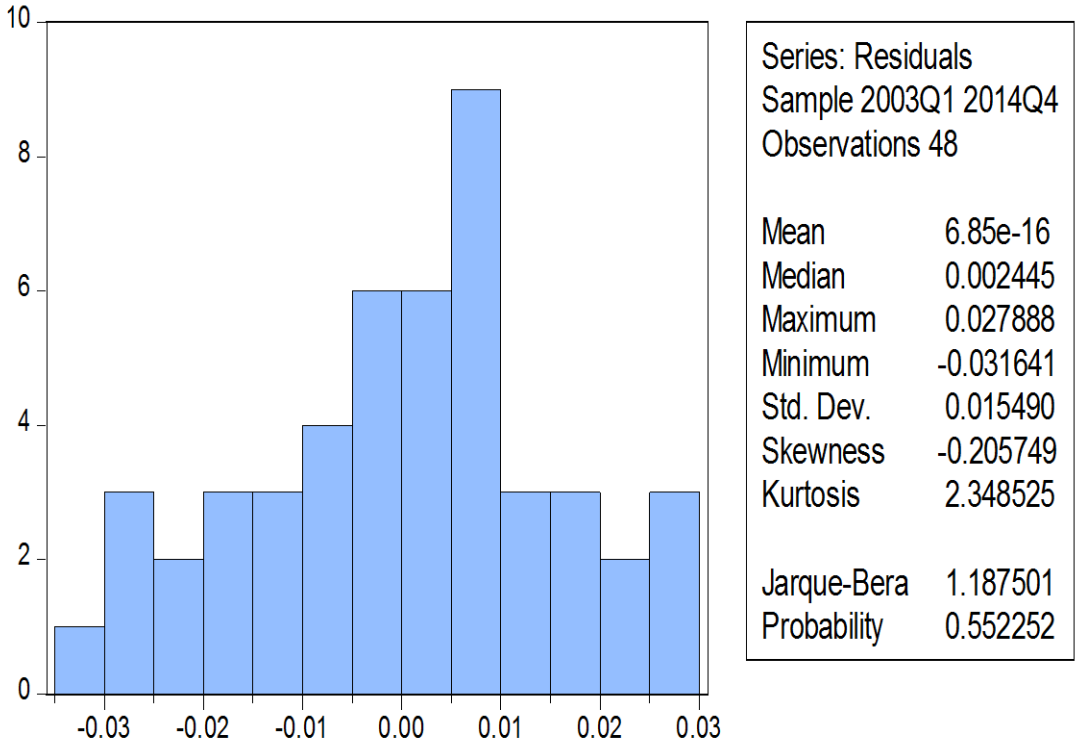

Table II: *(Multicollinearity)*

Dependent Variable: LOG(GOV)

Method: Least Squares

Date: 08/31/15 Time: 15:14

Sample: 2003Q1 2014Q4

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GST)	-0.198879	0.181728	-1.094374	0.2799
LOG(CPI)	1.604428	0.711958	2.253543	0.0294
LOG(FDI)	-0.007884	0.060413	-0.130502	0.8968
LOG(EX)	0.410385	0.462267	0.887766	0.3796
C	-1.516252	4.029245	-0.376312	0.7085

R-squared	0.333220	Mean dependent var	8.861407
Adjusted R-squared	0.271193	S.D. dependent var	0.255113
S.E. of regression	0.217790	Akaike info criterion	-0.112238
Sum squared resid	2.039598	Schwarz criterion	0.082679
Log likelihood	7.693711	Hannan-Quinn criter.	-0.038579
F-statistic	5.372248	Durbin-Watson stat	2.627543
Prob(F-statistic)	0.001341		

Dependent Variable: LOG(GST)

Method: Least Squares

Date: 08/31/15 Time: 15:23

Sample: 2003Q1 2014Q4

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	-0.136252	0.124502	-1.094374	0.2799
LOG(CPI)	1.878516	0.553367	3.394699	0.0015
LOG(FDI)	-0.065272	0.049014	-1.331689	0.1900
LOG(EX)	1.659877	0.291563	5.693028	0.0000
C	-18.50497	1.787611	-10.35179	0.0000

R-squared	0.872523	Mean dependent var	7.287624
Adjusted R-squared	0.860665	S.D. dependent var	0.482931
S.E. of regression	0.180267	Akaike info criterion	-0.490426
Sum squared resid	1.397333	Schwarz criterion	-0.295509
Log likelihood	16.77021	Hannan-Quinn criter.	-0.416766
F-statistic	73.57905	Durbin-Watson stat	2.186430
Prob(F-statistic)	0.000000		

Dependent Variable: LOG(CPI)

Method: Least Squares

Date: 08/31/15 Time: 15:24

Sample: 2003Q1 2014Q4

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	0.065836	0.029214	2.253543	0.0294
LOG(GST)	0.112512	0.033144	3.394699	0.0015
LOG(FDI)	0.009434	0.012155	0.776099	0.4419
LOG(EX)	0.135795	0.092198	1.472864	0.1481
C	1.384306	0.789812	1.752703	0.0868

R-squared	0.824204	Mean dependent var	4.451066
Adjusted R-squared	0.807851	S.D. dependent var	0.100644
S.E. of regression	0.044117	Akaike info criterion	-3.305600
Sum squared resid	0.083692	Schwarz criterion	-3.110683
Log likelihood	84.33440	Hannan-Quinn criter.	-3.231941
F-statistic	50.40060	Durbin-Watson stat	0.551145
Prob(F-statistic)	0.000000		

Dependent Variable: LOG(FDI)

Method: Least Squares

Date: 08/31/15 Time: 15:25

Sample: 2003Q1 2014Q4

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	-0.050216	0.384792	-0.130502	0.8968
LOG(GST)	-0.606822	0.455678	-1.331689	0.1900
LOG(CPI)	1.464328	1.886779	0.776099	0.4419
LOG(EX)	2.685231	1.103777	2.432766	0.0192
C	-23.41210	9.539286	-2.454282	0.0182

R-squared	0.348335	Mean dependent var	9.381197
Adjusted R-squared	0.287715	S.D. dependent var	0.651264
S.E. of regression	0.549647	Akaike info criterion	1.739253
Sum squared resid	12.99083	Schwarz criterion	1.934170
Log likelihood	-36.74207	Hannan-Quinn criter.	1.812912
F-statistic	5.746209	Durbin-Watson stat	0.989230
Prob(F-statistic)	0.000852		

Dependent Variable: LOG(EX)

Method: Least Squares

Date: 08/31/15 Time: 15:25

Sample: 2003Q1 2014Q4

Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	0.043858	0.049403	0.887766	0.3796
LOG(GST)	0.258928	0.045482	5.693028	0.0000
LOG(CPI)	0.353671	0.240125	1.472864	0.1481
LOG(FDI)	0.045055	0.018520	2.432766	0.0192
C	7.325293	0.702019	10.43460	0.0000

R-squared	0.873677	Mean dependent var	11.59779
Adjusted R-squared	0.861926	S.D. dependent var	0.191607
S.E. of regression	0.071198	Akaike info criterion	-2.348376
Sum squared resid	0.217973	Schwarz criterion	-2.153459
Log likelihood	61.36102	Hannan-Quinn criter.	-2.274716
F-statistic	74.34911	Durbin-Watson stat	1.224028
Prob(F-statistic)	0.000000		

Table III: *(Heteroscedasticity)*

Lag length = 1

Heteroskedasticity Test: ARCH			
F-statistic	2.896896	Prob. F(1,45)	0.0957
Obs*R-squared	2.842650	Prob. Chi-Square(1)	0.0918

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 08/31/15 Time: 15:10
Sample (adjusted): 2003Q2 2014Q4
Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000180	5.26E-05	3.421357	0.0013
RESID^2(-1)	0.245974	0.144518	1.702027	0.0957

R-squared	0.060482	Mean dependent var	0.000239
Adjusted R-squared	0.039604	S.D. dependent var	0.000278
S.E. of regression	0.000272	Akaike info criterion	-13.53984
Sum squared resid	3.33E-06	Schwarz criterion	-13.46111
Log likelihood	320.1862	Hannan-Quinn criter.	-13.51021
F-statistic	2.896896	Durbin-Watson stat	2.055962
Prob(F-statistic)	0.095650		

Lag length = 2

Heteroskedasticity Test: ARCH			
F-statistic	1.698532	Prob. F(2,43)	0.1950
Obs*R-squared	3.367991	Prob. Chi-Square(2)	0.1856

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 08/31/15 Time: 15:11
Sample (adjusted): 2003Q3 2014Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000158	6.12E-05	2.581958	0.0133
RESID^2(-1)	0.216582	0.151731	1.427411	0.1607
RESID^2(-2)	0.120889	0.152216	0.794194	0.4314

R-squared	0.073217	Mean dependent var	0.000240
Adjusted R-squared	0.030111	S.D. dependent var	0.000280
S.E. of regression	0.000276	Akaike info criterion	-13.48764
Sum squared resid	3.28E-06	Schwarz criterion	-13.36839
Log likelihood	313.2158	Hannan-Quinn criter.	-13.44297
F-statistic	1.698532	Durbin-Watson stat	2.021416
Prob(F-statistic)	0.194996		

Lag length = 3

Heteroskedasticity Test: ARCH			
F-statistic	1.286551	Prob. F(3,41)	0.2918
Obs*R-squared	3.871729	Prob. Chi-Square(3)	0.2757

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 08/31/15 Time: 15:11
Sample (adjusted): 2003Q4 2014Q4
Included observations: 45 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000142	6.77E-05	2.099213	0.0420
RESID^2(-1)	0.200145	0.154742	1.293414	0.2031
RESID^2(-2)	0.086663	0.158081	0.548219	0.5865
RESID^2(-3)	0.128919	0.155229	0.830508	0.4111

R-squared	0.086038	Mean dependent var	0.000244
Adjusted R-squared	0.019163	S.D. dependent var	0.000282
S.E. of regression	0.000280	Akaike info criterion	-13.44150
Sum squared resid	3.21E-06	Schwarz criterion	-13.28090
Log likelihood	306.4336	Hannan-Quinn criter.	-13.38163
F-statistic	1.286551	Durbin-Watson stat	1.978349
Prob(F-statistic)	0.291796		

Lag length = 4

Heteroskedasticity Test: ARCH			
F-statistic	1.482901	Prob. F(4,39)	0.2260
Obs*R-squared	5.808620	Prob. Chi-Square(4)	0.2139

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 08/31/15 Time: 15:11
Sample (adjusted): 2004Q1 2014Q4
Included observations: 44 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.93E-05	7.18E-05	1.383284	0.1744
RESID^2(-1)	0.192913	0.154687	1.247124	0.2198
RESID^2(-2)	0.070361	0.156837	0.448628	0.6562
RESID^2(-3)	0.108125	0.156900	0.689133	0.4948
RESID^2(-4)	0.185455	0.155155	1.195290	0.2392

R-squared	0.132014	Mean dependent var	0.000238
Adjusted R-squared	0.042990	S.D. dependent var	0.000283
S.E. of regression	0.000276	Akaike info criterion	-13.44247
Sum squared resid	2.98E-06	Schwarz criterion	-13.23972
Log likelihood	300.7343	Hannan-Quinn criter.	-13.36728
F-statistic	1.482901	Durbin-Watson stat	1.938378
Prob(F-statistic)	0.226040		

Lag length = 5

Heteroskedasticity Test: ARCH			
F-statistic	1.152060	Prob. F(5,37)	0.3509
Obs*R-squared	5.792591	Prob. Chi-Square(5)	0.3269

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 08/31/15 Time: 15:11
Sample (adjusted): 2004Q2 2014Q4
Included observations: 43 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000104	7.66E-05	1.361984	0.1814
RESID^2(-1)	0.214544	0.162998	1.316239	0.1962
RESID^2(-2)	0.052767	0.161183	0.327376	0.7452
RESID^2(-3)	0.105155	0.160014	0.657161	0.5151
RESID^2(-4)	0.168416	0.160863	1.046949	0.3019
RESID^2(-5)	0.017737	0.161222	0.110013	0.9130

R-squared	0.134711	Mean dependent var	0.000243
Adjusted R-squared	0.017781	S.D. dependent var	0.000284
S.E. of regression	0.000281	Akaike info criterion	-13.38627
Sum squared resid	2.93E-06	Schwarz criterion	-13.14052
Log likelihood	293.8048	Hannan-Quinn criter.	-13.29565
F-statistic	1.152060	Durbin-Watson stat	1.901484
Prob(F-statistic)	0.350899		

Table IV: *(Autocorrelation)*

Lag length = 1

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	2.026025	Prob. F(1,41)	0.1622
Obs*R-squared	2.260241	Prob. Chi-Square(1)	0.1327

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/31/15 Time: 15:12
Sample: 2003Q1 2014Q4
Included observations: 48
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	0.003077	0.011541	0.266626	0.7911
LOG(GST)	-0.003579	0.013925	-0.257034	0.7984
LOG(CPI)	0.006263	0.056136	0.111574	0.9117
LOG(FDI)	-0.001469	0.004609	-0.318662	0.7516
LOG(EX)	0.005358	0.034881	0.153620	0.8787
C	-0.077392	0.304903	-0.253823	0.8009
RESID(-1)	0.230946	0.162251	1.423385	0.1622

R-squared	0.047088	Mean dependent var	6.85E-16
Adjusted R-squared	-0.092362	S.D. dependent var	0.015490
S.E. of regression	0.016190	Akaike info criterion	-5.274815
Sum squared resid	0.010747	Schwarz criterion	-5.001931
Log likelihood	133.5956	Hannan-Quinn criter.	-5.171692
F-statistic	0.337671	Durbin-Watson stat	1.916964
Prob(F-statistic)	0.912946		

Lag length = 2

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.386706	Prob. F(2,40)	0.2617
Obs*R-squared	3.112301	Prob. Chi-Square(2)	0.2109

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/31/15 Time: 15:12
Sample: 2003Q1 2014Q4
Included observations: 48
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	0.005822	0.011996	0.485347	0.6301
LOG(GST)	-0.002671	0.014005	-0.190691	0.8497
LOG(CPI)	-0.000499	0.056834	-0.008777	0.9930
LOG(FDI)	-0.001331	0.004625	-0.287716	0.7750
LOG(EX)	0.004756	0.034991	0.135934	0.8926
C	-0.072579	0.305852	-0.237301	0.8136
RESID(-1)	0.264383	0.167193	1.581307	0.1217
RESID(-2)	-0.141932	0.162884	-0.871367	0.3888

R-squared	0.064840	Mean dependent var	6.85E-16
Adjusted R-squared	-0.098813	S.D. dependent var	0.015490
S.E. of regression	0.016238	Akaike info criterion	-5.251952
Sum squared resid	0.010546	Schwarz criterion	-4.940086
Log likelihood	134.0469	Hannan-Quinn criter.	-5.134097
F-statistic	0.396202	Durbin-Watson stat	1.986946
Prob(F-statistic)	0.898945		

Lag length = 3

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.907032	Prob. F(3,39)	0.4465
Obs*R-squared	3.130613	Prob. Chi-Square(3)	0.3719

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/31/15 Time: 15:12
Sample: 2003Q1 2014Q4
Included observations: 48
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	0.005739	0.012164	0.471759	0.6397
LOG(GST)	-0.002807	0.014222	-0.197372	0.8446
LOG(CPI)	-0.000124	0.057623	-0.002148	0.9983
LOG(FDI)	-0.001378	0.004698	-0.293364	0.7708
LOG(EX)	0.004897	0.035447	0.138153	0.8908
C	-0.073701	0.309813	-0.237889	0.8132
RESID(-1)	0.267038	0.170591	1.565368	0.1256
RESID(-2)	-0.146186	0.168338	-0.868410	0.3905
RESID(-3)	0.020565	0.163006	0.126159	0.9003

R-squared	0.065221	Mean dependent var	6.85E-16
Adjusted R-squared	-0.126528	S.D. dependent var	0.015490
S.E. of regression	0.016441	Akaike info criterion	-5.210694
Sum squared resid	0.010542	Schwarz criterion	-4.859844
Log likelihood	134.0566	Hannan-Quinn criter.	-5.078107
F-statistic	0.340137	Durbin-Watson stat	1.987181
Prob(F-statistic)	0.944709		

Lag length = 4

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.716965	Prob. F(4,38)	0.5856
Obs*R-squared	3.368351	Prob. Chi-Square(4)	0.4982

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/31/15 Time: 15:12
Sample: 2003Q1 2014Q4
Included observations: 48
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	0.005063	0.012382	0.408884	0.6849
LOG(GST)	-0.002561	0.014380	-0.178071	0.8596
LOG(CPI)	0.001856	0.058387	0.031787	0.9748
LOG(FDI)	-0.001752	0.004819	-0.363564	0.7182
LOG(EX)	0.005086	0.035817	0.141998	0.8878
C	-0.076989	0.313116	-0.245881	0.8071
RESID(-1)	0.268104	0.172379	1.555313	0.1282
RESID(-2)	-0.152562	0.170675	-0.893875	0.3770
RESID(-3)	0.038322	0.169362	0.226275	0.8222
RESID(-4)	-0.075882	0.168662	-0.449905	0.6553

R-squared	0.070174	Mean dependent var	6.85E-16
Adjusted R-squared	-0.150048	S.D. dependent var	0.015490
S.E. of regression	0.016612	Akaike info criterion	-5.174340
Sum squared resid	0.010486	Schwarz criterion	-4.784506
Log likelihood	134.1842	Hannan-Quinn criter.	-5.027021
F-statistic	0.318651	Durbin-Watson stat	2.024560
Prob(F-statistic)	0.963807		

Lag length = 5

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.502349	Prob. F(5,37)	0.2128
Obs*R-squared	8.100416	Prob. Chi-Square(5)	0.1508

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 08/31/15 Time: 15:12
Sample: 2003Q1 2014Q4
Included observations: 48
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	-0.000899	0.012201	-0.073648	0.9417
LOG(GST)	-0.001496	0.013788	-0.108499	0.9142
LOG(CPI)	0.022915	0.056842	0.403127	0.6892
LOG(FDI)	-0.003197	0.004669	-0.684779	0.4978
LOG(EX)	0.001538	0.034362	0.044757	0.9645
C	-0.070845	0.300040	-0.236119	0.8146
RESID(-1)	0.231405	0.166099	1.393171	0.1719
RESID(-2)	-0.119879	0.164283	-0.729710	0.4702
RESID(-3)	0.003253	0.163143	0.019941	0.9842
RESID(-4)	-0.023977	0.163500	-0.146648	0.8842
RESID(-5)	-0.347310	0.165797	-2.094797	0.0431

R-squared	0.168759	Mean dependent var	6.85E-16
Adjusted R-squared	-0.055901	S.D. dependent var	0.015490
S.E. of regression	0.015917	Akaike info criterion	-5.244750
Sum squared resid	0.009375	Schwarz criterion	-4.815933
Log likelihood	136.8740	Hannan-Quinn criter.	-5.082700
F-statistic	0.751174	Durbin-Watson stat	1.947288
Prob(F-statistic)	0.672818		

Table V: *(Specification Bias)*

Lag length = 1

Ramsey RESET Test:			
F-statistic	0.217690	Prob. F(1,41)	0.6433
Log likelihood ratio	0.254183	Prob. Chi-Square(1)	0.6141

Test Equation:
Dependent Variable: LOG(GDP)
Method: Least Squares
Date: 08/31/15 Time: 15:13
Sample: 2003Q1 2014Q4
Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	-0.005591	0.081953	-0.068219	0.9459
LOG(GST)	-0.004229	0.089298	-0.047355	0.9625
LOG(CPI)	-0.198643	2.069511	-0.095985	0.9240
LOG(FDI)	-0.005126	0.056597	-0.090578	0.9283
LOG(EX)	-0.103364	1.446653	-0.071451	0.9434
C	6.634331	13.39750	0.495192	0.6231
FITTED^2	0.054045	0.115834	0.466573	0.6433

R-squared	0.994609	Mean dependent var	11.17788
Adjusted R-squared	0.993821	S.D. dependent var	0.210423
S.E. of regression	0.016541	Akaike info criterion	-5.231877
Sum squared resid	0.011218	Schwarz criterion	-4.958994
Log likelihood	132.5651	Hannan-Quinn criter.	-5.128754
F-statistic	1260.807	Durbin-Watson stat	1.571608
Prob(F-statistic)	0.000000		

Lag length = 2

Ramsey RESET Test:			
F-statistic	2.057685	Prob. F(2,40)	0.1411
Log likelihood ratio	4.700582	Prob. Chi-Square(2)	0.0953

Test Equation:
Dependent Variable: LOG(GDP)
Method: Least Squares
Date: 08/31/15 Time: 15:13
Sample: 2003Q1 2014Q4
Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GOV)	-7.614448	3.862405	-1.971426	0.0556
LOG(GST)	-8.711025	4.419654	-1.970974	0.0557
LOG(CPI)	-180.9577	91.75937	-1.972090	0.0555
LOG(FDI)	-5.000894	2.536006	-1.971956	0.0556
LOG(EX)	-134.8444	68.39712	-1.971493	0.0556
C	789.7440	397.6491	1.986032	0.0539
FITTED^2	21.25842	10.76208	1.975309	0.0552
FITTED^3	-0.635444	0.322496	-1.970393	0.0557

R-squared	0.995086	Mean dependent var	11.17788
Adjusted R-squared	0.994226	S.D. dependent var	0.210423
S.E. of regression	0.015989	Akaike info criterion	-5.282844
Sum squared resid	0.010226	Schwarz criterion	-4.970977
Log likelihood	134.7883	Hannan-Quinn criter.	-5.164989
F-statistic	1157.221	Durbin-Watson stat	1.773689
Prob(F-statistic)	0.000000		