

THE IMPACT OF INTEREST RATE, CREDIT TO
PRIVATE SECTOR, INFLATION RATE, MONEY
SUPPLY, AND GROSS DOMESTIC PRODUCT ON
SAVINGS: POOLED MEAN GROUP AND ERROR
CORRECTION MODEL

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

This study is to examine the impact of interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings in four different groups of country which are America, Asia, Europe, and Middle East. To achieve this objective, Pool Mean Group had been used as the statistical approach to determine the dynamic relationship between interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings. Data to be used in this study is panel data which in annually data from the year 1981 to 2008. Furthermore, Error Correction Model (ECM) also use to examine whether there is convergence of short-run adjustment to long-run adjustment between interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings. This result indicates that all the variables (interest rate, credit to private sector, inflation rate, money supply, and gross domestic product) are found to be having significant impact on savings. Thus, it shows that all the country able to covert the adjustment from short run into long run.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

Savings is important because it is a source of capital for a country. Increment in capital will lead to increase in investment portfolio. Besides, savings can help to reduce liquidity risk which involve interbank and public. The more the savings, the more sources of funds that the bank able to lend out. When the public income tends to increase, the marginal propensity to save will increase simultaneously while the interest rate will remain unchanged.

In this study, the impact of interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings will be discussed. This topic was being chosen to examine for further detail regardless the relationship between interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings. In fact, there have other factors that affect the savings such as the level of real disposable household income, the availability of credit, changes in household financial wealth, changes in employment and unemployment rate, capital and current account and others. Among the factors, the main reason affect the savings rate are interest rate, credit to private sector, inflation rate, money supply, and gross domestic product will be determined. Therefore, the significant impact of interest rate, credit to private sector, inflation rate, money supply, and gross domestic product affect on savings is the main purpose of this research and clear understanding regarding this study is needed.

From the macro point of view, the savings plays an important role as the source of capital for both the country and business growth. The existence of the portion of savings supports the economy of the country. The country's economic growth is referred to the economy's capacity to increase the productivity of both the goods and services throughout the certain period. The excess of capital can be generated

from the savings and thus reduce the needs of borrowing. When there is surplus amount of savings, risk of borrowing from interbank will reduce because source of financing can be obtained directly. It is because interbank borrowing is exposed to many types of risks like interest rate risk or default risk. Thus, the bank should maintain their ability to increase the savings level so that the stability of the firm can be sustained.

The economic growth increase when consumption expenditure by the public goes up. The increase in the individual's disposable income has impact on the economic growth. The individuals will tend to spend more when they have high income level. Thus, the money supply will also increase. Basically, consumption is closely related towards the attitude of individuals either in their personal capacity and collectively. The habit of saving is a consideration for the future and makes a person unconscious to the desirability of reduce the current needs for the future or keep for emergencies. Saving involves a basic change in attitudes in life. Therefore, governments can help in creating directions by including fiscal measures, setting of examples, and giving a lead. This is because they have surplus money that can be set aside for their future consumption. Moreover, the importance of savings enables people to cope with irregular incomes and emergencies. On the other hand, when individual or country utilizes the savings and channeled into investment, it also serves as an important component that helps to boost up the economic growth of the country. Thus, higher level of capital will be generated for the usage of the country either in industry or other purposes. High level of national saving will reduce the chance of a country to be over dependent and exposure to the unpredictable global capital market.

Interest rates may affected by a number of factors and it is governed or manipulated by the Central Bank or Federal Reserve. Federal Reserve is in charged with maintaining the stability of the nation's financial system and make adjustment in interest rates which is under short term period. When the economy is growing, unemployment rate is low. Therefore, it indicates that consumers are spending money. Furthermore, short-term rates are increase in order to maintain the economic and inflation level. In fact, increasing in interest rate does affect the

savings rate increase in the economy and vice versa. There are two main categories of people that are sensitive to the changes in interest rate which comprises of middle class and upper middle class people.

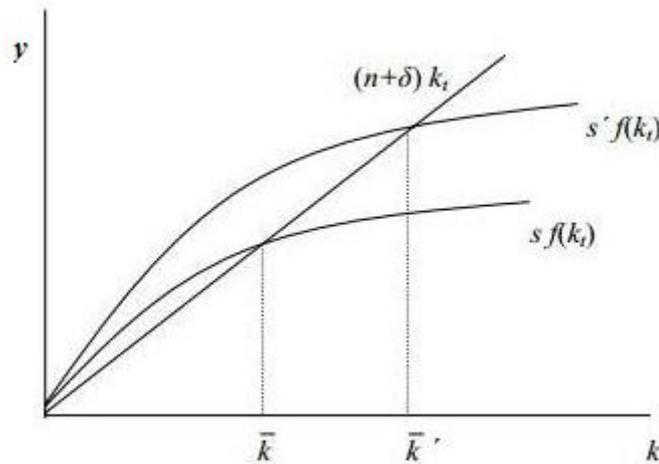
Inflation occurs will cause the purchasing power reducing over time. This is because individual have to pay more for the same goods and services when prices increase. Other than that, people choose to spend now rather than later because they know the price for goods and services will become more costly when higher inflation level happens. For instance, it means that the money which being saved interest rate is worth less than when you put it as savings. When interest is earned on savings, it should decrease by the rate of inflation. This is the way that used to determine the real interest rate. When the inflation rate is higher than the interest rate, the real interest rate will become negative, which means that money decrease in value. If interest rates rise accordingly during the inflation, the real interest rate will increase and thus the incentive to save tends to rise.

Gross Domestic Product (GDP) is used to measure economic performance of a country and it is an important variable to determine the comparison between two countries performance. Moreover, GDP can be represented by Marginal Propensity to Save (MPS). GDP will be rising when there is a rapid economic growth in a country's economy. According to the result obtained by Singhal (2008), it shows that the interest rate tends to be insignificant and no impact on savings in India. In addition, the second result is although the rate of interest is reducing in the past few years but the savings of the country are still able to increase.

GDP per capita is an indicator of the living standard of a country's citizens. Higher GDP per capita indicates that there is improvement regarding the living standard of the citizens in a country and indicates that the citizen achieved high living standards. Moreover, GDP per capita is being used in comparing the prosperity of countries in accord with total amount of population. Thus, the average output per person in the country can be known when the GDP per capita is divided to the total population of the country.

Furthermore, The Solow Growth Model by Robert Solow (American economist) can be used to explain in this case to the study of growth problems. The Solow Growth Model is as follow:

A rise in the savings rate



In the Solow Growth Model, it shows that a household produces a final good which is allocated with consumption and saving for future production. The transaction path and steady state is involved in dynamic model.

The key parameter of the Solow Growth Model is savings rate (s). Savings rate increase will lead to the actual investment to be higher and the capital (k) will rise until it reaches a new or higher steady state value. When a new steady state was being achieved, all the related variables will grow at the same rates and thus there is also an increment of output per worker at the technological progress growth level. In other words, savings rate and the growth rate have positive relationship.

When the saving rate increase, the curve will tend to move upwards therefore per capital income will increase and steady state capital-labor ratio will rise from $\bar{k} \rightarrow \bar{k}'$. In addition, for the countries which have higher savings rate and high technologies will tends to have higher capital-labor ratios and they are richer than the other countries. In contrast, those with low technologies tend to get the lower capital-labor ratios and they are poorer.

From The World Development Report (World Bank 1987), it showed that gross domestic savings, as a share of income, ranged from 31% to 33% in Korea, Malaysia, and Indonesia. In contrast, the highest saving rate for a Latin American developing country was 26% for Mexico. For comparison, United States and Japan were chosen and both the saving rates are 16% and 32% respectively. Both the United States and Japan consider as high saving rate countries due to the effect of higher populations.

1.1 Research Background

Many researchers had conducted the research to study about the determinants of savings. The relationship between interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings have been discussed and investigated for many years. According to Keynesian economist, savings is refer to the extra amount of funds after the cost of consumption or expenditure is deducted from the amount of disposable income which is not spent on buying consumer goods and services instead of being accumulated or being invested directly in capital equipment or in paying off a home mortgage, or indirectly through purchase of securities that he or she earns in a certain period of time. Other than helping to promote economic growth in this globalization world, it also tends to solve the underdeveloping countries problem.

Savings play an important role as an amount of fixed capital which is available to make use to support the developing country. In addition, classical economics indicated that interest rates would adjust to associate with savings. An increase in savings would cause a fall in interest rates. Savings can be divided into two main categories which are national savings and personal savings. National saving is the macroeconomic variable that works with some micro foundations which plays a significant role in economic development. All the personal, corporate and government savings are fall under national savings. The amount of national savings is normally reported as deficit so that the national savings rate

can be lowered down meanwhile the personal savings only involved household savings.

Personal saving is defined as the difference between household disposable income and household consumption spending. Personal savings is considered as a savings that can be accessed immediately and is depending on the consumer behavior. There are two major hypotheses to explain the private savings. The first hypothesis is Permanent Income Hypothesis of Friedman (1957). The savings can be determined by the hypothesis of differentiates of permanent and transitory while the second hypothesis is Ando and Modigliani's Life Cycle Hypothesis (1963).

Inflation is a very common phenomenon that cannot be eliminated which is happening in most of the industrialized countries nowadays. Inflation affects the savings and subsequently will also impact the economic growth of the country. Inflation will happens when there is an increment towards the price of the goods and services. Thus, the purchasing power will be reduced because the consumer is not affordable in buying expensive goods. Subsequently, consumer prefers to save rather than spending and this is related to the consumer behavior. Consequently, the value of the home currency will be depreciated and the economy will be slow down. Besides, the rate varies from year to year and happened in any countries no matter the country is well developed or developing countries. It will be more obviously to the economic systems which are using the currency notes. The forecast inflation level needs to be examined because it helps to decide the optimum level of interest rate.

Interest rate is the cost or price that had to pay or charge for the use of money or assets. Interest rate can be considered as the compensation to lenders if the value of asset decreases. It is often expressed as an Annual Percentage Rate (APR) of the principal. Interest rate is adjusted by the government regularly and is divided into short term rates and long term rates. Consumer and firm's decision will be influenced when the rates are set by the government. Interest rates can be in terms of borrowing cost which is an expense to the saver. Meanwhile, it can be fees

earned on the savings and it is considered as saver's income. Short term rates are easier to be affected by the changing conditions while the long term rates tend to be more stable.

Romm (2003) states that there is bi-directional relationship exist between GDP per capita and savings. The private saving rate is directly affecting the per capita output level. Meanwhile, the saving rate is positively affected by a higher level per capita output. The researcher also states the importance to understand regarding the severity liquidity constraints which ultimately cause the country's growth affect the saving rate. On the other hand, Waithima (2008) examines that for GDP per capita and private saving, uni-directional causality was found, which is supported by causality test.

Nowadays, the financial analyst is more likely to concern about the interest rate and inflation because both components have the capability to influence the country's savings. Meanwhile, there is a correlation between the interest rate and inflation. Therefore, government needs to control and manage the interest rate well because it will cause the inflation happens and consequently the savings will be affected. Moreover, Central bank will reduce the money supply so that it can slow down the overheat economy. Besides, policy maker will decide the money supply level. Whenever the economic is under performance, the determination of money supply levels will improve the economic growth.

1.2 Review of Relevant Theoretical Model

From Keynesian view of inflation, the important to the classical view of inflation was the Quantity Theory of Money. This Quantity Theory of Money is refers to the theory that money supply has a direct relationship towards price levels. This theory has the opposite around the Fisher Equation of Exchange:

$$MV = PT$$

Where:

M represents the amount of money in circulation.

V represents the velocity of money.

P represents the average price level.

T represents the number of transactions taking place.

Keynes (1936) argued that rises in the money supply (M) would unavoidably lead to increases in inflation. In other words, increasing in M may lead to a decrease in V. Therefore, the average speed of circulation of money would fall. Otherwise, the increase in M may lead to increase in T and this will caused insufficient demand for full-employment equilibrium. For instance, more extra demand will be appointed due to the increasing in the money supply. Hence, economy will move closer to full employment.

According to the Intertemporal Consumption Model, there are bidirectional relationship between savings and consumption. Meanwhile, savings and consumption are dependent on each other. This model is also known as consumption-leisure model which will consider the intertemporal choice of individual. For example, when an individual makes the optimal choice about consumption and leisure in the current period, they normally will tend to make a similar consumption-leisure choice in the future. The examples for consumer-leisure choice are included savings, educations, health care and others. The model considers about two period which is “current” period and “future” period to study the individual consumption behavior. We will use the period 1 as the “current” period and period 2 as the “future” period in the model. The Intertemporal Consumption Model is derived as follow:

$$Y_1 + S_1 \leq I_1$$

It shows that income in period 1 is I_1 , savings in period 1 is S_1 and spending in period 1 is Y_1 . Meanwhile, the savings and consumption in period 1 cannot more than income.

$$Y_2 \leq I_2 + S_1 (1 + r)$$

The model stated that consumption in period 2 is less than or equal to the income in period 2 plus the savings (and accrued interest) from period 1.

In addition, GDP model also being used which as follow:

$$Y = C + I + X - M$$

Where,

Y = Income

C = Consumption (public and private)

I = Gross domestic investment

X = Exports

M = Imports

The model is as follow:

$$I = S + F$$

Where,

S = Saving

F = Foreign capital inflow

$$S = Y - C$$

There are negative relationship between savings and consumption. In other words, individual will consume less in order to save more for future.

Equilibrium level of interest rate is achieved when the rate of return on investment is equal to the rate of society willing to give up the current consumption in order to get higher return. There is a positive relationship between consumption and income which recommend by Keynes. High-income household will save more than low-income households, therefore high-income households will tend to spend small portion of their income. According to Ando and Modiglianli's Life Cycle Hypothesis (1963), individual will tend to save more on their working years and spend based on their accumulating savings but will maintain the consumption levels when reaching retirement age. When interest rate arises, consumption will drop, and interest income increase for the depositors due to the substitution effect of an interest rate changes and vice versa. This shows that the interest rate depends on the ability of society to produce more for future consumption. Generally, this interest rate will be positive and it reflects to the premium that the society will pay for present in return of future consumption. There would be lenders and borrowers at any rate. The question arises whether both of the party matches with the given interest rate. Lenders are the one who are postponing consumption while the borrowers are the one who are consume now. Nominal interest rate depends on the expected inflation rate. This has been known as the Fisher effect. Fisher equation is as follow:

$$(1 + i) = (1 + r) (1 + \Delta Pe)$$

Where:

i is the observed nominal rate of interest

r is the real rate of interest

ΔPe is the expected annual rate of inflation.

Therefore, as the prices increase, the lenders will increase the nominal interest rate by an amount which is equal to the expected inflation rate.

Modigliani and Brumberg (1955) had conducted the life-cycle framework. It is a traditional life-cycle theory which formulating a few assumptions. They believe that consumers do not facing liquidity problem, and changes in asset prices are

insignificant. Besides, the authors also assume that an individual consumption is related with the expected life-time resources (total income after taxes and transfers) for the whole life and the real market value of net assets. During the individual main working years, they tend to consume lesser and save more. Thus, they will prefer to consume more and save less during early and later years. Another version of the life-cycle model modified by Hall (1978) is based on the rational expectations. He replaced the life-time resources with lagged value of real consumption and signifies the effects after changes in real labor income. The total econometric relations will be affected by the changes in total savings and their relationship will be known. This theoretical concept is slackly related to measurements in national income accounts towards the consumption, income and assets which exist in the life-cycle theory.

1.3 Problem Statement

There are many studies have been conducted regarding the relationship between interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings. However, the results for the study have not reached a compromise level and different findings were being obtained. Some developing countries have limited research on the determinants of savings. Due to fewer research are being conducted to test the correlation between the particular variables, the developing countries are motivated to do more research and further understanding about the relationship by conducting the analysis. It is important to understand the savings behavior and savings rate changes which are affected by the interest rate, credit to private sector, inflation rate, money supply, gross domestic product and others. This is because savings plays an important role to support and boost up the economic growth. Furthermore, different researcher may obtain different findings for these tested macroeconomic variables.

In addition, the relationship between the savings and inflation is not stated clearly. Some of the researchers found a negative relationship between the variables while

some found that it is positive related. For instance, Haan (1990) point out that a rise in inflation rate will lead to a decrease in savings. According to Bulkley (1981), the extra savings is not induced by the additional cost of inflation. But, some researcher found that high rates of inflation cause the rate of personal savings increase. Bulkley (1981) also point out that the existence of a positive correlation between personal saving and inflation has been highlighted by the experience since 1970s. He also states that the correlation between inflation and savings is not spurious especially happening in unusual and unexpected condition by Davidson (1968).

Paul (1977) states that inflation causes the real wealth of households are affected by the interest rates. Individuals would like to maintain the purchasing power of their stock of financial assets will lead to higher saving. According to Farmer (1982), in 1970s, higher inflation rate will cause the value of savers' money depreciate. Thus, the saver will not save the money at the interest rates level that is lower than the inflation rates.

Furthermore, Williamson (1968) point out that real rates of interest were negatively correlated with the government savings. Despite from that, there are some researcher found out that the interest rate and savings are positively correlated. In contrast, based on Kanhaya Gupta (1987), the findings indicate that interest rate is positively affecting the savings. Moreover, McKinnon-Shaw (1973) carries out that a rise in the real interest rate may tend to save more. Autoregressive Distributed Lag (ARDL) approach is being used to investigate this problem.

For this research, the interest rate, credit to private sector, inflation rate, money supply, and gross domestic product are playing the role as independent variable while the savings is the dependent variable. According to Mankiw (1987) the nominal interest rate tends to increase when the expected inflation increase. It indicates that there is a positive relationship between the two independent variables. The findings are consistent with the Fisher effect. However, there are certain developing countries which do not support Fisher effect and reject its

existence. Moreover, it is also found out that knowledge about savings behavior is not enough in certain developing countries. While for certain less developed countries, the econometric studies prefer using single equation models rather than two equation models. It will cause the researcher to obtain bias result regarding the savings function. Moreover, further research will be conducted and examined to analyze the findings in order to find out more reliable result.

1.4 Research Objectives

1.4.1 General Objective

The general objective is to study the impact of deposit interest rate, credit to private sector, inflation, money supply and gross domestic product on savings in America, Asia, Europe, and Middle East.

1.4.2 Specific Objective

1. To study the short run and long run integration between the interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings in America, Asia, Europe, and Middle East countries.
2. To study short run and long run integration in selected countries which are America, Asia, Europe, and Middle East countries.
3. To compare the result among the regions.

1.5 Research Question

In general, the research questions are:

1. What is the dynamic relationship between interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings?
2. What is the dynamic relationship interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings in selected countries in regions?
3. What is the difference among the regions?

1.6 Hypothesis of the Study

After review the theoretical framework proposed by Keynes (1936), the effect of interest rate in long run are subjectively lead to the savings. Meanwhile, an increase in interest rate will tend to increase the savings and vice versa. Moreover, according to Fisher (1930), inflation rate movement on savings will be reflected by interest rate in different industrialized countries. Additionally, inflation is an important determinant of economic growth. Based on McKinnon – Shaw model, it points out that higher interest rate will lead to increase in savings.

1.7 Significance of study

This research highlights the importance to study and understand the relationship between interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings. It is hoped that this study can provide more information to other researcher and policy makers who restructure the level of interest rate and formulate the policies in most of the countries. Some useful strategies or tools can be design to overcome the problems like inflation in these changing conditions of certain countries. Inflation can mean either an increase

in money supply or price level shoots up. Inflation is important for fixed-income investors, as the issue of future income must be discounted by inflation to determine how much the value for today's money will have in the future. For stock investors, inflation is the key components aimed to motivate them to take on the increased risk exposure of investing in the stock market in order to generate high real rates of return.

In addition, interest rate is the rate at which a borrower paid to its lender over a certain period of time. Generally, higher interest rates enable to control businesses and consumers in buying or spending, while interest rates declining makes borrowing become cheaper. Hence, businessman can expand their business and consumers can spend more. Once the relationship is known and confirmed, economic analysts are able to decide the suitable action to be taken such as save money in financial instruments. Moreover, saving is important to build a reserve for future used when someone needs it in future likes buying a house, financing a child's education, necessities or for emergency expenses. Therefore, it is important to understand and know the relationship between interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings to counteract the inflation, interest rate risk and other risks. The results of this study are useful and will be used by further researcher for similar study.

1.8 Chapter Layout

This study consists of five chapters which are:

Chapter 2 discusses an overview of the current studies regarding the relationship between various variables (interest rate, credit to private sector, inflation rate, money supply, and gross domestic product) and the savings. The model developed for the study and data issues are discussed in the following chapter which is Chapter 3. Then, the findings are discussed in Chapter 4 while conclusions and policy implications are discussed in Chapter 5.

1.9 Conclusion

This chapter had discussed about the research background which is the impact of interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings. Besides, the problem statement, research objectives, research question, hypotheses and significance of the study had been included. The previous researcher had done a few studies on this topic and it will be discussed in the next chapter.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In this chapter, empirical review on previous researches on the relationship of interest rate, credit to private sector, inflation rate, money supply, and gross domestic product on savings will be discussed for the purpose of determine the impact of independent variables on dependent variable.

2.1 Review of the Literature

2.1.1 Savings

Leff and Sato (1975) investigated the savings model and its appropriateness in developing countries. The researchers want to study the savings equation model in five countries which are Brazil, Costa Rica, Israel, Philippines and Taiwan. Data was obtained from the country tables of World Bank Data and International Financial Statistics and the observations were covering the period from 1952 to 1969 and Durbin Watson test was conducted. They found that all the parameter estimates for the four countries are positively significant except for Israel. Hence, the model is appropriate for all the four countries. However, savings behavior in Israel tends to be discussed further.

Howard (1978) examined the correlation between personal saving behavior and personal disposable income in five specific industrialized countries which are Canada, Germany, Japan, United Kingdom and United States. This paper studies the data from year 1976. The results show that saving and income is positive correlated and significant, while real-balance effect on personal saving was

negative correlated but significant. Ordinary least Squares (OLS or Cochrane-Orcutt iterative procedure) were used for analyzed the data.

Pesaran and Evans (1984) studied on the consequences of changing consumer prices and capital gains and losses on the total savings of United Kingdom personal sector. The variables used in this study are current real disposable income, capital gains and losses, and current real value of initial assets. Data used are annual data from 1953 to 1981 in United Kingdom and the methods used are Ordinary Least Squares (OLS) and maximum likelihood. The results obtained in this study show the proposed model are consistent with previous research. Moreover, capital gains and losses are highly significant to enlighten variations in the saving ratio.

Loayza, Schmidt-Hebel, and Serven (2000) investigated on the policy and non policy factors in saving behavior by using large, cross-country and time-series data. Method used for this research is reduced-form approach. The authors use the data from World Bank which including from year 1966 to 1995. Empirical evidence shows private saving rates are highly correlated with growth rate of real per capita income and private savings rate will be affected by financial liberalization.

2.1.2 Interest rate and Inflation

According to Fisher (1930), the expected rate of inflation was reflected by the movement of the nominal interest rate. This hypothesis was known as “Fisher Effect” and was being widely accepted by the economists in many industrialized countries. It indicates how real interest rate plays its role in this rapid changes economy. Mitchell (2006) studied the relationship between expected inflation and the nominal interest rate using Johansen’s co integration testing approach. Using the data from April 2000 to July 2005, the results have proved that Fisher hypothesis exists in the long run relationship between expected inflation and interest rate. The Fisher hypothesis also point out that expected nominal interest

rates on financial instruments or assets should move with expected inflation and have same trend in the long run. It means that the nominal interest rate should adjust one-to-one with the expected rate of inflation. In accordance to Irwin Friend (n.d.), there are positively correlated between expected interest rate and expected inflation. These results are strongly supports the Fisher hypothesis which stated that expected nominal interest rates on financial assets should move constantly with expected inflation. Based on Livingston data, the measures of expected nominal interest rate to the measure of expected inflation had been study from year 1946 to 1979. It implied that one percentage increase in the interest rate will tend to increase one percentage in inflation.

Robert Mundell (1963) determined the inflation and real interest based on the intersection of two schedules Hicksian liquidity preference money supply (LM) and investment saving (IS). IS curve is to measure the value of real interest rates and real money balances. The curve shows downward sloping when the interest rate increase, investment will decrease therefore deflation will occur. On the other hand, LM curve show the interaction between money interest rate and real money balance. It shows a negative impact because when money interest rate is low, the demand for real balance will be higher.

2.1.3 Inflation and Savings

In addition, Davidson and MacKinnon (1983) observed the positive relationship between the inflation and savings in Canada and United States by using the quarterly time series data to estimate. They found out that inflation will leads to higher savings rates and this result turn to be supported by Deaton's hypothesis as well. In order to study the effects of inflation on savings, Heer and Suesmuth (2006) accomplish regression analysis that available in United States data from year 1965 to 1998. Both of them found that inflation does not affect the savings significantly. Moreover, Irwin Friend (n.d.) also examined that investment has

been reduced by inflation which the uncertainty associated with the inflation will leads to increase in the real cost of equity financing.

Bulkley (1981) studied and generalized the rationale theory regarding the positive correlation between the inflation rate and the savings level. The duration of analysis was from 1958 to 1975. A simple estimated regression model was build up which include all the variables such as savings, income, interest rate and inflation rate. These data was obtained from Blue Book in United Kingdom which was also known as National Income Accounts. The major findings indicate that the observe correlation cannot be explained in terms of their proxy variables simply. Overall, this study revealed that negative causal relationship between inflation and savings exists.

Sternberg (1981) examined the relationship between inflation and savings and also studies the consumer behavior. The period of analysis was from 1962 to 1978 and the quarterly data was obtained from the National Account Statistics. Lagrange Multiplier (ML) and Durbin Watson (DM) approach were being used to test the regression model. The results show that when inflation rises, the income was decrease and hence the savings will also fall. Throughout the analysis, researcher found that inflation has a negative correlation and significant effect on savings. The outcome obtained from the studies also state that long run coefficients tend to require more detail analysis and empirical testing on it.

The data obtained by Byrd (1984) and was from international Financial Statistics for monetary data while income, sales, and price data are taken from Chinese Statistical Yearbook (1984). For the household savings data, it is taken in urban and rural area's saving deposits over the year. The study is done based on China's data. Virtual prices are used to substitute into the model and the results indicates that there is a negative relationship and significant real interest rate effect on consumption and nominal interest rate will influence savings behavior in China.

Wachtel (1977) had examined the relationship between inflation and saving behavior. The data tested in two separate periods, which is from quarter one of

1955 until quarter four of 1964 and quarter one of 1965 until quarter three of 1974 in United States and the model applied is Ordinary Least Squares (OLS). The variables used in the study are personal consumption expenditures, number of households, inflation uncertainty measurement, the real disposable income per household and savings flows. The result is significant and it can be applied precisely in estimating inflation effects on saving difficult.

Sultana and Syed (n.d) examined the important determinants that can stimulate the savings and investment. They obtained the data from State Bank of Pakistan annual report which including the annual data on savings and investment covering from year 1972 to 2007. They also collected the time series data from different Economic Surveys. The study placed the savings and investment as two dependent variables in two different types of forecasting models. Autoregressive Distributed Lag model is to detect the long run and short run relationship in conjunction with the Dickey Fuller and Augmented Dickey Fuller unit root tests were being used in this study. The findings indicated that the data was stationary and then proceed to the unit root test. A significant long run relationship between inflation and savings was found. However, it was found that inflation was negatively related to savings. Meanwhile, the relationship between interest and savings was significant and negative in the long run.

2.1.4 Interest rate and Savings

In accordance with Keynes (1936), the effect of interest rate in long run is subjectively lead to the changes in savings. Meanwhile, an increase in interest rate will make the savings rate become higher and vice versa. According to Munir, Ullah Awan and Hussain (2010), the real interest rate is positively affecting the private investment in the long run. This study is conducted from the period 1973 to 2007 and the ARDL Bounds Testing Approach is applied in time series data. Furthermore, these results being obtained are also consistent with the McKinnon – Shaw hypothesis, which point out that as interest rate increase will tend to have higher amount of savings. Not surprisingly, this hypothesis becomes reliable as it

is supported by Athukorala (1998) which determined high interest rate encouraged the investment through self financed savings in India. Besides, Mikesell and Zinser (1973) discovered that the responsiveness of savings tend to increase the real rate of interest which is positive effect on the savings. Thus, the results are found to be consistent with McKinnon (1973) which argued that the interest rate tends to have positive impact on savings.

Glyfason (1993) investigated the relationship between the household saving behavior and interest rate on savings. The empirical results from 1897 until 1990 of the previous researches are provided. He classified the variables into two categories which are divided into endogenous and exogenous variables. The variables include interest rate, savings and the growth. Exogenous growth model and endogenous growth model was being developed for this study. The result was found to be consistent with the previous studies that there is positive long run relationship between interest rate and the saving.

Gupta (1987) examined the aggregate savings, financial intermediation and interest rate. In this study, they used pooled time series cross sectional data which cover the period from 1967 to 1976. The data collected was including twenty two different countries which comprises of Latin America and Asia countries. The lagged savings (LS) coefficient were found to be insignificant. The findings show that the impact of income was significant on savings. Moreover, savings tend to increase when interest rate increase. However, both the expected inflation rate and interest rate are found to be not statistically significant. In contrast, Fry (1988) found that the significant relationship between interest rate and savings exist.

Kendall (2000) studied the government's interest policy in Guyana during year 1965 until 1995 in order to determine the appropriateness and effectiveness of savings and growth. The study evaluates the McKinnon-Shaw hypothesis in relation to the Guyanese economy. There are two hypotheses with respect to the impact of financial liberalization on savings, investment and growth. First will be the rise in the expected real deposit interest rate caused the increased savings income ratio to increase. Second hypothesis will be the income expands with the

increase in expected real deposit interest rate. The result obtain is matched with the McKinnon-Shaw hypothesis and the inappropriateness of the policy of financial repression is being underscored.

In the empirical study done by Chen (2002), he investigated the causal relationship between interest rates, savings and income in the Chinese economy. The data from 1952 to 1999 is being tested by using the co integration test auto regression (BVAR). The empirical result obtain from the test shows that there is a stable long run relationship between interest rates, savings and income. In addition, there is unidirectional causality runs from savings to income, indicates that developed financial institutions can promote economic growth.

2.1.5 Gross domestic product and Savings

The impact in financial sector which is in terms of savings, investment and GDP growth in Ghana has been conducted by Asamoah (2008). Asamoah (2008) used regression analysis and savings-investment models to examine how the impact in financial sector on savings, investment and GDP growth. The finding that carried out by this researcher is savings in financial services, investment and GDP growth will cause the rate of capital rises.

Other than that, Romm (2003) studied the relationship between savings and economic growth in South Africa. The data was obtained from the Wharton Economic Forecasting Associates database, South African Reserve Bank Quarterly Bulletins 1946-1992 and ERSA (Human capital data and political instability indexes) by using the Johansen Vector Error Correction Model estimation technique (Johansen and Juselius (1990) and Johansen (1991)). This technique indicates the long-run equilibrium relationships and short-run dynamics in different point of view. Romm (2003) found out that in an efficient capital market, growth can be inhibited by savings reduction due to lack of liquidity constraints. On the other hands, human capital and innovation of technology are

directly affecting the growth which may lead to an increase in saving rate and also investment rate. Therefore, it is bi-directional effect between savings and growth.

Ozcan, Gunay and Ertac (2003) carried out that gross domestic product income (GDPI) was negatively correlated to savings. They also stated that some developed and more advanced countries have the potential to save more.

Basically the purpose of savings for a country is to be reinvested domestically and contribute to higher growth rate in future. Based on the analyses researcher estimated that when a country has both lower and higher level of old age dependent it will lead to increase in savings on growth. In addition, savings rate will drop when the retirees try to make the consumption smoothly and thus can help to sustain the stability of the economic growth trend. GDP and population aging show negative relationship cause old age dependent leave the labor force. The more number of workers leave the labors force, the greater the slowdown in economic growth and decline in savings. The fluctuation of savings rate affect the long run and short run of the economic growth.

Waithima (2008) examines the causal relationship between the saving rate and economic growth in Kenya. The data was obtained from World Development Indicators by using the Granger Causality test which used to examine the relationship between saving and economic growth. In this paper, the result shows that there is no causality effect between growth in growth domestic saving and growth in GDP. However, a weak causality from GDP per capita to private saving was found.

2.1.6 Money supply and Savings

According to Haron and Azmi (2006), they point out that there is positive relationship between money supply and savings. Monthly data had been cover in this study from January 1990 to December 2003 to examine the determinants of deposit levels for both Islamic and conventional banks. Theoretically, increase in

money supply will tend to reduce the cost of borrowing. Hence, it leads individual tend to borrow more and the consumption will increase as well. However, money supply and savings account are positively correlated in relation with the liquidity preference theory, in which the theory states that increase in money supply will tends to have more money to be held for speculative motive.

Davidson (1968) had conducted a study on the correlation between money, portfolio balance, capital accumulation and economic growth. The variables are tested to determine the role of money supply based on Keynesian system in the real world. In this paper, results show that amount of savings influence the investment, and influence the level of money supply.

2.1.7 Credit and Savings

An empirical investigation had been done by Harrabi, Bousrih, and Salisu (2007). They investigated on the relationship between debt relief and credit to private sector. This investigation is done in African since year 1988 until 2004 by using panel data method. The results show that in short term, debt relief will not have positive impact towards the credit to private sector. Yet, they are positive related in long term.

Bertocco (2009) examine the savings and credit supply causal relationship and the significant between the two macroeconomic variables. The researcher found out that the significant relationship and impact on savings are considered by the consumer behavior. The amount of credit supply is related to the consumers saving decision regarding their purchasing options. When consumer chooses to deposit the money into the bank rather than spend on purchasing, it indicated that the credit supply will be increase and the relationship is significant.

2.1.8 Other determinants of savings

Agrawal and Sahoo (n.d.) used time series techniques to estimate the long-run total and private savings functions for Bangladesh. The researchers using the Granger Causality test and found out there is bi-directional causality between savings and growth. Besides that, the researcher used the Autoregressive distributed lag (ARDL) and Forecast Error Variance Decomposition (FEVD) analysis to test on the hypothesis. FEVD analysis is carried out by using VAR framework is consistent with the causality results obtained using the Granger causality test as well as the estimated savings functions. The ARDL estimation showed that there is a stable and long-run equilibrium relationship between total savings rate, economic growth, and dependency rate, banking density, interest rate and foreign savings.

Ozcan, Gunay and Ertac (2003) studied the determinants of savings in Turkey. They obtained the data from World Saving Database (WSD) for the private and public saving rates. Meanwhile two interest rate variable was taken from the data in order to get the correct value which was interest rate on savings deposits and discount rate from the database of the Turkish State Planning Organization (SPO). Unit root test was used to measure the ADF statistics and significant lag with significant t-value. Results indicate that the variables that effect on savings are more likely to happen in the long term impact rather than the short term impact. Income was found to be positively correlated with savings. In Turkey, inflation was alert and able to capture the fluctuations movement of the macroeconomic. Thus, private savings was positively impact by the inflation. The effects of current account deficit and terms of trade on private savings are positive. The result was consistent with the previous researcher who conducts cross country studies. (Loayza *et al.*, 1999). Furthermore, the money to GDP ratio is found to be positively correlated. When there is an increase in financial depth, money supply of M2/GNP ratio will also increased which is an important condition in Turkey.

Jongwanich (2010) studied the determinants of personal and household savings in Thailand. Data was obtained from the National Income Account in Thailand

which is related to the private and public savings. He conducted the statistical testing using Augmented Dickey Fuller (ADF) test and Autoregressive Distributed Lag (ARDL) approach which was tested on short run dynamic without ignoring the long run information. The result shows that there is a long run relationship between private and household savings. It also states that the growth rate has a positive impact on the savings both in the long and short run. Thus, their savings tend to raise more when they have high income. This result achieves is consistent with the previous researcher (Modigliani, 1993) and (Loayza *et al.*, 2000). Besides that, real income tends to be insignificant due to the credit constraint happens. When the credit starts to decrease, it is found that the savings will increase. It indicates that they are negatively correlated in the long run as well as short run. Credit constraint is a common thing which happens in most of the developing countries and it may limit the role playing by interest rate. In addition, interest rate has positive impact on savings but is insignificant. Researcher also found that inflation and savings tend to move in the same direction which means they are positively correlated. It is because uncertainty increase when inflation occurs, it encourages and motivate the individual to save more as a precaution in order to face with any unexpected or emergencies needs. For terms of trade, savings will decrease when there is a decline in terms of trade. It happens both in the long and short run.

2.2 Proposed Theoretical / Conceptual Framework

Interest rate is one of the important components that being taken into consideration in explaining the savings behavior of individual. According to Classical economists, savings is a function of interest rate. People will save more or invest more in the banks at higher interest rate and willingness to trade off their present for future consumption. Therefore, the higher the interest rate, the more the savings will be. This theory was argued by Keynes (1936) which the changes of interest rate could affect the social habits greatly in long run.

Other than that, the level of interest rate will become negative if facing the high inflation level. A higher inflation tends to weaken the purchasing power of a currency. This is because as the money value is getting more valuable, it tends to be in reducing the supply and if the money is getting cheaper, it will tend to be overflowing supply. But nowadays, interest rates are high if money is shortage of supply, then the inflation getting low as the overall price declines. People can buy fewer products with less money to spend now and weaker purchasing power compared to previously. This is the reason why the higher interest rates will lead to lower inflation and vice versa.

CHAPTER 3: METHODOLOGY

3.0 Introduction

The methodology that used to meet the main objectives will be discussed further in this chapter. It includes the data collection methods, definition of variables, and method of data analysis. The data to be used in this study will be panel data which include both time series data and cross sectional data and using Pool Mean Group as the statistical approach. Hausman test will be used for diagnostic checking after all tests had been done.

3.1 Scope of study

To achieve the objective, this study had been selected few countries in specific regional, such as American countries (Argentina, Brazil, Canada, Ecuador, Mexico and Venezuela), Asia countries (China, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore and Thailand, European countries (Denmark, Finland, Malta, Norway and Switzerland) and lastly is the Middle East countries (Cyprus, Egypt, Israel and Turkey). The Pooled Mean group will be employed to examine and study the integration between dependent and independent variables from the year 1981 to 2008 annually. The details of the variables are show as below:

Variables	Proxy	Explanation	Source
Savings	NNS	net national savings (% of GNI)	World Bank
Interest rate	DIR	real interest rate on savings deposits	World Bank
Credit to private sector	CR	credit to the private sector (% of GDPI)	World Bank
Inflation rate	CPI	consumer price index	World Bank
Money supply	M2	ratio of money plus quasi-money to GNP	World Bank
Gross domestic product	GDP	GDP per capita growth (annual %)	World Bank

3.2 Model Specification

The model used in this research is referring to Ozcan, Gunay and Ertac (2003) as below:

$$NNS_t = \beta_0 NNS_{t-1} + \beta_1 DIR_t + \beta_2 CR_t + \beta_3 CPI_t + \beta_4 M2_t + \beta_5 GDP_t \quad \text{Equation 3.1}$$

Where,

- NNS = net national savings
- DIR = real interest rate on savings deposits
- CR = credit to the private sector (% of GDP)
- CPI = consumer price index
- M2 = ratio of money plus quasi-money to GNP
- GDP = GDP per capita growth (annual %)

3.3 Definition of Variables

Variables used in this study are as follow:

3.3.1 Dependent Variable

3.3.1.1 Savings (NNS)

Savings is refers to the gross private disposable income. It is kept for transaction and precautionary motive purpose. The data used is from year 1981-2008.

3.3.2 Independent Variables

3.3.2.1 Interest rate (DIR)

Interest rate is a rate of amount that is being charged to the borrower or lender according to the principal it is expressed as a percentage. To measure the borrower's real cost of funds and lender's real yield, real interest rate are used in this study which has been excluded the effects of inflation. It is expected to have a positive relationship with the dependent variable as the interest rate increase, the savings will also increase and vice versa. The expected sign between interest rate and savings is positive sign.

3.3.2.2 Credit to private sector (CR)

Credit to private sector is indicated as ratio of bank credit to the private sector to nominal GDP which has been proved as a good measurement of financial sector development. Government's credit by central bank and bank are excluded. It is important to determine how the resources being transferred and fully utilize by the intermediary sector. It is found that the credit to private sector and savings is positive related.

3.3.2.3 Inflation rate (CPI)

Inflation rate is meant by increment in prices of goods and services. It can be affected by the demand of the purchasers as well as the purchasing power. It indicates that negative correlation between inflation rate and savings. According to Intertemporal Consumption Theory, it argues that the highest the inflation rate, people will choose to save more instead of consuming more. Therefore, the expected sign between inflation rate and savings is negative.

3.3.2.4 Money Supply (M2)

There are few categories for money supply which comprises of M1, M2 and M3. They are being categorized based on the type and size of the instrument and account is set aside. Economists based on the money supply to analyze how the interest rates and growth can be affected by the policies. In M2, it consists of M1 and all the deposits such as time-related deposits, savings deposits, and non-institutional money-market funds. The expected sign for the money supply (M2) and savings is positive. This is because when more money supply, it will lead to lesser cost of borrowing. People will tend to borrow and spend more now rather than keep it as saving.

3.3.2.5 Gross Domestic Product (GDP)

Gross domestic product (GDP) is important to a country's economy because it is a main pointer which representing the productivity of goods and services within a specific time period. Besides, it is useful when comparing the growth with one country to another and even compared with the previous quarter in the country. The performance of each country can be shown by viewing the GDP and it measures a country's living standard. When there is high GDP in country, it means people are having high consumption, therefore, the savings will become lesser. On the other hand, the high GDP also indicates that high level of income, thus, people might having the high saving too. So the relationship can be either positive or negative.

3.4 Data Processing

The traditional panel approach can produce inconsistent and potentially misleading estimates of the average values of the parameters in dynamic panel data model unless the slope coefficients are in fact identical. To achieve objective,

this paper will be examined using pooled mean group (PMG) method which allows for rich dynamic heterogeneity in the Saving and Interest Rate, Credit to Private Sector, Inflation Rate, Money Supply, and Gross Domestic Product regression over time and across countries. Autoregressive Distributed Lag (ARDL) dynamic panel specification is applied where the dependent and independent variables enter the right-hand side with lags of order p and q , respectively:

$$y_{i,t} = \mu_i + \sum_{j=1}^p \lambda_{ij} y_{i,t-j} + \sum_{j=1}^q \delta'_{ij} x_{i,t-j} + \varepsilon_{i,t} \quad \text{Equation 3.2}$$

Where,

$$i=1,2,\dots,N, \quad t=1,2,\dots,T, \quad y_{i,t} = NNS_{i,t},$$

$$x_{i,t-j} = (NNS_{i,t}, DIR_{i,t}, CR_{i,t}, CPI_{i,t}, M2_{i,t}, GDP_{i,t}) \text{ and } \mu_i \text{ is the fixed effects.}$$

By re-parameterization, equation (3.2) can be written as:

$$\Delta y_{i,t} = \mu_i + \phi_i y_{i,t-1} + \beta'_i x_{it} + \sum_{j=1}^{p-1} \lambda^*_{ij} y_{i,t-j} + \sum_{j=1}^{q-1} \delta^{**'}_{ij} x_{i,t-j} + \varepsilon_{i,t} \quad \text{Equation 3.3}$$

Where,

$$j=1, 2, \dots, q-1. \quad \phi_i = -\left(1 - \sum_{j=1}^p \lambda_{ij}\right), \quad \beta_i = \sum_{j=0}^q \delta_{ij},$$

$$\lambda^*_{ij} = -\sum_{m=j+1}^p \lambda_{im} \text{ and } \delta^{**'}_{ij} = -\sum_{m=j+1}^q \delta_{im}.$$

By grouping the variables in levels, equation (3.3) can be rewritten as:

$$\Delta y_{i,t} = \mu_i + \phi_i (y_{i,t-1} - \theta'_i x_{it}) + \sum_{j=1}^{p-1} \lambda^*_{ij} y_{i,t-j} + \sum_{j=1}^{q-1} \delta^{**'}_{ij} x_{i,t-j} + \varepsilon_{i,t} \quad \text{Equation 3.4}$$

Where,

$$\theta_i = -\frac{\beta_i}{\phi_i} \text{ defines the long-run or equilibrium relationship among } y_{it} \text{ and } x_{it}. \text{ And } \lambda^*_{ij} \text{ and } \delta^{**'}_{ij} \text{ are the short-run coefficients relating Interest Rate,}$$

Credit to Private Sector, Inflation Rate, Money Supply, and Gross Domestic Product to its determinants x_{it} . Finally, ϕ_i measures the speed of adjustment of y_{it} toward its long-run equilibrium following a change in x_{it} , and $\phi_i < 0$ ensures that such a long-run relationship exists. As a result, a significant and negative value of ϕ_i can be treated as evidence in support of cointegration between y_{it} and x_{it} .

Pesaran, Shin and Smith (1999) proposed the PMG estimator which restricts the long-run parameters to be identical over the cross section, but allows the intercepts, short-run coefficients (including the speed of adjustment), and error variances to differ across groups on the cross section. If the long-run homogeneity restrictions are valid, it is known that Mean Group (MG) which its estimates will be inefficient. In this case, the maximum likelihood-based PMG approach will yield a more efficient estimator. The validity of a cross-sectional, long-run homogeneity restriction and the suitability of the PMG estimator can be tested by a standard Hausman statistic.

CHAPTER FOUR: DATA ANALYSIS

4.0 Introduction

In this chapter, the empirical result obtained from the methodology in the previous chapter will be discussed. Many countries had been observed to conduct the test. The major countries used to conduct the research are America, Asia, Europe and Middle East countries. Furthermore, the PMG calculations were obtained by estimating a common ARDL for all countries under study. The results show there are significant changes depending on the estimation method use which from PMG.

4.1 Pooled Mean Group (PMG)

The alternative estimators, Pooled Mean Group (PMG), are used to examine in this study. Moreover, Error Correction Model (ECM) had been carried out to examine whether the adjustment for short run and long run exist in the test. In other words, to determine whether it is possible short run will convert to long run or not. It only can convert from short run to long run if there are negative relationship and significant between the independent and dependant variable. Otherwise, it is not consider as convergence.

4.1.1 Regional's Result

From the results in Table 4.1, it shows there are significant among the variables in Asia countries. It shows that is negative relationship between the independent variables and few dependant variables which is -0.4310. Therefore, it can convert from short run to long run. Other than that, the result from Table 4.1 also shows

there are significant among the variables in Middle East countries. It implied that is negative relationship between the independent variables and few dependant variables which is -0.6353. Thus, it can convert from short run to long run. In addition, the results also shows there are significant among the variables in America countries. It indicates that is negative relationship between the independent variables and few dependant variables which is -0.4910. Hence, it can convert from short run to long run. Lastly, it shows there are significant among the variables in Europe countries from the table above. The table shows there is negative relationship between the independent variables and few dependant variables which is -0.7016. Therefore, it can convert from short run to long run. Besides, according to Hausman test result in Table 4.1, it shows that by using PMG, long run coefficient will be more consistent than using MG.

Table 4.1 Regional's ECM Model

	America		Asia		Europe		Middle East	
	MG	PMG	MG	PMG	MG	PMG	MG	PMG
LR								
dir	-0.7286	0.0158	-1.564	0.4673***	347.343	0.2050***	0.569	0.1501***
cr	0.1176	0.2225***	0.1016	0.1938***	59.0128	0.0519***	0.2296	-0.2429***
m2	0.7539**	0.1552***	-0.4182	-0.2183***	-19.09	0.0137	0.1329	0.3142***
gdp	1.1612*	0.1541**	0.3989	0.3170***	88.5843	0.8229***	1.2166	0.1968**
cpi	11.3006	5.1989***	26.3861	-1.4895**	-6225.3	-15.3108***	-12.231	-1.971***
SR								
ec	-1.2581**	-0.4909*	-0.6956***	-0.4310**	-1.5176	-0.7016***	-0.8045***	-0.6353***
d.dir _{t-1}	-0.4483	0.2152	-0.1341	0.0541	-2.8917	0.166	-0.6438	-0.3585
d.dir _{t-2}	0.225	-0.0775	0.1104	-0.0776	-	-	-	-
d.cr _{t-1}	-0.0062	0.3206	0.0485	-0.2677***	-0.7854	0.1034**	-1.302**	-0.1965
d.cr _{t-2}	-0.3704	-0.0468	-	-	-	-	1.4339	-0.5303
d.cr _{t-3}	0.2718	0.0513	-	-	-	-	-1.0382	0.8345
d.cr _{t-4}	-	-	-	-	-	-	0.42	-0.4995
d.cr _{t-5}	-	-	-	-	-	-	-0.0754	0.1189
d.m2 _{t-1}	0.5962	-0.2005	0.7808*	-0.1588	3.9221***	-1.274**	0.4913**	0.1352
d.m2 _{t-2}	-	-	-0.4595	0.08292	-1.6993	1.2641***	-	-

Interest Rate, Credit to Private Sector, Inflation Rate, Money Supply, and Gross Domestic Product on Savings

d.m2 _{t-3}	-	-	0.1756	-0.2151	-0.0187	-0.5478***	-	-
d.gdp _{t-1}	0.0836	0.117	-0.1037	-0.3427	-1.5567	-0.219	0.2002	-0.0165
d.lcpi _{t-1}	-10.452	10.4608**	3.3494	-17.846	7.8711	23.87491*	34.4122*	1.3372
d.lcpi _{t-2}	-	-	101.668	60.6144	-	-	-	-
d.lcpi _{t-3}	-	-	-95.375	-43.034	-	-	-	-
d.lcpi _{t-4}	-	-	31.4518	18.3063	-	-	-	-
_cons	-81.644	-6.2432	-76.935	12.1841***	915.753	47.4695***	31.7027	3.9032***
Hausman	0.04		0.42		0.00		0.34	

Maximum likelihood: America -104.15833, Asia -119.4177, Europe -37.632141 and Middle East -135.47951.

Note: The asterisks indicate the rejection of null hypothesis as follow: ***1%, **5% and *10%

4.1.2 America's Result

For Table 4.2, the long run variables are dynamically integrated with the short run variables in Argentina, Ecuador, Venezuela and Brazil in with 1% and 5% significance level. Yet, it is not significant for Canada and Mexico.

4.1.2.1 Mexico, Brazil, Argentina

Mexico was facing financial crisis in 1994. Financial crisis occurs due to exchange rate was overvalued and most important it was fixed. Foreign countries like Mexico usually carrying debt which is denominated in foreign currency because they involved in foreign investment and international trade. It caused the country's cash flow not stable which indicated that capital outflows more than capital inflow. When the exchange rate was overvalued due to the error made, the information regarding the relative country will be circulating around the world. Public's expectation will also affect the country's economic growth. Thus, cash outflows occur rapidly and the prices of the domestic asset will fall. Therefore, recession happens and will cause the unemployment rising. The national savings tend to decrease during the recession. This type of financial crisis and recession also occur in Brazil in 1999 and in Argentina in 2002. The supply of savings tends to increase when the stock market is not in a favorable position or the real interest rate for investment declined. Therefore, the propensity to save will be increased.

On the other hand, Mexico also faced the hurricane and it was warning most of the state in that country. This hurricane tends to reduce the number of visitor to their country. Moreover, many cargos which handling operations are hanged and the port forced to closed for all the commercial liner traffic which related to the interchange within the port.

4.1.2.2 Canada

In Canada, the net worth of households decreased and the Canada's economists say that it becomes even worse in reducing stock and home prices. The Statistics Canada shows that 3.2% or \$191-billion of the household net worth reduce in the third quarter was the largest percentage drop in 1998, after the Canadian stock prices fell after the Asian financial crisis. Therefore, economists discuss about the wealth effect and households adjust their consumer spending based on how their wealth flows going.

4.1.2.3 Ecuador

Ecuador is the major production and export of raw products such as bananas, cocoa, coffee and shrimp. Oil became the primary export in Ecuador in the early 1970s. This allowed Ecuador to invest in new public services and infrastructure in order to control the wealth. Over depending on oil will lead to fluctuations in world market prices. Ecuador also faced the oil market crashed in the early 1980s. The dropped in oil prices lead the Ecuador's economy facing crisis matter characterized by inflation, increasing in debt service and non-competitive industries. Ecuadorian government establish a policy of currency depreciation which objective to pump up the country's internal debt. Thus, the Ecuadorian products become less expensive and more competitive in the international market.

4.1.2.4 Venezuela

Venezuela is one of the major oil producing country in Latin America. Venezuela was rich of variety of natural resources such as oil and petroleum. Since Venezuela becomes the world's third largest oil exporter, the country growth was expanding and thus has highest standards of livings among the nations in Latin America. In 1990, Venezuela plays the role as international exporter of steel, coal, aluminum and iron. On the other hand, the country's government fiscal account

was indicated surplus but it was until the mid of 1980s. The country's national savings was affected when there is oil price dropped which happened in 1988 and subsequently causing the account to become deficit. At the time, the government spending was considered high which around 23% of GDP. Despite the advancement which appears significantly in certain economic areas in Venezuela, the undesirable activities happen. It includes corruption, economic was not manage well that will caused the country to suffer. Both the political and economic structure of the country is affected and only small portion of income to cover large expenses. Therefore, the country's income was not generated much. Between the periods of 1930 until 1970, the inflation level was considered normal which shows the country enjoyed the price stability. After that, investments in oil opportunities occur in 1970 due to stability of price but unfavorable economic conditions turn up in 1980.

Table 4.2 America's ECM Model

	Argentina	Brazil	Canada	Ecuador	Mexico	Venezuela
SR						
ec	-0.3442***	0.1447**	-0.0108	-1.3808***	0.0678	-1.4227***
d.dir _{t-1}	-0.0535***	0.0008	1.2015***	0.1209	0.2755	-0.2539*
d.dir _{t-2}	-0.0078***	-0.0001	-0.5205**	-0.0304	-0.0915	0.0639
d.cr _{t-1}	0.4215***	0.0696	-0.1373	1.3986***	0.2927	0.123
d.cr _{t-2}	0.3031***	-0.0418	0.0848	-1.5313***	-0.0563	0.6115
d.cr _{t-3}	-0.0516	-0.0091	-0.0095	0.8845***	-0.7047**	-0.4504**
d.m2 _{t-1}	-0.8226***	-0.2118*	0.0806	0.3178	0.1681	0.1375
d.gdp _{t-1}	-0.0120***	0.4058***	0.0432	-0.009	0.1681	-0.1755*
d.lcpi _{t-1}	33.5149***	0.9199	4.6181	10.8653***	11.6294*	1.2172
_cons	-8.6610***	5.6346***	0.5907	-27.4443***	1.0917	-8.6708***

Maximum likelihood = -104.15833

Note: The asterisks indicate the rejection of null hypothesis as follow: ***1%, **5% and *10%

4.1.3 Asia's Result

According to Table 4.3, EC for China, Indonesia, Japan, Korea, Malaysia and Philippines are significant. This indicates that both dependent and independent variables are having dynamic integration. However, Singapore and Thailand are not significant.

4.1.3.1 China

For example in 2008, China was the host of the Olympic. Due to China promised to have the grand opening for the Olympic, thus it cause China over spend their capital for the Olympic event. In the same year, earthquake was happened in Sichuan and destroyed many properties. Therefore, China's government need large amount of capital to support the living expenses and other costs for victims. So, the economy growth of the country can be improved.

4.1.3.2 Indonesia

The theory of life cycle hypothesis can be applied in this situation which is the higher the population in Indonesia will affect the saving rates. The reason is initially the younger households tend to borrow, when reaching the intermediate stage household tend to save more in order to repay the borrowings, lastly when at the stage retirement the household will not to save anymore. According to the information, the population relatively to young is over 60% under the age of 34 years old therefore it is significant in Indonesia on savings.

In contrast, the higher the population the higher the unemployment rate therefore it leads to the lower saving rate. Thus, negative correlation between saving rates and unemployment rate occurs in this situation. For instance, in year 1996 the unemployment rates achieve 4.3 million people and had been increased to 6.0 million in year 1999. According to the report, two-third of the unemployment rate

includes 15-24 age groups and most of the jobs in labor-intensive industries have been separate to China and Vietnam.

4.1.3.3 Japan

Japan has a high saving rate among all industrial countries. Peoples keep 15% of their after-tax incomes as savings during early 1980s. But it started to reduce since 1990s because of house prefer current consumption instead of savings. Thus, the average saving rate deduce from 15% to 10%. Japan is free from borrowing capital from others due to the high saving rate in their country and high GDP. Besides, the national savings is more than the domestic investment and put Japan in deflation.

4.1.3.4 Korea Republic

Korea Republic or South Korea was ranked 13th largest economy in the year 2007. But it was hit by the financial shock that starts to happen in U.S. since year 2006. South Korea was unprepared for the shocked and economy problems had arisen. The economy facing a downturn and also the asset deflation, interest rate rises and inflation happened at the same time. This leads to the heavily indebted among the small and medium enterprises (SMEs) and also the households. The household debt has increased in a dramatic trend that is even faster than the U.S. Although there is no dramatic decline in the housing prices, but there is an increasing of mortgage interest rate that might burden the Korean. At that moment, the 30 largest Korean corporations had agreed to spend up to 94.5 trillion to stabilize the country's economy. At the same time, consumers were tend to only consumed for the fundamental goods to lower down the living cost at this moment. South Korea is highly exposed to the global economic changes as it is a country that was heavily rely on the export and import that expose to the foreign exchange risk. South Korea had faced a big declined in foreign direct investment (FDI) when the

foreign investor moved their manufacture to the countries with advanced technology and also the low labor cost.

4.1.3.5 Malaysia

Although Malaysia is a crude oil producer, which is supposed not affect by the global crude oil price, but the people still have to suffer from the high oil price. The reason of it is because of fuel is a necessity item to the people, no matter how high the price, it won't reduce the quantity consume even the price is high. Therefore, government implement a new policy where fuel subsidiaries being cut down, high tax duty imposed to cigarettes and liquor and increase charges on toll usage. The changes of the policy bring a big impact to the people in Malaysia. In logistics and transportation view, the companies have to pay more to buy fuel. To cover the back the cost, then have to charge more on customer, it might be the firm and organization. Price of goods and services increase at the same time, people have to pay more in order to get the goods and services.

4.1.3.6 Philippines

Around 1980s, the Philippines were facing huge foreign debt, low savings rate, inefficient tax collection, poor agriculture and inadequate infrastructure. These phenomena were even serious at the suburbs. The Philippines's economy was highly affected by the oil price and exchange of international stock and also the interest rate shifted by the U.S. Federal Reserve. When comes to the end of 1990s onwards, the Philippines economy was in the trend of fast growing. The GNP in the Philippines has grown even faster than the GDP in consistent. This shows that most of the incomes generate was incurred in foreign countries instead of home. The activity that generates most income is by out-migration the labor forces to other countries. In Philippines, the government implemented a forced saving scheme to the enterprise and households such as pension funds which is one of the important sources of institutional saving. The foreign direct investment in

Philippines had been increased by the liberalized of economic policy. The industries that assembly and manufacture of parts of the electronics has successfully attract the foreign investment to inflow. As the increased in the foreign investment, the unemployment rate will be significantly reduced. Therefore, the saving has been increasing as the incomes of Filipino are increased.

4.1.3.7 Singapore

Although Singapore is just a small country that located in Southeast Asia, but it shows its importance in economic in Asia. Singapore faced deflation due to high salary which made Singaporean products less competitive on the world market. At the same time, the neighbor country such as Malaysia also faced declination due to falls of demand for electronic products and oil. It is not only affected Singapore, but also Indonesia and close trading partners and this makes Singapore experienced serious economic downturn.

4.1.3.8 Thailand

From the result obtain, Thailand is said to be insignificant. This is because Thailand is a country that is heavily relies on the foreign investment and tourism. In other words, Thailand economic condition is highly rely on others foreign countries. Investors will choose to invest in Thailand because of its geographical strategic location and also to cut down the cost. As the foreign investment flow into Thailand increase, the rate of unemployment decline due to the local labor force will be used up to save cost. The high employment rate leads to higher saving rate in Thailand. But the political issue such as the incident of booming happened during year 2007 to 2008 had causing a decline level of Thailand economy as the investor try to avoid investing in a country that is in riot. This caused the investor choose to switch their subsidiaries to other countries instead of Thailand. As a result, Thailand's economy falls into an unstable condition. Therefore, the saving rate in Thailand is also affected by other important issues

other than the deposit interest rate, credit to private sector, inflation rate and money supply during that period of time which leads to the result of the test to be insignificant.

Table 4.3 Asia's ECM Model

	China	Indonesia	Japan	Korea	Malaysia	Philippines	Singapore	Thailand
SR								
ec	-0.3327***	-1.5168***	-0.8871***	-0.3328***	-0.2759***	-0.2344**	-0.0189	0.1508
d.dir _{t-1}	-0.8280**	-1.8303***	-2.2009***	0.7019	1.2137***	-0.3953	2.4067	1.3651***
d.dir _{t-2}	0.5250**	1.4086***	1.0142***	-0.4093	-0.7254***	0.4179**	-2.1617	-0.6899**
d.cr _{t-1}	-0.1900***	-0.8435***	-0.1805***	-0.2854***	-0.0107***	-0.1748***	-0.4412***	0.0804
d.m2 _{t-1}	-0.7411***	-1.3795***	0.2193***	0.1750*	0.3611***	-0.0472	-0.2555***	0.3975
d.m2 _{t-2}	1.7756***	5.7104***	-0.2901***	-0.4022	-0.2704***	0.4274	0.1108	-0.4281
d.m2 _{t-3}	-0.8561***	-1.4099***	0.1690***	0.1597	0.1295***	-0.2097	0.0569	0.2396
d.gdp _{t-1}	-0.5211***	-1.9728***	0.2917***	0.0555	0.1252**	-0.2318	-0.4658*	-0.0228
d.lcpi _{t-1}	-51.0744***	-45.4011	39.6766***	21.0334	-112.5647***	-26.6587	139.7277***	-107.5096**
d.lcpi _{t-2}	100.105***	28.877	301.8237***	-3.972	494.1300***	32.7144	-542.168***	73.4053
d.lcpi _{t-3}	-52.2139***	-72.9352***	-306.3338***	3.5015	-477.196***	-3.0122	636.2468***	-72.3254
d.lcpi _{t-4}	6.9294**	41.3999***	78.7516***	3.8798	174.4713***	-9.811	-187.4204***	38.2495
_cons	20.3316***	33.6147***	19.3712***	6.1195***	11.4134***	6.69833*	-0.1838	0.1082

Maximum likelihood = -119.4177

Note: The asterisks indicate the rejection of null hypothesis as follow: ***1%, **5% and *10%.

4.1.4 Europe's Result

According to Table 4.4, in Denmark, Finland, Malta and Switzerland, independent and dependent variables are dynamic integrated at 1% significance level while Norway significant at 5%.

4.1.4.1 Denmark

Denmark is a country that has higher education in order to prepare the high quality students for the career in the industry in future. In Denmark, age from seven to sixteen requires having basic education and it is free from the University level. Excellent teaching material and academic activities is provided for the student to learn in order to get higher and innovative knowledge. Thus, with the knowledgeable consumer tend to have significant saving rates. Unfortunately, according to the report the unemployment rate is increasing over the time period. Therefore higher the unemployment rates lower the savings. It also discovers that household does not have enough income for savings.

4.1.4.2 Finland

Finland facing account deficit because of the implementation of financial deregulation and thus causes real interest rate shock happen subsequently faced economic downturn. In the end, Finnish companies' encountered a huge loss in the level of output, employment and industrial production. Thus, company's debt to the foreign lenders will drop. This leads the devaluation of the country's currency and thus the country facing heavier debt load.

4.1.4.3 Malta

Household consumption and savings behavior is the main concern for macroeconomic which is related to the economic growth. It means that when the consumption increases, savings will decrease and vice versa. The household at Malta tends to satisfy the basic needs only and will dedicated to the necessary needs to achieving the higher level of living standard. Besides that, changing in purchasing power will lead to change in household consumption and savings behavior. According to the previous research, within the year 1988 and 1992, income increase and then also lead to increase in both consumption and savings. In some situation, the savings will grow up faster than the consumption. Therefore, Maltese savers no longer are a nation of savers in recent years. Maltese prefer more on the constant consumption in each period of time which mean they overcome the smoothly consumption over the period therefore savings on Malta will be significant. In addition, life cycle hypothesis also supported the smoothly consumption in Malta.

4.1.4.4 Norway

In Norway life cycle theory can be applied. Generally the younger generation will save more compare to old generation because they have higher income. But, in Norway older generation and patient tend to save more than the younger generation due to according the preferences for higher savings. This is so call different culture and born in different time periods tend to have different savings pattern. For instance, the common situation is that older generation maybe more alert to the risk existence and save more compare to younger generation therefore it is significantly affected. Hence, savings will be kept rising with the age which means the older generation tend to save more. Besides, the negative correlation can be explained by the higher consumption and the lower the savings and vice versa.

4.1.4.5 Switzerland

Switzerland is one of the countries which having a stable market economies around the world. GDP per capita was higher than the average of other big sized countries in Western European. Although comparative stagnation occurs during 1990s, Switzerland is still able to achieve the highest per capita income among the Europe countries. The unemployment rate in Switzerland is very low and the inflation as well due to the establishment of sound government policy and harmonious labor-management relations. As the unemployment and inflation is low, the citizens will have more money in accumulated savings. In Switzerland, the citizens tend to spend more on the entertainment and also travelling in order to have a comfortable life. But, they still concern about the savings. This is because they wish to have a higher standard living after retired. So, they will invest more in the bank deposits, pension plans, and also investment funds. Therefore, Swiss have a good financial planning. As a result, they will assign a plan regarding their income and expenses to ensure that part of the portion of their income will be saved for future used.

Table 4.4 Europe's ECM Model

	Denmark	Finland	Malta	Norway	Switzerland
SR					
ec	-0.2969***	-1.1811***	-0.4162***	-0.6412**	-0.9726***
d.dir _{t-1}	0.0998	-0.4814***	1.7295	-0.2163	-0.3017***
d.cr _{t-1}	0.0886***	0.2899***	0.1042	0.0438	-0.0088
d.m2 _{t-1}	-0.4242***	-2.1754***	-1.9496***	-2.1971***	0.3746***
d.m2 _{t-2}	0.3989***	1.8968***	1.7985**	2.3123**	-0.0863*
d.m2 _{t-3}	-0.1906***	-0.8986***	-0.9067***	-0.6658*	-0.0774***
d.gdp _{t-1}	-0.2358**	-0.6414***	-0.0838	0.4444	-0.5783***
d.lcpi _{t-1}	-21.9861	31.9489***	46.3300	48.3514	14.7304**
_cons	20.8134***	75.6045***	32.4966***	41.9344*	66.4987***

Maximum likelihood = -37.632141

Note: The asterisks indicate the rejection of null hypothesis as follow: ***1%, **5% and *10%.

4.1.5 Middle East's Result

From Table 4.5, Cyprus, Israel and Turkey short run variable will have dynamic integration with long run variables due to the significance level is in 1% while Egypt's short run and long run variables do not have integration.

4.1.5.1 Cyprus

Economy started to grow in favorable level due to rapid development in Cyprus in 1974. Many buildings and territories were built and standards of livings were also improved. Thus, the cost for living will also increase and the residents in Cyprus have to spend more. The domestic savings level will decline which contribute less to the national savings. The rapid development will impact the country environment throughout the long term basis. The more important is that Cyprus government goal is to preserve and maintain the quality of the environment all the times which is in conjunction to both the social and economic policies. The government's plan was emphasized on both sustainability economic growth and at the same the quality of environment is protected. Hence, an Action Programme was planned.

Other than that, the savings tax directive in Cyprus on 1st July 2005 affected the resident in their country which they got their interest income from the investments or the deposits which held in another state. While a resident have the interest on savings in another state, the payment that they received at the beginning will be taxed which in compliance with the position in the country's investment.

4.1.5.2 Egypt

Meanwhile, Egypt was facing financial problem because their large amount of capital were not channel and allocate effectively and efficiently through the intermediaries. Moreover, the Egypt's financial intermediation only takes place in

both the banking and insurance. National Investment Bank in Egypt normally makes the borrowing to government or participates in the bond investment and no secondary market for the treasury instrument. In 1981, capital flight was happened and affected the Egypt's economy. The Egyptian businessmen begins to loss their confidence and unwilling to put their money in Egypt. They withdraw their money and placed in other stable economy country like Zurich or London. Foreign investor was reducing in amount due to unstable economy growth in Egypt although Egypt obtains the help from World Bank. Hence, it will cause the capital market become too liquid and inflation will happened. Therefore, the per capital real income will be affected and declining sign was indicated in 1983.

4.1.5.3 Israel

The expenditure in Israel becomes an important issue that captures the major concern by the government. They spend their capital mostly on supplies, construction, equipment, personnel costs and foreign purchases. The foreign purchase includes the consumption of goods and services for the military purpose. Moreover, government also allocates their country's savings for the aircraft project development and other materials for the use of defense industry.

4.1.5.4 Turkey

The factor that was vulnerable to Turkey economy was facing imbalance account because of high deficit current account. The global crisis was happened during 2002 until 2007. Another reason regarding Turkey economy was affected is because of the foreign trade flows. Foreign trade flows are important channels which lead the global crisis occur. According to (Uygur, 2010), the results obtained indicated that that import are more than export. The available data also shows that the export was decreased continuously which begin on October 2008 and the import was also declined. In 2009, the volume of import begins to increase while the export was remained. When Turkey was facing global crisis, the price of

the goods will fall and thus the value of the export will also fall. The production from different industry sector such as vehicles or chemicals will be affected when Turkish export are close to the world import. As a result, it caused Turkey generate less income because their production level was reduced and have to bear for more costs for trade financing during the crisis. The national savings was low.

Turkey also demands more foreign capital as a major source of funding for the bank in Turkey. The foreign capital plays an important role as the credit for the bank. The bank needs the credit to support the growth and their operations. In order to obtain foreign capital, Turkey will either involve in foreign investment or through borrowing. Turkey will be indulged in heavier debt load when the borrowing rates were increased. Moreover, the volatility in the investment was high and has to face many uncertainties.

Table 4.5 Middle East's ECM Model

	Cyprus	Egypt	Israel	Turkey
SR				
ec	-0.5048***	-0.3351	-0.5386***	-1.1627***
d.dir _{t-1}	-1.9888	0.4216	0.4214	-0.2883***
d.cr _{t-1}	-0.0290	0.0653	-0.7830**	-0.0393
d.cr _{t-2}	0.1744	-1.5876	1.1083*	-1.8165***
d.cr _{t-3}	-0.2712	2.3256	-0.5510	1.8346***
d.cr _{t-4}	0.1551	-1.2805	0.2216	-1.0942***
d.cr _{t-5}	-0.0295	0.3118	-0.0733	0.2667***
d.m2 _{t-1}	0.0698	-0.0833	0.1063	0.4481***
d.gdp _{t-1}	0.0608	-0.0058	0.1230	-0.2438***
d.lcpi _{t-1}	34.0321	4.9221	-31.2773**	-2.3279
_cons	3.4419	1.6713	6.6221**	3.8777**

Maximum likelihood = -135.47951

Note: The asterisks indicate the rejection of null hypothesis as follow: ***1%, **5% and *10%.

4.2 Diagnostic checking

4.2.1 Sensitivity test

To ensure these results are not heavily depending on the country, sensitivity test was employed. Based on Figure 4.1 to 4.4, these result show that, there are insensitive on each regional after dropping the country one by one. Therefore, the research can conclude that the results are unbiased.

Figure 4.1 Sensitivity test for America

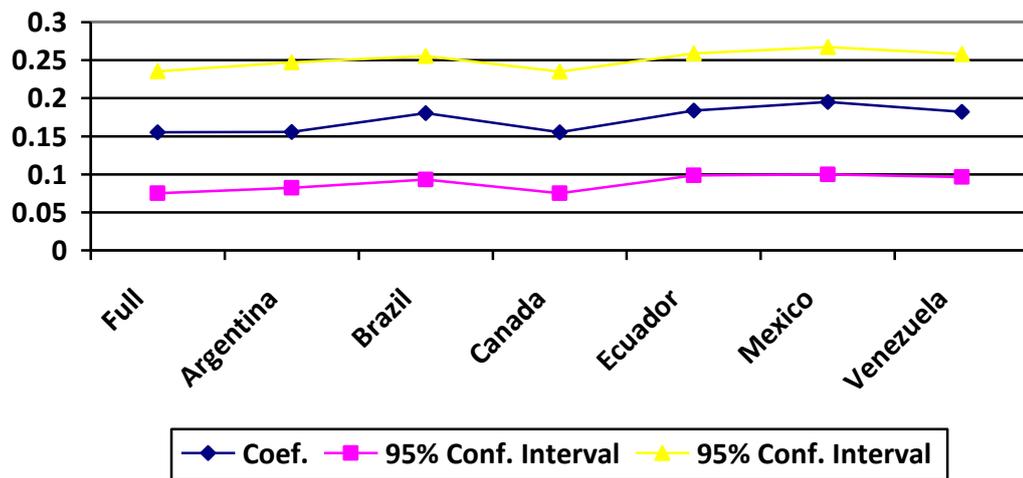


Figure 4.2 Sensitivity test for Asia

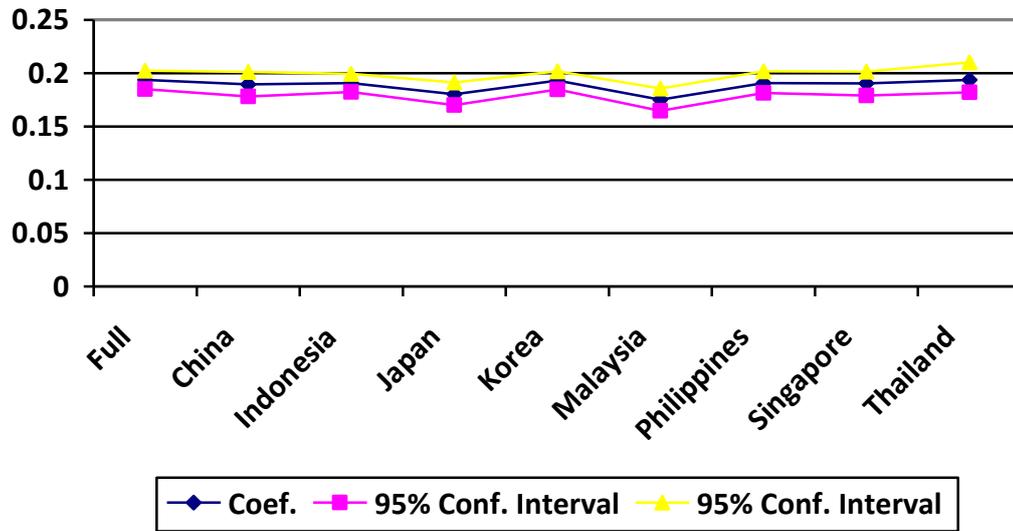


Figure 4.3 Sensitivity test for Europe

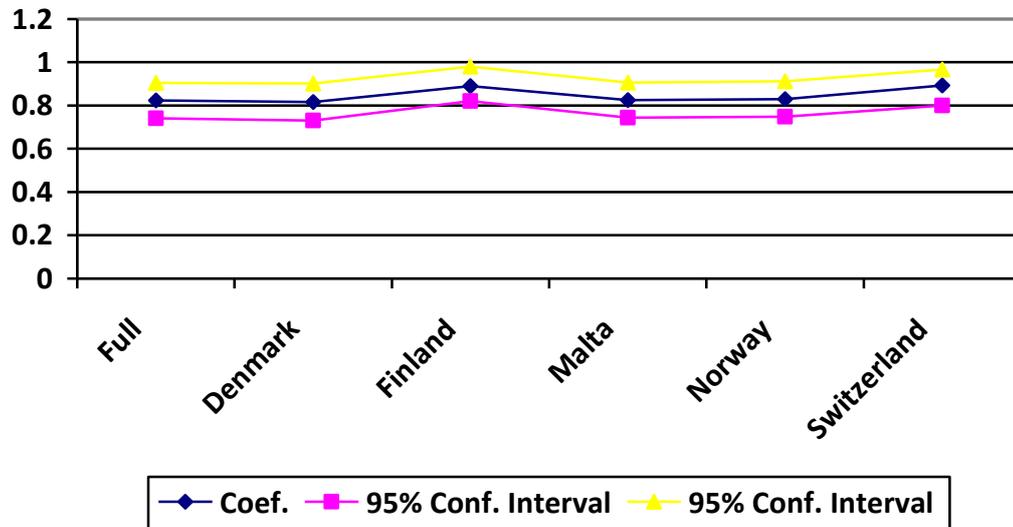
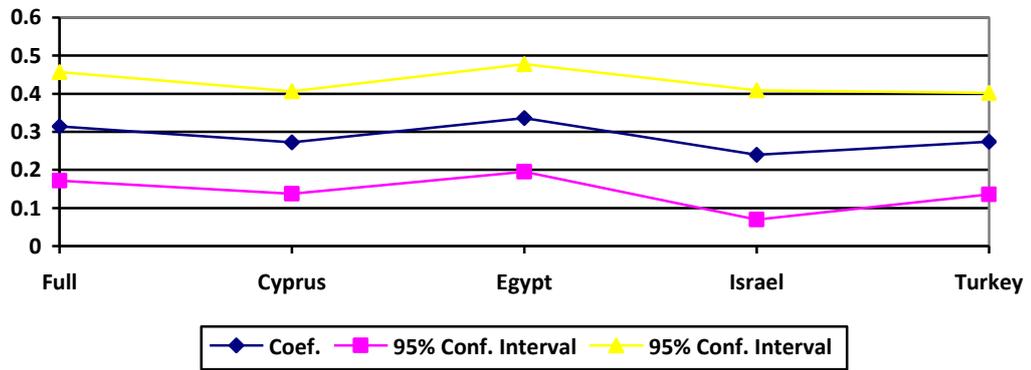


Figure 4.4 Sensitivity test for Middle East



CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

In this chapter, a summary will be concluded based on the entire previous chapter. The summary include all of the statistical analyses, discussions of major findings, implications of the study, limitations of the study, recommendations for future research and last but not least the conclusion.

5.1 Summary of Statistical Analyses

The purpose of this study is to determine the impact of inflation, interest rate, gross domestic product, money supply and credit to private sector on savings on four different groups of country, which are America, Asia, Europe, and Middle East. These are the few groups of the country which are being selected for these studies. In addition, the model in this study is to examine and analyzed the interaction as well as the significant level between the independent variables and dependent variable in both the short run and long run. The study is conducted to test whether the impact of savings follow the intertemporal consumption and marginal propensity to save effect.

According to the results that obtained, all the variables (deposit interest rate, credit to private sector, money supply, gross domestic product, inflation) are found to be significant impact on savings. Although the variables are significant at different significant level, but it has enough evidence to indicate that the variables are correlated and sensitive to savings. Besides that, the lag two credit to private sector is found to have negative relationship with savings in Mexico. In other

words, the credit to private sector does not affect the Mexico savings level. Meanwhile, all the variables are found to be insignificant with Egypt savings. In other words, it shows that Egypt savings rate is affected by other important variables like financial decisions but not the variables from this study.

Moreover, there are certain countries like Indonesia, and their government has to make many efforts in order to boost up or stimulate their country's saving rate. But, their savings rate are still remained poor due to their country are in predevelopment stage compare to other countries like China, Canada, Japan , Switzerland which are considered as developing countries. Countries that have poor saving rate is because they cannot achieve good economic performance. The reasons is that those countries do not have many professional workers, expertise, advance technology, their products price are low in international trade and they do not have good relationship with developing countries. United States tend to have lower savings rate compared to other developed countries due to they have large current account deficit.

5.2 Discussion of Major Findings

Pooled Mean Group (PMG) have been done to investigate the relationship between interest rate, inflation, gross domestic product, money supply and credit to private sector on savings in long-term as well as in short-term. The ARDL tests also use to investigate whether there is convergence of short-run adjustment to long-run adjustment between savings and interest rate, inflation rate, gross domestic product, money supply and credit to private sector.

From the result, it found out that all the countries have negative relationship and significant between the independent and dependant variable. It implied that all the country is able to covert from short run into long run. The test use to examine the relationship between the dependent variables and independent variables is Error Correction Model (ECM) in long term and short term. Based on the results,

savings react differently to interest rate, inflation, gross domestic product money supply and credit to private sector in short run.

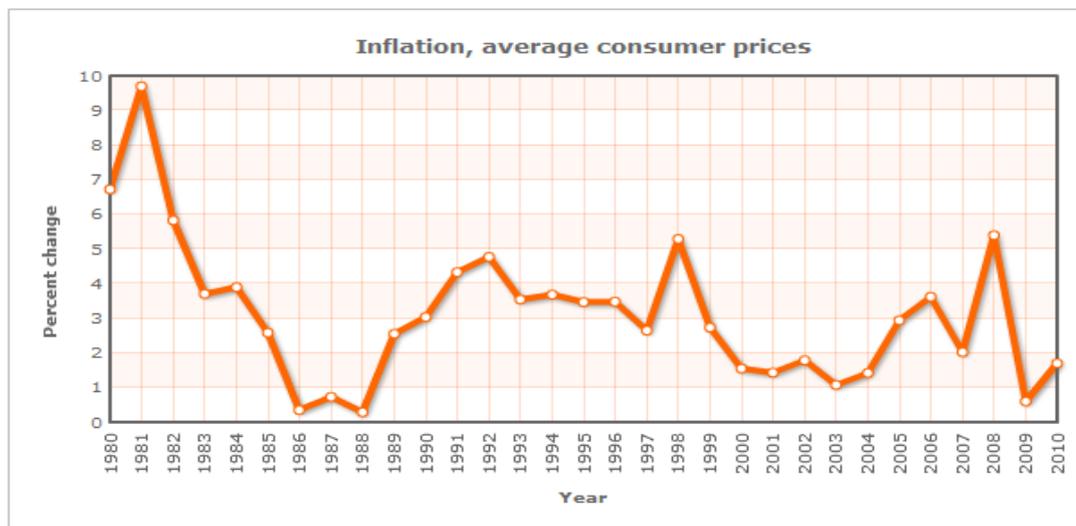
According to the results, savings show significant or insignificant impact on several variables that are chosen. Credit to private sector shows significant on savings which is supported by Harrabi, Bousrih and Salisu (2007) and done in African from year 1988 to 2004. In addition, the amount of credit supply is related and significantly impact on savings, spending drop which will affected money supply increase (Bertocco, 2009). Besides, money supply supported by prior researcher Haron and Azmi (2006) show significantly affected. They examine that when the money supply increase, savings will increase and vice versa.

Meanwhile, the inflation and savings are negatively correlated which match with prior studies Sternberg (1981). Inflation increase leads to the income decrease and hence savings will decrease. According to Sultana and Syed (n.d) there is significant long run relationship and negative between inflation and savings which match with the result. However, interest rate and savings show positive and significantly affected in the results which match with the prior studies (Glyfason, 1993). Savings increase when interest rates increase according to the findings of Gupta, 1987 which cover from year 1967 to 1976 in Latin America and Asia countries. There are some discussions about the major findings in some countries:

5.2.1 Malaysia

In year 2008, Malaysia achieved high inflation rate throughout 26 years in the past. This is because of increment of electricity fees and crude oil price that faced globally.

Figure 5.1 Inflation rate in Malaysia

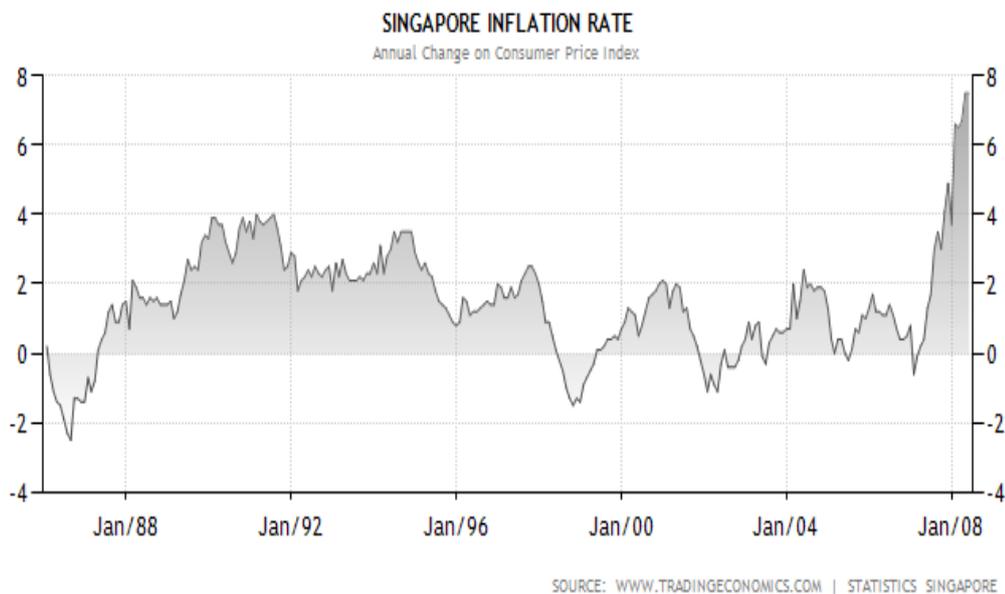


Source: International Monetary Fund

5.2.2 Singapore

During 1980s, government overthrows previous practice of traditional labor-intensive, low salary pay and prosecutes the plan of implementing advances technology, offer higher salary to employee. But this arrangement does not receive a good feedback, yet, it brings negative impact to the economy.

Figure 5.2 Inflation rate in Singapore



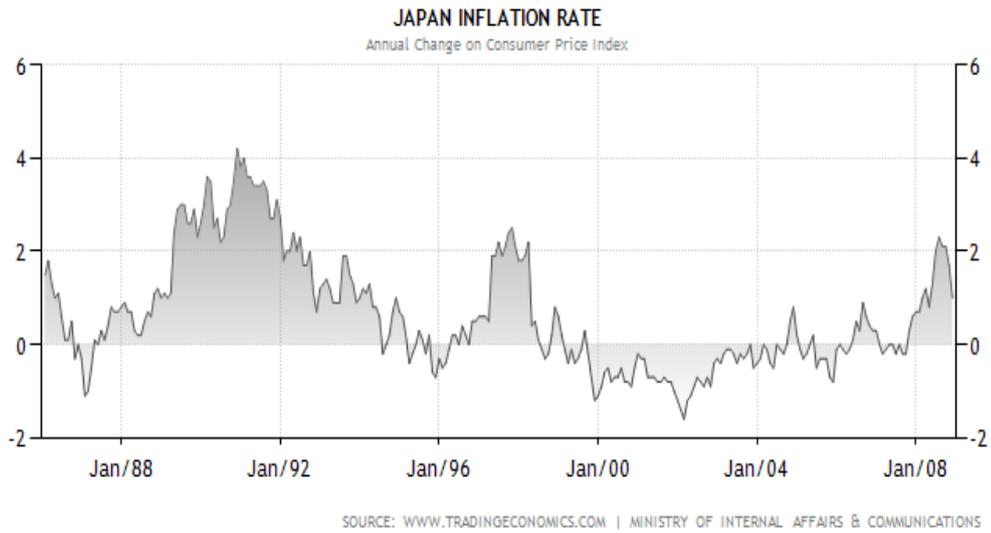
Source: Trading Economics

5.2.3 Japan

Japan's economic started to grow slow at 1990s. The declination in share prices and house values does not change the mind of Japanese to increase their saving because they have make savings and own a strong and liquid capital. Compared to those eldest people, the youngster prefer current consumption than save for future. As times goes by, those day who make high saving had reached retired stage. Consequently, the saving rate had reduced to 2%. From the graph, no matter the

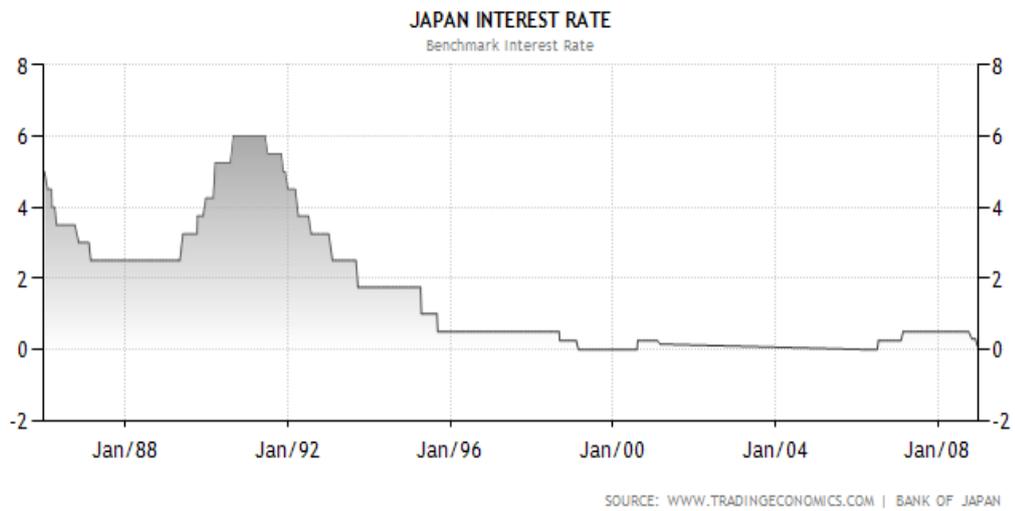
interest rate is increase or decrease at the point of times, it is not affecting the savings rate but is more related to the consumption behavior of the people.

Figure 5.3 Inflation rate in Japan



Source: Trading Economics

Figure 5.4 Interest rate in Japan

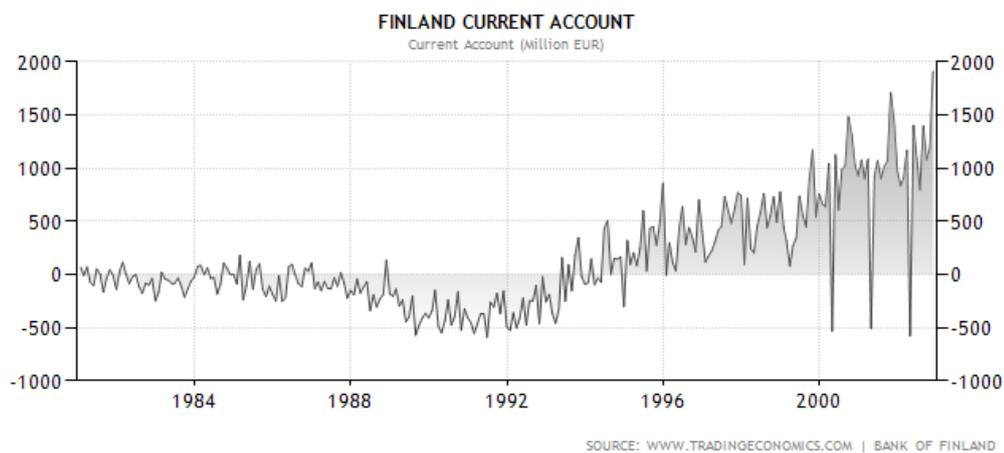


Source: Trading Economics

5.2.4 Finland

From the graph, Finland shows a current account deficit at the early of 1990s. This is because of financial deregulation which lead to real interest rate shock and faced economy downturn.

Figure 5.5 Current account in Finland



Source: Trading Economics

5.3 Implications of the Study

The results indicated few policies that are important for the policy maker for their decision making. National savings are playing an important role as the capital for investment and help promote economic growth. Therefore, policymaker needs to choose the suitable policy according to the condition level. The policy is important and has major impact on a country's savings. Central Bank can applied monetary policy to control the changes of interest rate so that savings rate are potentially increase. Generally, increase in interest rate has the potential to attract more savings and thus the savings rate goes up.

Interest rate is an important issue for the target of monetary policy. This is mainly because of the Federal are get into trouble in past period by using the federal funds rate as the targeting. Thus, this target had revealed some problems. First, Federal may lose the control of money supply. Basically, inflation rate should increase and the higher the rate of expectations of inflation, it will lead to nominal interest increase as well. If Federal targeting on interest rate, increase of money supply will push the interest rate back to normal rate. Thus, the inflation in an economy will become worsen and the increase in money supply will strengthen the expectation of people in higher rate inflation. Moreover, once the expected inflation rises, it will push up the nominal interest rate. Hence, a large increase in money supply is needed to push the interest rate back to normal rate.

Central bank plays an important role on controlling money supply by implementing Open Market Operation. When the market is too liquid, central bank will issue the treasury bills, treasury bonds, treasury notes to the market so that the bank can buy it in order to bring back the money supply to balance. Else, the interest rate will drop drastically, lesser cost of borrowing promoting people to borrow more from the bank. At the same time, people will tend to save less and vice versa. Government should control the inflation rate because it affects the purchasing power of people. When high inflation, people will not buy at this time but keep it as saving. This will make the market not liquid since them not preferring current consumption.

Meanwhile, government is the largest consumer of goods and services for trade. When government spends more consumption, it also means that the national savings will reduce. According to Solow Model, savings rate increase when the consumption level declined in the short run. Other than that, national savings are not only contributed by government but also from the public. The national savings will be affected by the amount of tax that imposed by the government. Tax is considered as financial incentives instrument. Current consumption will be taken into consideration when they are exposed to heavy tax burden. Therefore, they tend to borrow more at present and repay the loan in the future. Different type of taxes will give different impacts on the savings rate. Savings rate will increase

when the consumption level is declined when consumption tax is imposed on both the goods and services whereas the savings rate increase when there is capital gain taxes. Both of the policies are known as savings incentives.

Government will decide to increase the nation savings by increase the public savings. This is because in the long run and short run, an increase in corporate savings will affect the decline on household savings and vice versa. Thus, corporate savings movement will directly affect the household savings even the government savings is over or under. For economists, the savings tend to increase when there is less consumption now. Businesses tend to make their decision regarding the expenditure after considering all the economic conditions and factors like inflation level, economy growth and other important determinants. In addition, economic education is launched to encourage the public to instill saving behavior.

There have two issues had been set. Firstly, the current saving and investment are imbalances which both of the variables are found to be worthless. This will lead to disrupting the potential adjustment which is being generated together with the implications for economic activity and financial markets. This issue caused the Europe countries whether fiscal policy should play an important role in limiting the “internal” imbalances between current saving and investment or not. Secondly, the imbalance between current saving and investment might not be a concern matter, due to both of it may not achieve the sustainable level. For instance, both of these issues come up with what is the macroeconomic policies and structural role that can take part in to assist the desired adjustment.

5.4 Limitations of Study

There have been many researchers study on the impact of inflation, interest rate, gross domestic product, money supply and credit to private sector on savings. However, the research on the relationship between the independent and dependent

variable is limited. It is important to have a study to examine and further investigate the different independent variable on savings because different independent variable will contribute different effects on savings. Besides, this study only examines short run relationship between the independent and dependent variable instead of long run relationship.

5.5 Recommendations for Future Research

There are few suggestions for further studies. Firstly, future researcher is recommended to include few more important independent variables in future such as income of the household, spending behavior, private savings or public savings in order to investigate the more detail on the factors that may influence the savings. In addition, future researchers are encouraged to test on the countries which not selected in this study to carry out more reliable findings and know about the savings behavior of other countries. Besides, omit the country that consists of less data in order to ensure the consistency of the data period for all groups as well as reliability can achieve. Moreover, further researchers are encouraged to examine the long run relationship between the independent and dependent variable.

5.6 Conclusion

Some major findings had been discussed by several tests that had been conducted in this study. This study had achieved the main objective which is to study the impact of interest rate, inflation, gross domestic product, money supply and credit to private sector on savings. In addition, this will be a reference for future research when they are going to conduct the test.

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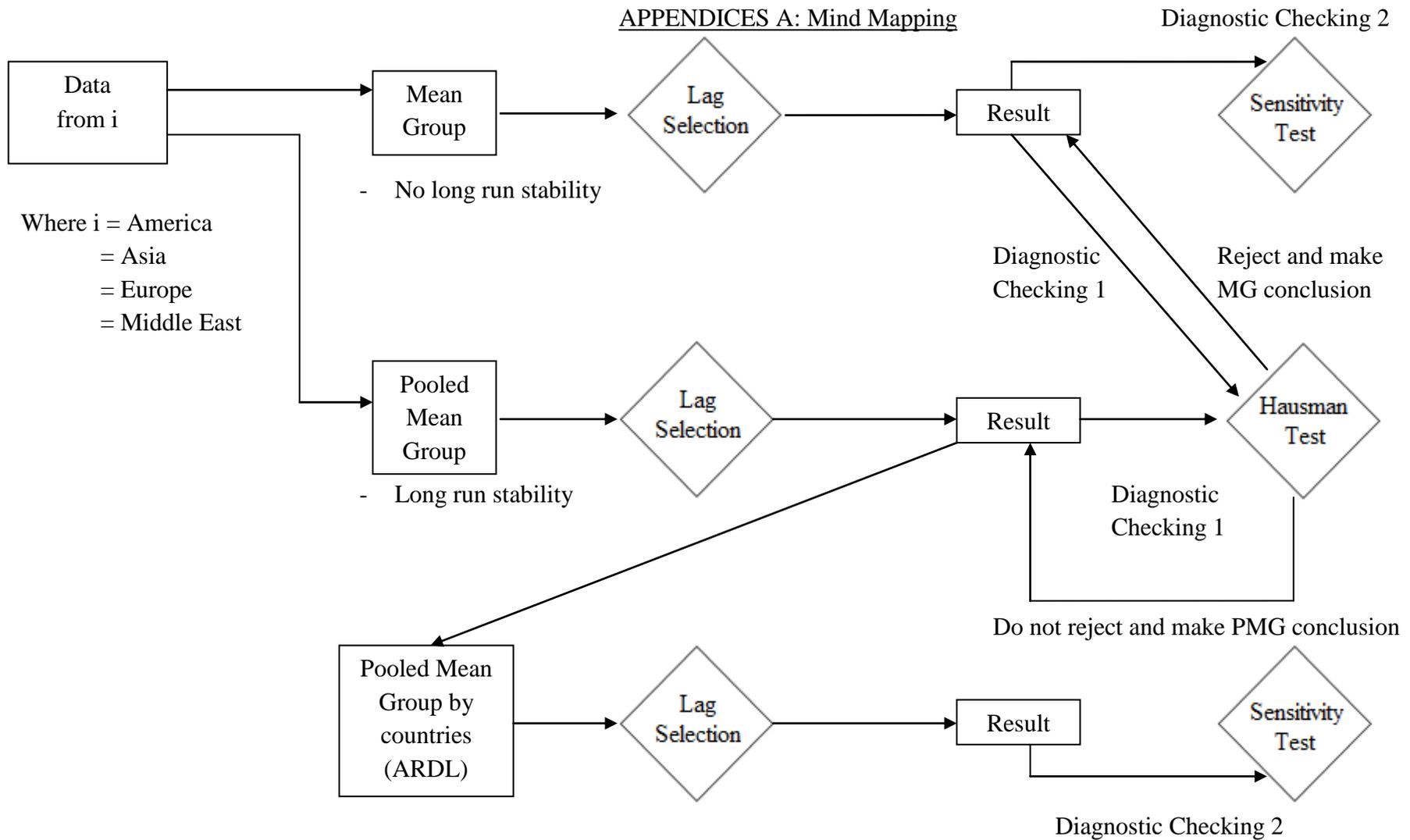
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APPENDICES A: Mind Mapping



- Test result for Mean Group (MG) will not suitable to conclude for long period, this is because of it does not consist long run stability. But for Pooled Mean Group (PMG), it has long run stability.
- Hausman test was used to be the first stage diagnostic check in this thesis. From Table 4.1, the result is do not reject, which means that should use PMG's result to make conclusion, because of long run coefficient in PMG will be more reliable than MG.
- Table 4.2 to 4.5 shows the countries coefficient where it is applying PMG test.
- For Figure 4.1 to 4.4, they are result of running second stage diagnostic checking by dropping each country from each model to test the coefficient.

Appendices B: Definition of variables by WorldBank

Adjusted savings : net national savings (% of GNI) - Net national savings are equal to gross national savings less the value of consumption of fixed capital.

Deposit interest rate - Deposit interest rate is the rate paid by commercial or similar banks for demand, time, or savings deposits.

Money and quasi money (M2) as % of GDP - Money and quasi money comprise the sum of currency outside banks, demand deposits other than those of the central government, and the time, savings, and foreign currency deposits of resident sectors other than the central government. This definition of money supply is frequently called M2; it corresponds to lines 34 and 35 in the International Monetary Fund's (IMF) International Financial Statistics (IFS).

Domestic credit to private sector (% of GDP) - Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises.

Inflation, GDP deflator (annual %) - Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.

GDP per capita growth (annual %) - Annual percentage growth rate of GDP per capita based on constant local currency. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.