PAK Publishing Group
Growing Knowledge for Future

Proceedings Book of ICBSSS, 2014, Malaysia
Handbook on Business Strategy and Social Sciences
ISBN: 978-969-9952-00-5

Does Sovereign Debt Create the Sustained Growth? The Case Study of Thailand

Pornpong Sakdapat[1]

[1] Lecturer, School of Management, Shinawatra International University

ABSTRACT

The aim of this research was to explore the impact of sovereign debt and debt services on the economic growth of Thailand in both long- and short-term periods, including other relevant macroeconomic factors: gross capital formation, consumer price index, inflation and trade by using time series data. The study was divided into two cases: a short-term case using quarterly data from the first quarter of 2006 to the fourth quarter of 2011, and a long-term case using annual data from 1990 to 2010. The study evaluated the relationship between external debts, debt services and other relevant variables by using the Ordinary Least Square (OLD) regression model. Stationary of time series was checked by the unit root test of the augmented Dickey-Fuller (ADF test) model. OLS regressions, test of normality, and auto-correlation were used in order to find the best linear unbiased estimator. It was displayed through tests that the estimation of regression lines was fitted; most of individual variables were statistically significant, independent variables of the model were jointly significant in order to explain dependent variables, and the error terms had no correlation. The empirical estimation equation's results illustrated that the external debt to GDP ratio had no correlation with economic growth ether in short- or long-term cases, while debt services to GDP ratio had a negative effect on economic growth of Thailand in both cases. So, the null study hypothesis was accepted that the external debt had an impact on economic growth of Thailand in both short- and long-term cases. Consumer price indices had a positive impact on economic growth in both short- and long-term cases, while gross capital formations and trade balances had a positive impact only in long-term case. The result of this study suggests that even borrowing level does not impact economic growth, its obligation or debt service still threatens the growth of the economy; therefore, improving overall debt management policies, trading policy and inflation control is the way to develop a different outcome between short- and long-term periods.

Keywords: Sovereign debt, Debt overhang, Sovereign debt crisis, Thailand sovereign debt, Sustained growth, Sovereign debt growth.

1. Introduction

The globalization in the 1980s has changed Thailand in many ways. The prominent effects of globalization are that during the 1980s-1990s the transportation and communication had literally shrunk the world, suddenly many things such as documents and files became digitalised and in a sense had become borderless by being able to transfer things in seconds while staffs had been greatly reduced by using automated machines instead and improving information management. All of which have greatly benefited Thailand in many aspects. Firstly, regarding information technology in the past, Thailand was known as a country which had a large number of basic human-needed products such as food, food ingredients and cloths, but information had wildly expanded the marketing of products to be able to reach wider and further customers. This resulted in that much more products were distributed and accessible. During the 1980s, the overall country had been broadly known by other countries, causing an increase in Thai product's demand, but manufacturers, which were still largely primitive low-tech agricultural industries, were not be able to sustain the need of global demands. Secondly, the transportation has been drastically changed. In the past, traveling from Asia to Europe could take up to three months by sailing, but since the technology was changed, it could take only up to 20 hours by a flight. The reduction in transportation time enhanced a possible opportunity to export agricultural products which gave Thailand

an access to further destinations. Moreover, the arrival of computer in the 1990s, leaded to much more effective transportation and information; however, in order to supply the world's demand, Thailand had to serve much more than an agricultural country. Therefore, the government in the 1980s started an ambitious plan to transform the country from an agricultural country to an industrial country. The purpose was simple, i.e. to gain the possibility of increasing output while reducing their costs at the same time. Nevertheless, industrial project plans need a massive amount of infrastructures which also needed massive amount of investments. Unfortunately, Thailand was an agricultural country which had a small economy generating a low income. As a result, free internal saving amount, which could transform to be a source of investments, was limited. So, using the country's own money to invest was proven difficult and impossible to achieve the plan. Normally, free sources of investments were reserved in the country's saving account which can be a source of borrowing within their own country (Ezeabasili, 2006). However, countries with a small economy like Thailand did not have enough saving to provide massive sources of investments. Since the 1980s, debts therefore had significantly started to be used from oversea to be injection fuel for expanding its economy.

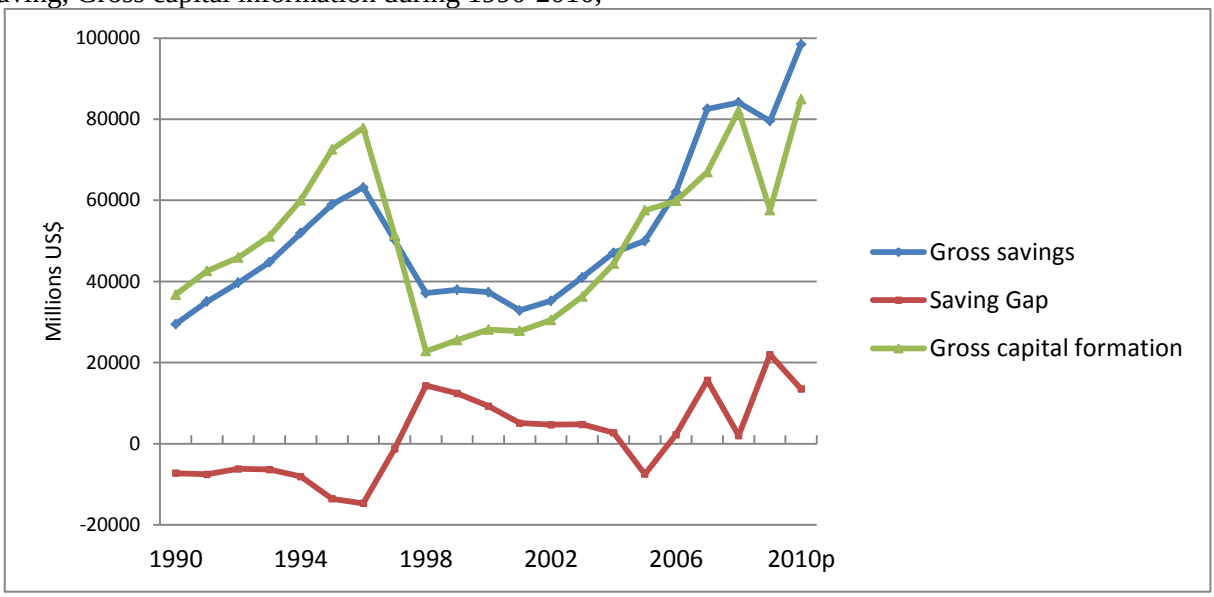
The simple concept of taking external debt is that money outside of the economic system can lead to economic growth without losing liquidity in the system. Moreover, it supports higher growth comparing with country capital in terms of margin. For example, for countries X and Y that have the same level of investment at 10 units, they invest in the same investment project, which gives the possibility of return exactly 10 percent per one period of time. At this point, investment turns to be capital, X invests without using debt (10 units of capital), so it will get 1 unit as a return or income, while Y invests by using 10 percent margin which means that it has capital of 100 units (10 units own, and 90 units from borrowing). Y will get 10 units as a profit or 100 percent returning ratio comparing with an initial capital. So, 10 percent margin gives 1/0.1 = 10 hyper return comparing to X. At the end of the year, Y has 20 units, while X ends up with 11 units. If the process is re-run, in long-term country Y will have a much more capital than X; in other words, Y has much a bigger economy size than X. Moreover, if return turns to be capital, the country could have a higher level of facilities such as infrastructures which could provide more possibility of growth in the future. However, using debts also has some drawbacks, i.e. that user has to trade them off. There are a lot of effects being created from debt on macroeconomics, such as uncertainty, losing credit, political pressure, even debt overhang problems. Moreover, the world's history has many lessons of using debt, especially from many memorable crises, including those occurred in the 1980s; Latin America, Mexico and Argentina, 1990s; Southeast asian crisis, or even Euro crisis in modern century which highlighted damages of world economy. Summers (1986) concluded that excessive external debt burdens would threaten financial stability by adverse consequences to the real economies, political officers would be under pressure from the result in inflation that was needed to jump up inevitably. So, the problem background of this research is that Thailand had not enough internal saving account to provide a massive source of investments without less money liquidity. The aim of this dissertation is to analyze the relationship between long- and short-term periods that affects macroeconomic factors of external debt with economic growth in Thailand by using export, external debt level, debt services, gross capital formations and consumer price indices as input factors, while comprehensive economic growth or real gross domestic product (GDP) was used as a dependent variable by using Ordinary Least Square model (OLS) to evaluate the relationship.

2. External Debt and Thai Economy

External debt has been an effective factor of Thailand economy since the history of the country because of the insufficiency in internal saving and the philosophy of policy planning which has been influenced by capitalism from western countries in order for them to emerge the market in developing countries. Moreover, the World Bank has significantly increased its encouragement in developing countries in terms of infrastructure and economics structure under the purpose of supporting the movement of funding from developed countries in which the overall view would perform the world economic expansion. As a result, Thailand's GDP has continually grown. This chapter clarifies the problem of saving gap, how external debt is classified, and Thailand external debt time line.

2.1. Saving Gap & External Debt of Thailand

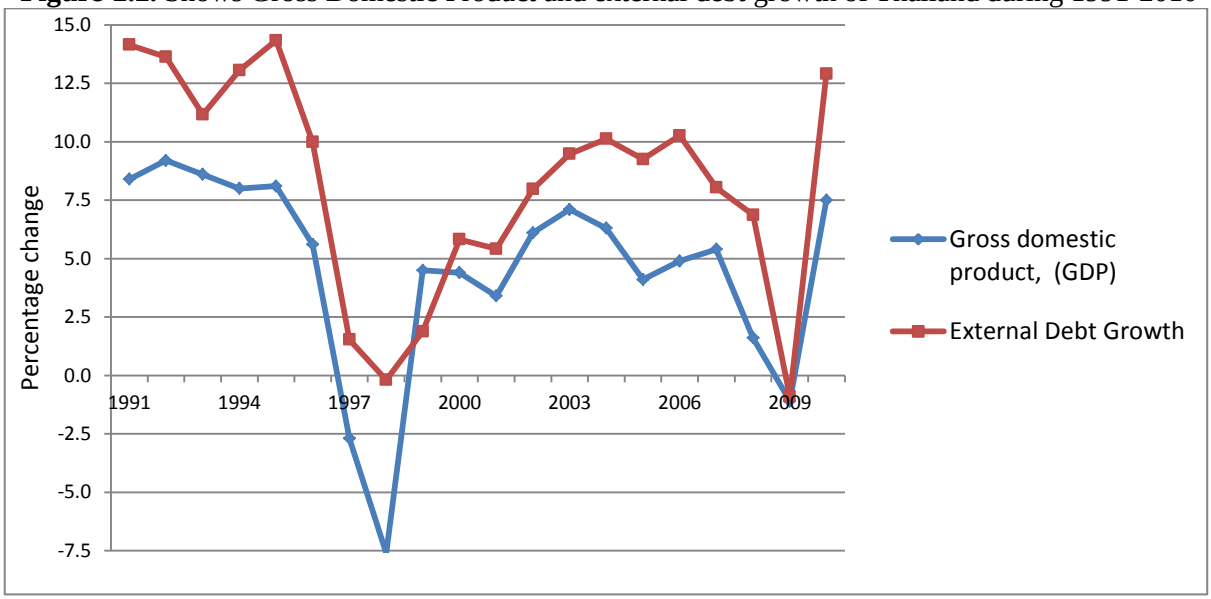
Figure-2.1. show Gross saving, Gross capital information and Saving Gap; the different between Gross saving, Gross capital information during 1990-2010,



Source: Bank of Thailand.

Saving gap in Thailand during 1990-2010 in figure 2.1 shows the relationship between gross capital formations and required gross saving to be sources for internal lending. In the 1980s, the fourth and fifth National Economic and Social Development Plans were introduced to the society and their main contexts were to develop infrastructure to support the possibility of an industrial country. So, investing in infrastructures was the first focus of the government which resulted in the highly increasing number of capital requirements. During that time, external debt was doubled from 8,716.00 to 18,321.00. Moreover, free market and financial liberalization caused major demanding in investment. The government in 1990 strongly gained investors; in other words, private sectors were confident to invest in the country. Therefore, private sectors needed a high number of capitals to support the high growth, which was over 8% during 1990-1995. As a result, in that time the gross capital formations had higher than gross saving. Saving gap was negative during that period, especially in 1996. The saving gap was highest at -14684.4 Million US Dollars. These show that the capitals were offset from external sectors. According to the external debt data, the number of external debt from 1980 to 1990 increased from 8,716.00 to 29,308.00 Million US Dollars and it rocketed up to the maximum point in 1997 at 109,276 Million US Dollars.

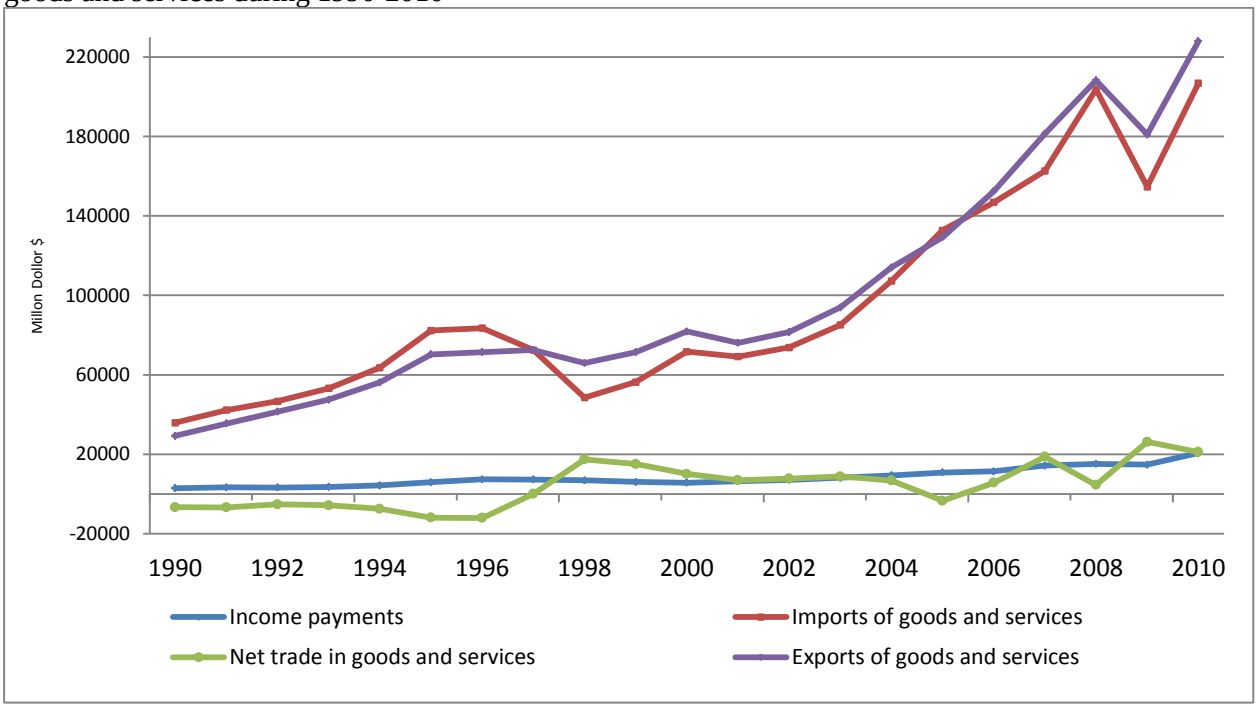
Figure-2.2. Shows Gross Domestic Product and external debt growth of Thailand during 1991-2010



Source: Bank of Thailand.

However, the number of capital inflow during the beginning of the 1990s was misused by investing in speculating properties instead of sustainable projects. Capitals from private sectors which came from external debt were maturity mismatch. Capitals were borrowed in terms of short-term debt and transformed to be long-term loans for internal sectors. These happened because firstly there was no exchange rate risk or variation in it because the exchange rate was pegged to US dollar at 25 Thai Bath/USD. This significantly encouraged a free-flow across the border of funding. Secondly, external interest rate was much lower than that of internal interest rate because of highly inflation of Thai economy, which leaded to two interested groups, internal dealers and foreigner investors, to move money to the country for seeking higher return. Thirdly, the regulators were not fully comprehensive to check all of the capital inflows with their purposes which caused an uncontrolled money inflow. The effect was tension on both internal and external exchange rates and the fixed exchange rate of the government could control only internal currency market, while external market was normally the save value due to the demand and supply system, but in this case they both have different values due to high capital inflows. Furthermore, capitals were misused in asset speculations. So, the growth number was illusory from the truth. Unfortunately, financial scandal in 1997 exploded the market's confidence. Moreover, Thai currency was further hit by hedge fund, and all of international reserves were volatilized by fighting with a hedge fund. Government had to change currency system from a fixed to floating rate system. Suddenly, Thai currency from 25.34 Thai Bath/USD in 1996 jumped to 31.37 Bath/USD in 1997 and 41.37 Bath/USD in 1998. So, exchange rate crisis emerged. The number of external debt, which relied on the exchange rate, was now double. Private sectors went to trouble at this point from unweighted balance sheet. This caused GDP angled to -8% in 1998 and inflation rocketed up to 10%. Thailand had only one option by opting to enter the International Monetary Fund (IMF)'s debt packages at the end of 1997 with 17,000 Million Dollar for funding. The gross capital formation dropped from 80,000 to 20,000 Million US Dollars in 2 years and the saving gap was first positive since the 1980s. After that, by positive saving gap reasons, the government decided to make debt from internal sectors because of lower interest rate and reduction of obligations from external debt. Moreover, because of heavy devalue in exchange rate, the export amount was sharply increased after the crisis and has continually expanded until now. As a result, the money flew into the country and GDP was quickly recovered from -8% to 4.8% in 1999 and gross saving was accumulated to a high level. The number of projects slowly gained and saving gap fluctuated positively until 2010. Although there was the hamburger crisis in 2008 in the United States of America, this time Thailand was not much affected because of its strongly diversified export income and high number of gross saving account.

Figure-2.3. shows Income payments, Imports of goods and services, Net trade balance and Exports of goods and services during 1990-2010



Source: Bank of Thailand

2.2. External Debt Timeline

The economic structure has been adjusted all the time, especially in Thailand which confronted with the crisis during 1997-1998. So, the timeline of external debt is divided into two periods: before and after 1997.

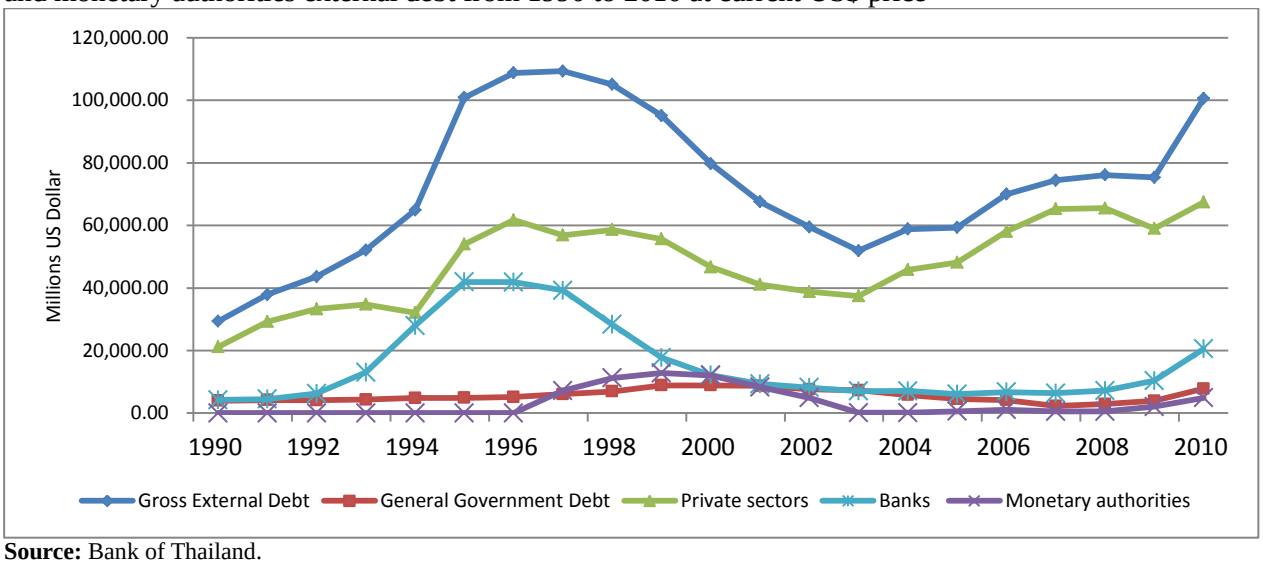
i. Before 1997, Southeast Asian Crisis

After oil crisis in the 1990s, the economy was in the boom period in Southeast Asian countries because they were seen as an emerging market. To start with the end of 1980s, the second oil crisis caused low level of government budgets; however, it was covered in a few years due to the recovering of the productions, investments, terms of trade, and austerity plans. In 1987, Thailand was graded in a high confidence level with high growth. Moreover, Thai government attempted to make Thailand as a financial base. The reduction in policy barriers in terms of imports, exports, movement of funding resulted in the growth to increase up to 10 percent during 1987-1997. The government's income was increased due to increasing in trading. However, the government debt grew because of the free traded market policies, financial liberalization, and the reduction of income from the economic recession by the gulf war. Free trading, financial liberalization with high GDP growth rate and high interest rate dramatically attracted the foreign funding. Furthermore, the recession in developed countries caused the interest rate to become low. In addition, G-7 countries introduced the Plaza Accord in 1996 and its major reason was to move investment base to the high growth rate countries. Therefore, the money was rocketed into Thailand. At the same time, private and banking sectors in Thailand could borrow money from abroad without any currency debt from a fixed exchange rate. So, the external debt of the private sectors was triple from 1990 to 61,721 million US dollars in 1996, while banking was over 40,000 million US dollars ten times jumping. These resulted in that the overall external debt of the country increased four times in 6 years to 109,276 million US dollar. In 1996, the economic growth dropped to 0.6 due to the reduction from the export sectors caused by the world economic recession. Moreover, the chronic problem with speculation of properties caused a dramatically high level of Non-Performing Loans (NPL) and the high portion use of short-term external debt causing a liquidity in the banking sector was limited. Finally, the problem exploded into the market. Thus, Thailand at the end of 1996 lost all investment confidences. The net money movement was sharply high outflow which provided tension on fixed currency, and moreover it was major attracted by hedging fund. This resulted in losing in all Federal Reserve for protecting the currency. Eventually, Thailand entered into the IMF program with a 17.2 billion package on 14th August 1998.

ii. After 1997 Southeast Asian Crisis

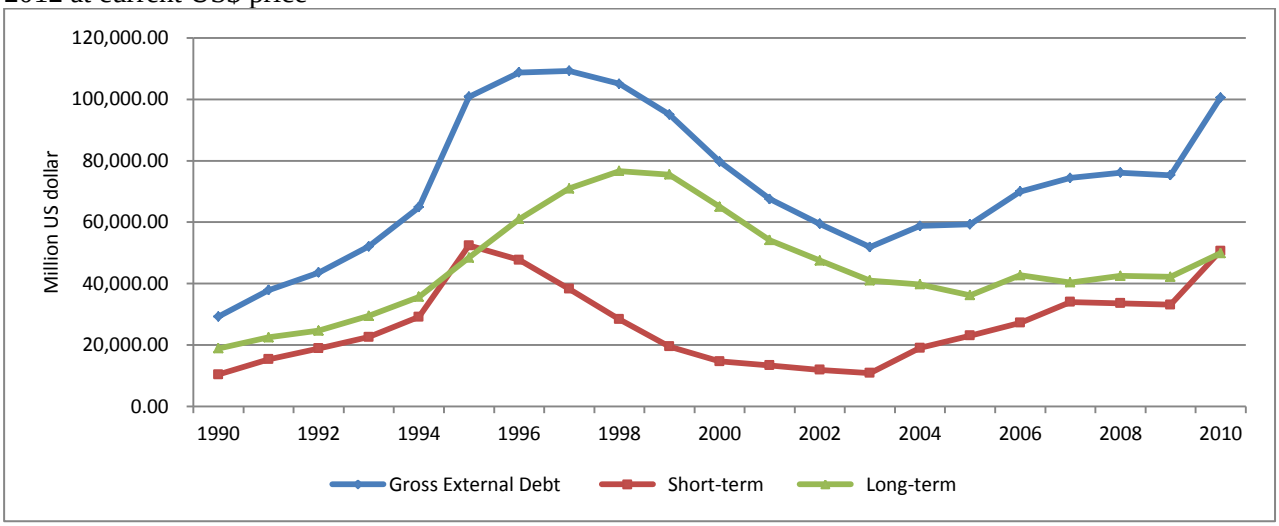
The effect of the crisis in 1997 caused highly negative growth. Exports and investments were not in the targets, while the obligation being made before the crisis could not be cut. Therefore, the level of external debt still increased in 1998, but the money was used to invest in energy projects, infrastructures and communications, and to recover the financial sectors. However, the portion of external debt used gained the weight on long-run period for reducing the short period of debt service. Government's debt increased from 24,082 in 1997 to 36,288 million US dollars in 1999, while private sector debt and banking were fluctuated. In 1998-1999, the government focused on the stability of the overall economy. The budget was reduced may times to fit with drop-down economy period and taxation was under target resulting from the reduction in internal demand, especially in consumptions and investments. So, the government released plans to shift up economy by reducing the taxation. However, the government’s budget was limited; therefore, the debts from Japanese Overseas Economic Cooperation Fund (OECF) and Social Investment Project (SIP) were used to perform the economic and social structures. Finally, debt from the Asian Development Bank (ADB) was used to increase the competitive power because they were a high portion of long-term debt. In 2001, the economy was continuously recovered due to the high growth in exports and the demand on internal consumptions as an effect of government recovering plans. At this point, private sectors could be able to repay back their debt; private sectors and banking debt reduced and some were converted to internal debt, while the government's debt was fluctuated. Overall external debt significantly dropped to 58,789 million US dollars and fluctuated until 2006 and exports value increased continuously and double its value 1997 in 2006. After that, Thailand's economy performed well due to dramatical gain in export value to move foreign money to the system. Even the hamburger crisis in 2008 and Euro crisis in 2010 pressed down the world economy, Thailand was slightly impacted due to a sustainably economic structure, high number of export earnings, and number of stop policies, with a suitable capital level which resulted from policies after the core crisis in 1997.

Figures-2.4. show gross external debt, government debt, private sector external debt, bank external debt, and monetary authorities external debt from 1990 to 2010 at current US$ price



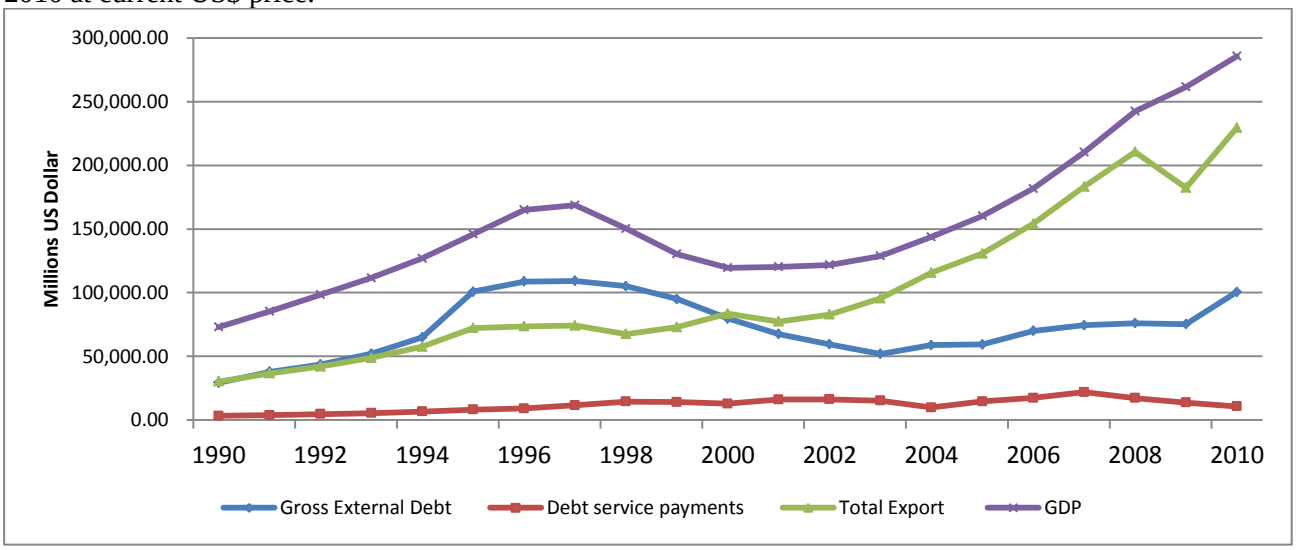
Source: Bank of Thailand.

Figures-2.5. show gross external debt, short-term external debt and long-term external debt from 1990-2012 at current US$ price



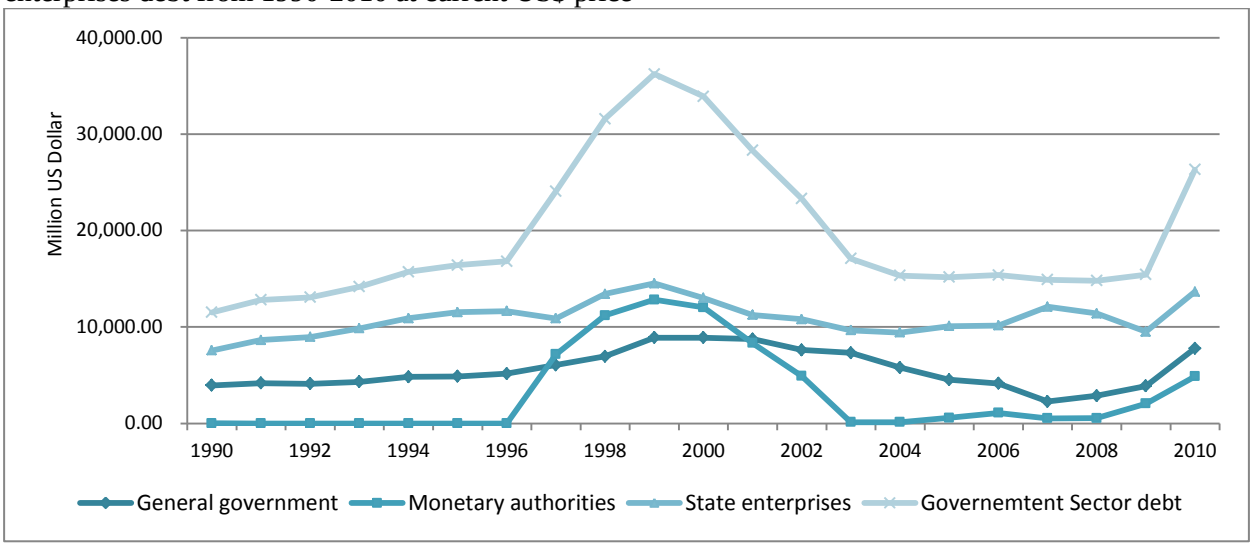
Source: Bank of Thailand.

Figures-2.6. show GDP, total exports compare with external debt, and debt service payment during 1990-2010 at current US$ price.



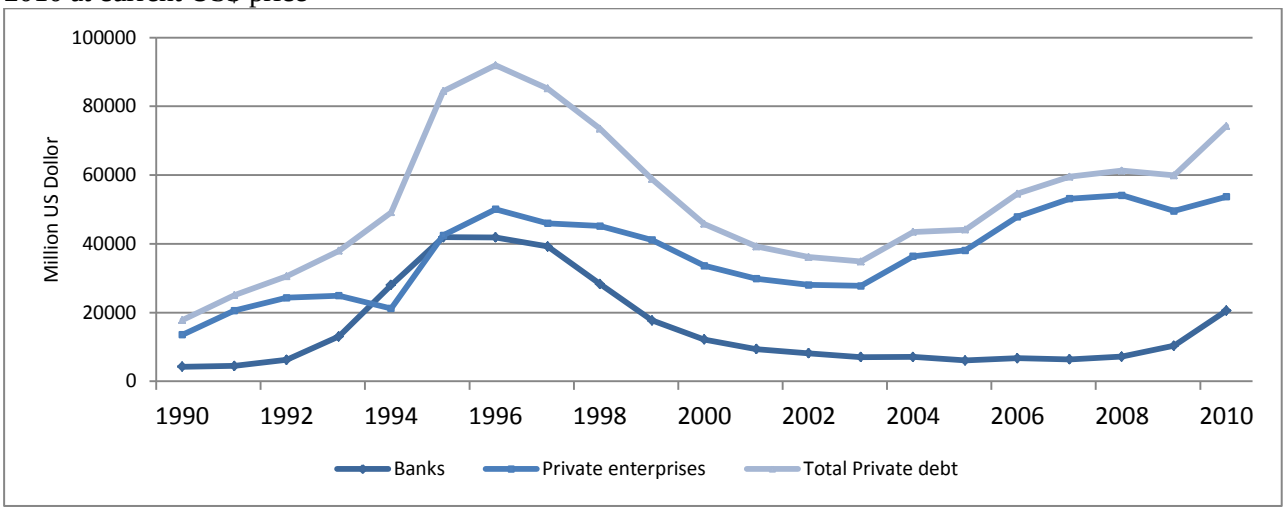
Source: Bank of Thailand

Figures-2.7. show combination of government sector external debt: monetary authorities, state enterprises debt from 1990-2010 at current US$ price



Source: Bank of Thailand

Figures-2.8. show the combination of total private external debt private enterprises and banks from 1990-2010 at current US$ price



Source: Bank of Thailand.

3. Empirical Literature Reviews

Since the modern history in the 1980s, external debt and economic growth topics have been broadly considered the major cause of economic crises around the world. Along that, its supporting studies are increasing in a huge number and they are available in a wide range covering all dimensions of economies. External debt at some levels may contribute the growth and provide benefits in some countries, but it may be humped factors when conditions are changed. Moreover, it may dramatically affect the structure of the economy. Therefore, literature reviews in this section are divided into three main groups: economic growth can be incited by external debt, economic growth is humped by external debt, and lastly debt overhang literature reviews.

3.1. Economic Growth can be incited by External Debt

The view of supporting literature points out that external debt provides growth for borrowers. From the concept of Conventional Approach (Atthakorn, 1982), the direct effect is that external debt facilitates continuous capital accumulation, so country capitals can be accumulated with the growth of the economy, while indirect effect is that after capitals being accumulated, income is higher resulting in higher saving that re-effects the direct effect. So, from the direct and indirect effects, literature reviews show supporting evidence. Jayaraman and Lau (2009) study the connections between external debt and economic growth in Pacific island countries (PICs), the study used panel data by testing panel unit root, cointegration, and OLS estimates to observe the relationship between parameters covering a 17

years period from 1988 to 2004 relating to sex PICs: Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga, and Vanuatu, model of study is that real output (GDP) of countries has been affected from external debt to GDP, export value to GDP, and the level of budget deficit to GDP. The result shown external debt level to GDP and Export to GDP were positive correlated with GDP, while budget deficit has a negative effect. Semmler and Wohrmann (2004) studied the credit risk and sustainable debt of the Euro countries. It was wondered that sustainable debt has been the key-issues in rating of sovereign debtors because the rating of debt directly affects the expectation of the return of debtors which used to lead to the problems in South-Ease Asia in 1997. So, their assumption was that the external value of the currency depends on external debts of a country. Credit-worthiness of the country should be estimated. The study models the dynamic of growth with an additional equation for the evolution of debt, and compute sustainable debt and countries' creditworthiness. After that, time series data have been sourced into the model, results show that the Euro-area has a large external asset and will have a stable currency in the long-run due to large amount of assets which can be used to guarantee its debt. Currie (2005)'s article about the relationship between external debt and economic development concludes that economic development which was defined as sustainable growth has been measured by the level of the stable level of income per capita, or the level of corporate or institutional accumulated earning per capita in the country level. The appropriate measurements and monitors are the ratio of debt as they are shown as a portion for comparing: The percentage total external debt to GDP, and Total debt service to GDP ratios. The result shows that the debt would not fall and harm the future economy if the government properly increases on taxation policies to anticipate future debt service that the future balance sheet will be offset by taxation.

3.2. Economic Growth is Humped by External Debt

It is true that the taking debt always has to confront with its obligation. Debt service is a major threatening factor for the future. The Unconventional Approach (Atthakorn, 1982) supports that external debt wrecks the incentive of people to save that causes people to decide spending on consumption instead of saving. Murad (2011) studied the macroeconomic effects of external debt and debt services on economic growth in Pakistan during 1970-2010. The result of estimation is that percentage different of previous year of debt service ratio to GDP, gross capital formation and inflation was a positive relation with the percentage difference of previous year of real GDP, while total debt service to export and external debt stock to GDP shown negative relation. Ezeabasili *et al.* (2011) studied on Nigeria's External Debt and Economic Growth: An Error Correction Approach. Results of estimation have shown the negative short-run relationship between economic growth and the present level of external debt, while government expenditure, trade balances, consumption expenditure and passed GDP were the significant support to the growth of GDP.

3.3. Debt Overhang Literature Reviews

Macro-Debt overhang creates a wide range of effects such as crisis of heavily indebted countries (HICs). Furthermore, it heavily damages the structure of country's economies and threatens long-run economic growth. As the World Bank definition *"The presence of an existing 'inherited debt' sufficiently large that creditors do not expect with confidence to be fully repaid" by Krugman (1988)*

Therefore, literature reviews show the causes, effects and process of it in various circumstances. Deshpande (1997) The debt overhang and the disincentive to invest, study on the external debt and economic growth of marked 13 debt-overhang countries. The result has wondered that external debt pushes economic to growth only up to the critical point, and then it reverses its effect. To start with, the study doubted that during 1980-1987 HICs investment has highly declined by 2.6% per year. Moreover, it converted the debt crisis into a growth crisis shortly. GDP per capita was sliced in half in a decade.

4. Model Specification and Results

4.1. Model Specification

The selected model in this study has formed under the idea that the economic growth of Thailand is affected by external debt or debt services. Behind of the idea is the hypothesis that external debt can be used in the way of increasing the capital level in order to shift the country's productive level which will result in the possibility of generating more income. However, using of the external debt causes the obligations called debt services at the same time, and other effects such as political pressure ether from debtors or internal. So, external debt may not provide only benefit as in the prospective plan. Significant evidences of using external debt have been illustrated in previous literature in term of macroeconomic key

indicators. Therefore, the model in this study has been set that the output growth is dependent parameter, while an external debt ratio to GDP, external debt service ratio to GDP, external debt service ratio to export, gross capital formation to GDP ratio, rate of inflation, and trade balance. The reasons of adding these parameters into the model are that external debt and debt service to GDP ratio are observed as the causes of the study's problem, the external debt service to exports is expected to show that if the country has a problem of crowding out effect, gross capital formation to GDP ratio is to shows the transforming of funding to be capitals, inflation rate is to show the level of economic stability, and trade balance to observe the possibility of generating foreign currency income.

To capture all cogent debt burden indicators and its expectation, the model used has been major adopted from Elbadawi *et al.* (1996) and Murad (2011) because their model has been well assumed and fitting with all of the macroeconomic dimensions for this study. The study has been done in two period long-term with a 20-year period and short-term with a 5-year period. They used the same model specification in order to see an addition observe of the difference between long and short-term period. Both long-term and short-term models in this study pass the debt burden indicators through the production function directly, like similar study, so the regression equation is specified as follows:

$$RGDP_t = f\left(ED_t, TSD_t, DSR_t, GCF_t, CPI_t, TOT_t\right)$$

Where

$RGDP_t$	Gross domestic product at year t
ED_t	Stock of external debt to GDP ratio at year t
TSD_t	Total debt service to GDP ratio at year t
DSR_t	Debt service ratio to export earning year t
GCF_t	Gross capital formation to GDP ratio year t
CPI_t	Consumer price index or Inflation year t
TOT_t	Trade Balance (export – import) year t

4.1.1. Ordinary Least Square (OLS)

The relationships of external debt in two cases are estimated by OLS. The model can be unbiased estimated, even though those two models are non-stationary at level. According to Engle and Granger (1987) time series data of more than two parameters might have an exact relationship called co-integration relationship, and the relationship can be seen even data are non-stationary. The result from estimation show:

4.2. Results

I. **Short-Term Case**

$$Log(RGDP_t) = \underset{\text{(-0.433605)}}{-1.428774} \underset{\text{(-4.347370)***}}{- 0.309962\log(TSD_t)} + \underset{\text{(2.4082148)**}}{0.218934\log(DSR_t)} + \underset{\text{(3.860743)***}}{3.037480\log(CPI_t)}$$

R Square	= 0.941474	Adjusted R Squared	= 0.930500
Durbin-Watson	= 1.844889	F statistic	= 85.79349***

parenthesis below coefficients are t-statistic
* 90% significant level
** 95% significant level
*** 99% significant level

Individual coefficients, TSD, DSR and CPI, are different from zero at 99%, 95% and 99% respectively while GCF and TOT are insignificant. Adjusted R-square of 0.9305 show that independent variables TDS, DSR and CPI can 93.05% correctly explain dependent variable RGDP. Durbin-Watson of 1.844889 shows no auto-correlation problem in this estimation. So, after passing, being test independent variable can explain the independent variables in short-term period that firstly, in short-term changing of total debt service to GDP causes a reverse effect to real GDP with coefficient -0.3099621 meaning that if other variables are fixed, 1 percentage change in total debt service to GDP reversely affects 0.30996% to real GDP. Secondly, debt service ratio to export and real GDP has direct relationship in short-term with 0.218934 coefficient. If other variables are fixed, 1 percentage change in debt service to export will

directly change real GDP by 0.2183%. Thirdly, consumer price index has the same way of changing with real GDP of Thailand in short-term. Changing of 1 percentage in consumer price index cause 3.0374 percent change in real GDP.

II. **Long-Term Case**

$$Log(RGDP_t) = \underset{(0.015227)}{0.029181} - \underset{(-3.417677)***}{0.305440}\log(TSD_t) + \underset{(3.130310)***}{0.23199}\log(DSR_t) +$$
$$\underset{(4.290235)***}{0.450189}\log(GCF_t) + \underset{(2.347697)***}{0.537326}\log(CPI_t) + \underset{(3.397030)***}{0.667946}\log(TOT_t)$$

R Square	= 0.993896	Adjusted R Squared	= 0.990011
Durbin-Watson	= 2.029064	F statistic	= 255.8547***

parenthesis below coefficients are t-statistic
* 90% significant level
** 95% significant level
*** 99% significant level

Durbin-Watson shows the value of 2.029064 that the null hypothesis of auto-correlation problems can be rejected, so it implies that no auto-correlation problems with the model. F-statistic also higher than the critical values at 99 percent confidence level; null hypothesis can be rejected, so the model has at least one non-zero coefficient. The null hypothesis of Individual test for all independent variables can be rejected. Therefore, they are statistically different from zero with 99 percent confidence level. After the model passes the test of hypothesis, dependent variable in long-term can be explained by independent variable that.

Firstly, total debt service ratio to GDP has a negatively long-run relationship with real GDP. If other variables are fixed, one percent change in total debt service to GDP reversely causes GDP to change by 0.30544 percent. Secondly, debt service to export earnings and real GDP have a long-run direct relationship. If other variables are fixed, a percentage change in debt service to export will have the same trend of change 0.23199 percent of real GDP. Thirdly, in a long term, country gross capital formation to GDP ratio positively causes GDP to change. If other variables are fixed, real GDP will directly change 0.45018 percent if gross capital formation changes by one percent. Fourthly, consumer price indexes or inflation have a same relationship with real GDP in the long run. If other variables are fixed, one percent change in the consumer price index will change directly by 0.537326 percent. Fifth, term of trade (export – import) has directly long-run relationship with real GDP with coefficient 0.667946. If other variables are fixed, one percentage change in term of trade, real GDP will change directly by 0.667946 percent.

5. Conclusion

This study has focused on the point that how economic growth is possibly affected by external debt of Thailand. It attempt to evaluate the relationship between Thailand economy growth and the set of macroeconomic factors of external debt, which are external debt to GDP ratio, total debt service to GDP, debt service to export earning, country gross capital formation to GDP ratio, consumer price indexes or inflation and term of trades. The study has been divided into two cases of short-term and long-term period in order to observe the difference of parameters that has an impact on economic growth.

The study started with a stationary test with the process of ADF. The results showed that data are stationary at second different I(2) in both cases, but both data have not been adjusted due to the co-integration test has shown the strong co-integration relationship of independent variables and independent variable. Next, results of diagnostic tests are shown with 93.05 and 99.00 percent of confidence in short-term and long-term respectively. The test in short-term has not detected the problem of auto-correlation, but in long-term case has detected. So long-term data are adjusted by auto-regressive AR(2). In short-term the result indicated that total debt service to GDP, debt service ratios to export earnings and consumer price index have a relation to economic growth or real GDP with 99, 95, and 99 percent significant levels. The total debt service ratio has negatively impacted on the economic growth, while debt service ratios to export earnings and consumer price index have a positive relationship which is concluded that in Thailand debt service itself harms the economic growth, but if external debt can seek more export earnings income, external debt provides benefit to GDP growth. In long-term case, the result illustrates that total debt service to GDP, debt service to export earnings, country gross capital formation to GDP ratio and terms of trade have relation with economic growth with 99 percent significant level for all of the variables. Total

debt service ratio to GDP has negatively impacted on economic growth, while the rest variables have positively relationship with economic growth.

In short-term estimated equation exhibited that the coefficient of independent variables have the sign as same as theory expected, except the external debt stock of Thailand, which has a positive but not significant sign. This can be concluded that the external debt stock level does not impact the economic growth of Thailand in short-term, but results suggest that the negative impact of total debt service on GDP ratio which was expected and aligned with the unconventional concept. In addition, it supports the hypothesis that debt services need foreign currency resources from export earnings to repay the loans, it strays resources from internal investment in the short-term. Since the debt service is significantly negative for economic growth, the null study hypothesis is accepted. Thailand economic growth has been affected from external debt in short-term. Nevertheless, the impact of debt service to export earnings on economic growth is statistically significant and positive. The last variable is that the consumer price index or inflation is positively significant with robust yield. It suggests that, in Thailand, inflation strongly encourages economic to growth in short-term.

In long-term period, the estimated model illustrated that the impact of external debt stock on economic growth is positive, but it is not significant. From the empirical evident, it is said that long-run economic growth in Thailand has no effect from the level of external debt. Moreover, from the earlier studies, it is said that Thailand has no effect of debt overhang problems. The impact of debt service on economic growth is negatively correlated that supports the hypothesis that foreign currency resources are needed from export earnings to repay the loans. However, as same as short-term case, the impact of debt service to export earnings on economic growth is positively and statistically significant. So the studied null hypothesis also fails to reject. It is concluded that long-term economic growth of Thailand is affected negatively by external debt. Further suggestion from the result is that the higher export earning supports the higher possibility to bear the load of debt service. That leads the solution that the negative impact of external debt and its obligation can be solved with exports earning. The positive impact of gross capital formation to GDP on economic growth has the result same as supporting literature and theory of Solow-Swan that it is the major source of economic capital to generate the growth in long-term, but not in short-term due to it is not significant. Furthermore, the model suggests that the higher GDP growth rate attracts higher investment and contribute in mobilizing of investing. Consumer price index or inflation can be said as an economic growth simulating factor, but it is not as strong as in short-term case. Finally, the impact of trade balance on economic growth is positive significant in long-term, but not in short-term. It is said that the trade balance is a factor of economic growth and it also confirms that exports earning is a key solution of the external debt problem for Thailand.

6. Suggestion

This study has focused on macroeconomic effects of external debt on economic growth. The results indicated the difference between short- and long-term periods. In the short-term, the inflation is the most effective factor to grow the economy, so the government can encourage the economic growth by increasing the target of inflation rate. However, in the long-term period, the effect of inflation is less effective. Since debt service is the only negative effect on both models ether in short- or long-term periods, the government can control the limitation of debt service. However, in a long-term period, the effect of debt service can be adjusted by export earning when exports increase the possibility of bearing debt service is higher. Moreover, it also gains in trade balance, which causes positive impact on economic growth. Increasing in gross capital formation can be a policy used to expect growth only in long-term. Finally, further study could be done on the effect of external debt by using the assumptions of micro-economic view which might lead the focus in more compacted view.

References

Atthakorn, W., 1982. Thailand's development policy and the external debt problem. Ph.D Dissertation, Indiana University.

Currie, C.V., 2005. An empirical test of a new theory of economic growth – the relationship between external debt and economic development. Available from http://ssrn.com/abstract=831344.

Deshpande, A., 1997. The debt overhang and the disincentive to invest. Journal of Development Economics, 52(1): 169-187.

Elbadawi, A.I., J.B. Ndulu and N. Ndung'u, 1996. Debt overhang and economic growth in Sub-Saharan Africa. A Paper Presented to the IMF/World Bank Conference on External Financing for Low Income Countries. December.

Engle and C.W.J. Granger, 1987. Cointegration and error correction: Representation, estimation and testing. Econometric, 55(2): 251-276.

Ezeabasili, V.N., 2006. Nigeria external debt: Causes and implications. Paper Presented at National Center for Economic Management and Administration, Ibadan.

Ezeabasili, V.N., H. Isu and J.N. Mojekwu, 2011. Nigeria's external debt and economic growth: An error correction approach. International Journal of Business and Management, 6(5): 156.

Jayaraman, T.K. and E. Lau, 2009. Does external debt lead to economic growth in pacific island countries. Journal of Policy Modeling, 31(2): 272-288.

Krugman, P., 1988. Financing vs forgiving a debt overhang. Journal of Development Economics, 29: 253-268.

Murad, W., 2011. Macroeconomic effects of external debt and debt service on economic growth in Pakistan. Interdisciplinary Journal of Contemporary Research in Business, 3(4): 401.

Semmler, W. and P. Wohrmann, 2004. Credit risk and sustainable debt: A model and estimations of why the Euro is stable in the long-run. Journal of Economic Modelling, 21(6): 1145-1160.

Summers, L., 1986. Debt problems and macroecoomic policies. Symposium sponsored by the FED, Kansas city, August.

Bibliography

Avromovic, D., 1996. Economic growth and external debt. Maryland: The John Hopkins Press.

Baxter, M. and M. Crucini, J., 1993. Explaining saving--investment correlations. The American Economic Review, 83(3): 416-436.

Boonsrirat, P., 2001. The impact of foreign debt on some selected macroeconomic variables. Bangkok, Thailand: Kasertsart University.

Charoensukamnuay, R., 2006. The relationship between the policy regarding interest rates and long-term economic growth. Bangkok, Thailand: Ramkhumhaeng University.

Chumtong, N., 2009. A study of the telationship between public debt and national income. Bangkok, Thailand: Ramkhumhaeng University.

Daesking, C. and B. Joshi, 2006. Debt and new financing in low-income countries: Looking back, thinking ahead. In peter Isard, et al. (Eds.), The macroeconomic management of foreign aid: Opportunities and pitfalls. Washington, D.C.: International Monetary Fund.

Dokmai, S., 2011. Public sector expenditures, private sector investment and economic growth in Thailand. Bangkok, Thailand: Ramkhamhaeng University.

Ender, W., 2004. Applied econometric time series. 2nd Edn., New York: John Wiley & Sons.

Inder, B., 1993. Estimating long-run relationships in economics. Journal of Econometrics, 57(1-3): 53-68.

Paudel, R. and M.B. Shrestha, 2006. The role of external debt, total trade and labour force in economic growth: The case of Nepal. The Business Review, Cambridge, 5(2): 130.

Perman, R., 1991. Cointegration: An introduction to the literature. Journal of Economic Studies, 18(3): 3-30.

Phatcharopaswathanagul, A., 2007. Impact of external debts on investment and economic growth in Thainland. Bangkok, Thailand: Kasertsart University.

Sen, S., K.M. Kasibhatla and D.B. Stewart, 2007. Debt overhang and economic growth –Asian and Latin American experiences. Journal of Economic Systems, 31(1): 3 -10.

Solow and M. Robert, 1956. A contribution to the theory of economic growth. Quarterly Journal of Economics (The MIT Press), 70(1): 65–94. DOI 10.2307/1884513. JSTOR 1884513.

Swan, T.W., 1956. Economic growth and capital accumulation. Economic Record (John Wiley & Sons), 32(2): 334–361. DOI 10.1111/j.1475-4932.