

FDI AND DEBT: THE EVIDENCE IN EU-10

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We hereby declare that:

- (1) This undergraduate research project is the end result of our own work and that due acknowledgment has been given in the references to ALL sources of information be they printed, electronic, or personal.
- (2) No portion of this research projects has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.
- (3) Equal contribution has been made by each group member in completing the research project.
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ABSTRACT

Debt crisis is one of the issues which attained a great apprehension from every country in the 21st century. Owing to the significant effect of debt crisis on FDI of a country, it has raised the interest of participants in economy regardless investors, economists or policymakers in determining the causes that lead to existence of debt crisis. Likewise, the consciousness has been emerged for us to examine the relationship between debt and FDI in this paper. This study has adopted mean group (MG) and pooled mean group (PMG) where PMG allows short run coefficients and error variances to differ across group and long run coefficient is constrained to be identical. Panel unit root test is conducted to check stationarity before the estimation of MG and PMG. Moreover, Hausman test is applied in this paper to examine the efficiency between MG and PMG. Based on the result collected, this paper has found that debt is negatively related to FDI and the result of Error Correction Model (ECM) in MG and PMG had shown significant in long-run in which the results indicate that FDI would be corrected in the next period.

CHAPTER 1: RESEARCH OVERVIEW

1.1 Theoretical Background

1.1.1 Foreign Direct Investment

Numerous numbers of researchers have placed concern on examining the effects of FDI recent year since FDI plays an essential role from macroeconomic perspective. There is a widespread belief that FDI has promoted economic development through its spillover effect such as productivity increment, technology improvement, enhances capital and human accumulation. According to Findlay (1978), the advantages and features of FDI derived a contagion through worldwide industries that lead to improvement of productivity in the situation of technology transferred from knowledge diffusion and spillover. For instance, a plenty of chances has been created though spillover effects of FDI which including the latest skills and techniques in management (Lim, 2001).

Moreover, transmissions of FDI technologies will also fortify the human capital base in the host country. According to Blomstrom and Kokko (2002), completing training programs for the local employees will be the most emphasized and designed before the technology being transferred. Thus, domestic worker may adapt these new technologies and apply it in local industries through providing latest technical assistance to their suppliers, subcontractors and even customers. By doing so, human capital enhancement would lead to higher productivity and profitability as a direct result of the increased capacity of the employees to perform their tasks. It may not only ameliorate the ability of employees to deliver greater productivity, but also improve their willingness, commitment and motivation when FDI increases. This can be proven in Michie (2001) that

employees are now better equipped to absorb and utilize both the codified and tacit knowledge.

Since FDI can develop economic growth vigorously through its spillover effects, many countries notably developing countries have focused in attracting FDI on this particular issue by magnifying its competitive advantages. FDI has served as crucial role in assisting capital injection to the host country, thus most of the countries have liberalized their trade policy to entice foreign investors' interest. This can be further explained when it can assist in a country economy by giving opportunities for improving the market scale of telecommunications, banking and finance, transport and other sectors (Omisakin, Adeniyi & Omojolaibi, 2009; Biglaiser & DeRouen, 2005).

Apart from that, market size could be an essential determinant since there is a prevalent in determining the pace of FDI in a country. A larger and growing market size most likely to inspire the foreign investors as they tend to be more confident with higher minimum consumption based in cross boundaries investment. Other than that, market size stands as an important role due to the chance of creating the economy of scale. This plausible reason could be steamed from the notion that foreign investors in different industries base will obtain more and better opportunities to establish their ownership advantages and exploit their market place by creating a successful environment with larger market size (OECD, 2000). According to the examination of Owen (2004), China and Guangdong province has showed a dramatically raised in FDI inflow with its greater market capacity and higher degree of economic development.

While there is an extensive belief that FDI typically accelerating economic growth through its spillover effect, nevertheless the inwards of foreign investment might crucially depend on the country's condition with particular regards to the development of financial market, human capital or trade liberalization. Thereby, are the degree of debt level is relatively vital in affecting FDI movement?

1.1.2 Debt

The role of debt in the perspective of macroeconomic has been a topical issue that debated intensively in the policy circle. Recently, a strand of researchers have addressed that the positive effects of debt in the perspective of economic growth through financing infrastructure. A well establish of infrastructure in the country can coordinate and contribute to the economic growth and lead to government to have interest on investing it. Due to the extremely huge cost, low profit margin and the duration of breakeven is long for investing in public infrastructure, private companies would not invest on it. Therefore, the government might use debt as sources of financing infrastructure. For instance, the roads, jetties and airports are one of the infrastructures that constructed by government. These infrastructures can provide dedication to economic growth through several ways, notably job opportunity creations as labor forces are needed to develop new infrastructures. Hence, this indirectly reduces the unemployment rate and increases the living standard of the country. Additionally, infrastructure provides more channels for local businesses to export their product to other countries or expanding in other states to increase productivity and helps boosting the GDP of the particular country too. As considering the benefits of infrastructure that can be induced, it can attract FDI flows into host countries and hence enhance economic growth. Though financing infrastructure by debt borrowing, government may develop the infrastructure and thereby bolstering the path of economic development.

Nevertheless, over borrowing at excessive debt level could bring undesirable consequences to the investment climate and economic growth. Countries borrowed on more than they could afford to repay and the debt level was exceeding high above their ability. This continuous increment of debt borrowing threatened the profitability in investment as a larger proportion of earnings that will be set apart for repaying the existing debt which identically reducing the revenues, therefore, debt overhang effect

existed (Krugman, 1988). The critically high debt level not only worsens the profitability of current investment in the countries but also influences the potential of additional investment. In Nunnenkamp's research (1991), it showed that a debt level in the country discouraged foreign investors' preference. Therefore, countries that were heavily indebted were not being beneficial from borrowing but instead to be constrained on both new private lending and FDI inflows. Consequently, debt overhang effect does frighten investors from invest into the country.

Additionally, the increments of debt service caused the investors losing their confidence towards the countries and discouraged the entrance of foreign investment. Since there is existence of discouragement of foreign investment, the investment rate will relatively be affected. Cohen (1993) stated that investment rate react negatively with the debt level due to economic stability. Hence, high debt level brings unfavorable impacts to the countries and decreases the benefits of the host country. Since the instability of economic phenomenon creates the fear of uncertainty to investors on the future policy implementation, this reduces the probability in investment in host country and hurt the host country's profitability. Consequently, the impaired profitability and higher risk taking influences the investors' investment decision making since investors are expected high debt level will deduct greater earnings from the investment to repay accumulated debts. For instance, high debt commitment of government typically generated from higher taxes payment. Thereupon, government tends to impose various types of taxes or higher taxes responsibilities in order to fulfill the debt obligations (Warburton, 2003). Although higher taxation for government could increase the funds that needed, however, increment of taxes add up the cost of investment in the particular country which it becomes a burden and factor for investors to be considered. Thereafter, the unreasonable taxes responsibilities results the tax distortion and influences the investment preference of investors. This perspective is supported by Aguiar, Amador, and Gopinath (2008) with the argument that the optimal taxation problem could influence the decision of a risk-neutral investor. This notion could be reasoned by the investors are doubted that

the profit earned from the activities are being taxed to repay back the host country's government debt and might not be able to repatriate the money back to their country. Apparently, tax burdens become one of the factors that affect investor's decision making and the unexpected changes in government policy will affect the potential FDI in host country. Therefore, the uncertainty of the government policy brings down the investor's preference to invest into this country.

Apart from that, the government will enroll policy to guarantee that the profit earned from foreign investment could lock in the particular country. Investors' capital remittance would be expropriated and restricted. Therefore, the capital restriction that set by the host country increases the foreign investors' liquidity risk. Besides, the government controls the FDI also affect the liquidity of the capital for the investors. The higher liquidity risk may increase probability of the investor fall into insolvency. Therefore, the investor is prefer to invest in the country that with low or reasonable debt level for lowering the risk of capital restriction or profit expropriation.

One of the typical cases that overly sovereign debt crisis happened was in the Latin American in 1980s. The Latin America countries, especially Mexico, Brazil and Argentina, have borrowed large amount of debt from international creditors to develop their industrialization, particularly in infrastructure, resulted the borrowed debts have exceeded their repayment ability. Therefore, the inability in debt repayment indicated the occurrence of debt crisis. Similar to Latin American debt crisis, in 1997, Asian countries had economic boom with the over accelerate increment in export and FDI. Large amount of debt were borrowed to continue in the boosting of FDI has caused them to be highly in debt. As the result, the inability of repayment affected their currency value and stock price, at the end it turned into external debt crisis. The latest crisis in year 2007, overly loan issued and failure of big institution, in U.S. triggered the collapsed of economic system in whole world. Repricing on its securities discounted the value critically on those who hold large amount of U.S. bonds, especially in European countries. Hereinto, European countries were

affected most significantly by the U.S. financial shock spillover which caused the banking crisis, fall of stock price and more. Thus, the global crisis effect led European countries move into the banking crisis and later on the sovereign debt crisis.

In the aftermath of financial crisis in year 2008 to 2009, European countries had increased debt vividly notably Portugal, Ireland, Italy, Greece, Spain, Austria, United Kingdom, Iceland, Ireland and France (hereinafter EU-10). Therefore, the reviewing of government debt in next section would provide an overview for the evolution of debt level overtime in these selected countries.

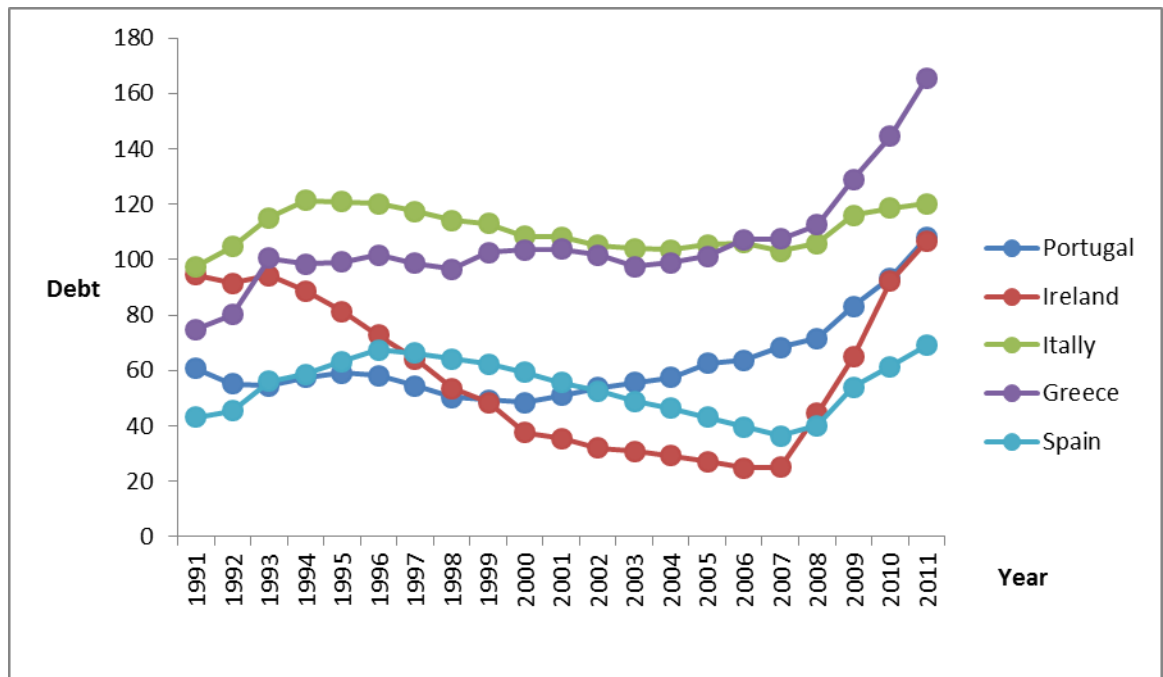
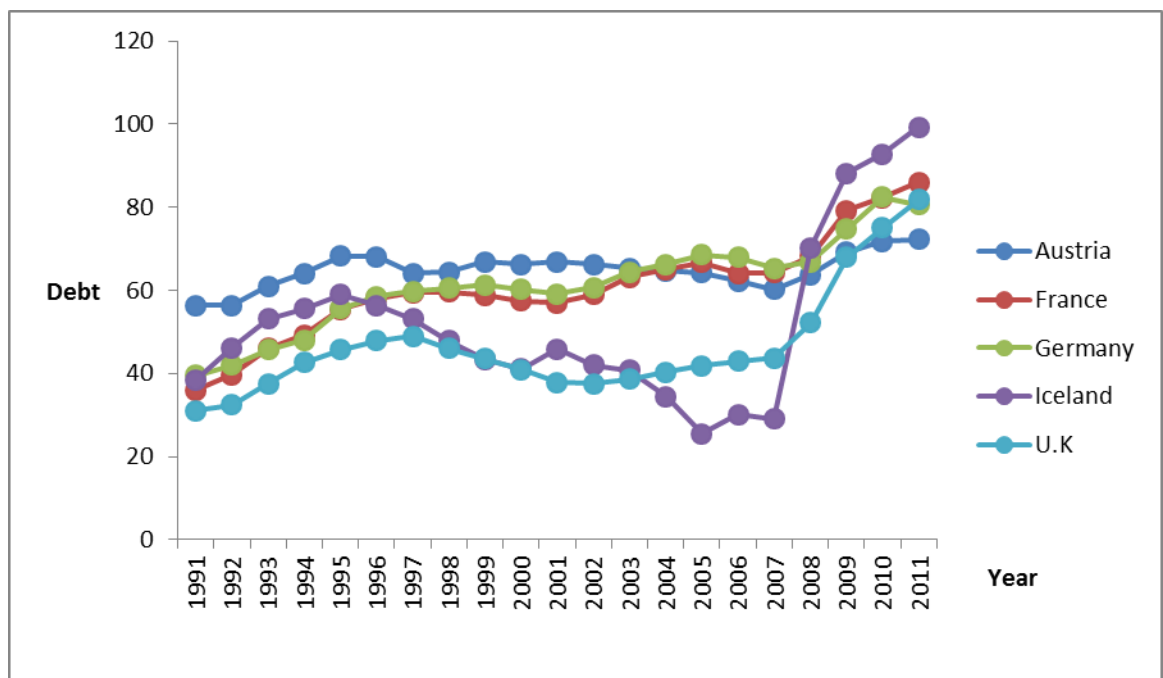
1.2 Trend

In 2008, U.S. banking was overly optimistic on its strong financial system support and therefore they overly provided loans without constraints in both strong and weak private sectors. This have resulted a high default risk in U.S. mortgage market which consequently caused the U.S. suffered greater losses. As the result, the value of CDSs (Credit Default Swap) in U.S. was relatively reduced and was subjected to repricing of credit risk. Thus, this decline in value caused the investors suffered great losses and also lowered the payment ability that resulted higher default risk. The subprime crisis that happened in U.S. banking sector has turned into banking crisis and global financial crisis swiftly around the world. In year 2008, European Union was hit heavily by the spillover of the financial crisis from U.S. Due to the repricing in U.S. mortgage market, many European countries, especially PIIGS (Portugal, Italy, Ireland, Greece and Spain), Iceland, United Kingdom, Austria, Germany and France were dipped into the global financial crisis' repercussion and borrowed more funds in order to cover the banking sectors losses. The subsequence of this condition, for example, downturn in stock market, descend of large institutions, collapse of financial institution and even resulting of failure in international trade (Helleiner, 2011). Therefore, the government in European Union (EU) enforced stimulus package and entrenched a

considerable debt level in order to maintain the harmonious in the economy. This phenomenon could be evident by the debt evolution in Figure 1.

Based on Figure 1 and 2, some countries are having similar debt level movement (as % of GDP). Starting from the beginning of year 1991, the debt level of Ireland decreased significantly till the end of year 2007. Meanwhile, the debt levels of Greece, France, Germany and Austria were increased from the beginning of 1991 based on the data. All of these countries have different duration in their debt level increment. For Greece, it increases till year 1993; France, increased until year 1998; Germany, increased until year 1999; and Austria, increased until year 1995. These countries' debt levels were fluctuating during the period but the difference was altered within a small portion of percentage compared to other countries. The data before year 2008 showed that the lowest and highest debt level for Greece was 98.51% in 1994 and 107.45% in 2007, for Austria was 60.22% in 2007 and 68.14% in 1996. Germany and France was from 59.14% in 2001 and 68.51% in 2005, and 56.94% and 66.67% in 2001 and 2005 respectively. However, starting from year 2008, all countries have similar movement in debt levels. Data showed that the debt level increased critically, especially in Ireland, its debt level rose from 44.49% in 2008 to 64.86% and even increased to 106.46% in 2011, and its increment from year 2008 to 2011 was the highest among the countries which is 61.97%.

Not only those, from year 1995 to 2004, some European countries have maximized on their debts level and began to decrease their debt. Italy, Portugal, Spain and Iceland's debt level were kept increasing from year 1991. After the turning point in 1995, their debt levels decreased accordingly until year 2007. However, United Kingdom has different changed in debt level. Its debt level was increasing in the very beginning, but it decreased to a certain level and then increased again from year 2002. Most of the countries except Austria, the debt levels have shot up significantly after the Euro crisis that happened in year 2008. Austria showed to have lesser effect which its debt level increased only from 63.83% (2008) to 72.30% (2011).

Figure 1: Debt for PIIGS from year 1991 to 2011**Figure 2: Debt for the other 5 European countries from year 1991 to 2011**

Source: International Monetary Fund (IMF)

One of the possible reasons that these countries would have the increasing level of debt in their countries is EU did not establish and execute the fiscal policy well. This can be proven by Maravalle and Claeys (2012) where it has been stated that PIIGS countries has been suffered from economic instability after the financial crisis is mainly resulted from practicing fiscal policies. Other than injecting funds into financial institution, the borrowed funds of PIIGS from other countries also were used to develop the domestic facilities, such as technology and infrastructure. Although these developments could provide a better living standard for their residence and some even attract more foreign investors but the spending will burden on the government also. Due to the increment of government spending and did not have sufficient assets to cover the debt, therefore they are unable to pay back the funds.

1.3 Problem Statement

In the aftermath of 2007 - 2008 global financial crisis, a tremendous increment in the government debt level has revitalized the concern of policymakers and researchers towards the effects of debt on macroeconomic perspective. An incredible of debt level caused to the existence in the uncertainty in government policy such as expropriation on earnings, restriction on capital remittance and tax distortion in EU-10. Thereby, it depresses the confidence level of investors towards the macroeconomic stability in EU and dampens the foreign investment in host countries. This can be proven by Iyoha (1999) where the author inspected on the effects of macroeconomic instability and uncertainty, economic size and debt on FDI. The author found that these unfavorable conditions disincentive foreign investment. Therefore, the research was done to find out the evidence of the FDI movement and debt and how both variables could affect or integrate with each other.

Another issue that raises their apprehension is that the increase in debt level reduces the flexibility in credit accessibility of the investors in host countries. The foreign investors that wish to expand their business in the host country plan to

borrow fund as the capital for expansion. Since the country is facing debt issue, government needs to set aside the funds available to repay the debt instead of distributing to private sector. Therefore, the fund that can allocate for productive project in private sector is lesser due to the increment of debt, so the foreign investors have lesser chance to borrow the fund successfully in the host country. Therefore the productive projects have to be stopped and it would not bring any benefits and even bring many disadvantages to the country. In this situation, productive and profitable infrastructures cannot be projected and lead to the reduction in FDI, thus economic growth cannot be advocated. Due to these discernments, this paper has inspired to investigate the nexus between FDI and debt in EU countries. The rationale behind is these issues that have been arose by the increment of debt have bring negative impact to FDI.

Additionally, even though there are abundant researches have studied on the nexus between FDI versus growth, FDI versus government spending, FDI versus trade openness, yet, there is limited study on the impact of debt on FDI in the existing literature. Therefore, this paper intends to propose further study on the nexus between the movement of debt and FDI.

1.4 General objective of the study

- (1) To examine the nexus between FDI and debt in the selected European countries, EU-10 from year 1991 to 2011.

1.5 Specific objective of the study

- (1) To analyze the long run integration between FDI and debt in particularly in EU-10.
- (2) To analyze the dynamic adjustment between FDI and debt. Therefore this paper aims to investigate the speed of correction of the investment variables towards its long run equation.

1.6 Significance of the study

This substantial increment of debt level in recent financial crisis has drawn much attention of the role of debt on macroeconomic perspective. This paper, therefore, intends to examine the effect of debt level on FDI. However, this paper is different in two-fold: first, by comparing the previous literature, Schnitzer (2002) only analyzing the debt and FDI by using the sample period which only until year 2002. This paper tends to extend the study by lengthening the sample period until year 2011. By prolonging the sample period until 2011, it implies that the data obtained has included the special event that happened among this period. This effect can be emphasized as it captures the event like subprime crisis and sovereign debt crisis that happened in 2007 and 2010 respectively. By capturing this effect, it may provide more accurate and better results when analyzing the nexus between FDI movement and debt.

On the other hand, the research carried out may provide insight information for investors, policy maker, economists and government. Different position could expect different outcome in a host country, for instance, investors look forward the profitability while policy maker focuses on formulating the policy in order to maintain or give impetus to the economic growth of the country. Not only than that, economists may refer this paper to guide them when they analyzing the market trend while government searching for the stability in the market. Therefore, through the result that show about the relationship between debt and FDI movement in this paper, they can consider debt level as one of the factors when making investment decision or compiling policy.

Lastly, there are abundant researches have studied on the nexus between FDI versus growth, FDI versus government spending, FDI versus trade openness yet the nexus between FDI and debt has not excavated by previous researchers. Therefore, the unique of this research is aim to examine the relationship between debt and FDI in European countries since there is limited studies have analyzed in this perspective. As such, this study will benefit the government in taking serious consideration in the movement of FDI and debt.

1.7 Organization of the paper

The remainder of the paper is organized as follows. The immediately following section discusses literature review and followed by illustrating the data description and the methodology that being employed in Section 3. In Section 4, the empirical results and interpretation are being presented before the conclusion in Section 5.

CHAPTER 2: LITERATURE REVIEW

2.1 Overview

This chapter is to review on various researches that have done previously in both theoretically and empirically way to analyze the relationship of debt level and FDI. In both theoretical and empirical review, the positive or negative relationship between FDI and debt has been analyzed. Not only that, theoretical review also included uncertain effect.

2.2 Review on Foreign Direct Investment and Debt

2.2.1 Theoretical Review

FDI plays an important role for a country development. It not only brings technological transfer, improvement in human capital but also boosting the economic growth of the country. Therefore, in order to enjoy the benefits that brings by the FDI, the government tried various ways to increase the FDI such as build new infrastructure or improve the quality of existing infrastructure. Basically, the colossal expenses for improving quality and building new infrastructure were covered by the debt financing that implemented by the government. Therefore, debt can bring positive impact to FDI of the country through the development and improvement of the infrastructures. Based on the research done on the determinant of FDI, it was found that infrastructure has significant effect on the FDI of the country. In Kumar (2002), the author mentioned that the changes in FDI investment climate could be influenced by the availability of good quality in different types of infrastructure especially in physical infrastructure. Better quality of infrastructure can result lower cost of the investment, for

instance, better communication channel will reduce delay in information exchange, this aids to increase the accuracy of the information delivered and to increase the productivity on the investments and thus investors could maximize their profit. Coughlin, Terza, and Arromdee (1991) did further research on the issue and they found that infrastructure that focuses on transportation contributed more on FDI among other infrastructures. The reason behind is that better completion of road system could provide aids for the investors in delivering goods among the places in the whole country. The investors could cut cost and time; and transportation infrastructure still can help to increase the marketability of the goods. It is useful for assisting the investors to generate more profit in the investment. Therefore, debts are bringing positive effects to FDI.

On the other hand, some researchers argued that the positive effect of debt to FDI is inconsistent, for example, the effect of the infrastructure on the FDI is based on the country status. In Asiedu (2002), the author determined the effect in both sub-Saharan Africa (SSA) and non-SSA. He found that the impact of infrastructure on FDI is significant in non-SSA countries; however, it was found to be no effect of infrastructure on FDI in SSA countries due to the region factor. This is because the author identified that the income level and domestic saving of the region is low, so the investors cannot get their expected profit from SSA, and so on FDI would not boost up even if the infrastructure improved. Some research found that the impact of infrastructure on FDI is based on the preferences of the foreign country too. In Wheeler and Mody (1992), they mentioned that United States had invested their FDI to a country not only depending on the infrastructures quality of the country, but also considering the category of the country. They found that the infrastructure did affect the FDI from United States. However, this impact level is based on the category of the country which is the impact for the developed country with good quality of infrastructure has lesser in the attractiveness in FDI from United States compared with developing countries.

From these researches, the impact of the infrastructure on FDI is based on the country or the category of the infrastructures that the government injected in. It can be either strong effect, low effect or no effect on FDI. So the impact on debt to FDI also can be strong relationship, low relationship or no relationship based on the ways that government uses the debts. Since part of the funds that used for infrastructures is financed by debt, it can finalize that the effect for debt on FDI is based on the country itself and how the government chooses way to inject funds into the infrastructure. Debt is having positive impact on FDI when the country has the good quality of infrastructures especially in transportation sector. Debts also bring no effect to FDI if the countries are SSA countries. Lastly, the attractive of FDI from United State by debts is based on the country categories which are developing countries and developed countries.

Even though debts bring beneficial development for the country in a certain level, but according to Baum, Checherita-Westphal, and Rother Philipp (2012), the authors mentioned that after the growth at 90-100% in GDP, the borrowed debt has little or no positive effect on contributing in FDI. Thus, debt has reversed its direction which means that debt causing negative impacts. Fernandez-Ruiz (1996) also supported the existence of negative relationship between debt and FDI. Therefore, FDI is affected indirectly by debt level.

Since research has found the reverse effect on debt to FDI, Warburton (2003) have further explanation that due to the repayment of debt, the income dependence of tax revenue stumped the foreign investment. Investors found that there is higher cost in foreign investment. Therefore, they would rather search for lower tax commitment country than those which are higher and relatively affected the FDI into the particular country. Similar to the research mentioned previously, Kaminsky and Pereira (1996) also agreed that the increment of debt will influence the country in tax responsibility.

Furthermore, Warburton mentioned that the impact of debt overhang not only affecting the countries' growth and development but also discourage the investment. Due to the large debt accumulation, larger amount of earning will be set aside to repay the debt interest which reduced the foreign investor's profit. Therefore, foreign investors slipped back from the uncertain and higher risk investment. In addition, Krugman (1988); Sachs (1989) have done research on this argument where FDI will be affected by the debt level. Their research believed that because of the overly borrowed debt, creditors are not expecting the full repayment. Their research believed that because of the overly borrowed debt, creditors are not expecting the full repayment.

However, Cohen (1993) argued that the analysis of debt overhang by comparing the between the stock of debt and investment was not accurate. The research was based on the 1980's crisis which relatively slowed down the investment with a dummy variable from year 1982 to 1987. He stated that there were two other possibilities that indebted countries could apply without affecting the FDI. First, those indebted countries may not commit into the debt services and through that, it will have lesser withdrawal of foreign investment. Secondly, even if the indebted countries did repay in the service, but it could still protect the investor's profit by implementing a good rescheduling strategy. Meanwhile, another researcher arose with different point of view that debt overhang can be managed by debt reduction. Borensztein (1990) argued that through debt reduction, even though the country was highly indebted (The Philippines) but the method could help in foreign saving and polish up the domestic resources. Consequently, it will provide more foreign investment opportunity to countries.

Kaminsky and Pereira (1996) mentioned that Sachs (1989a) has used debt overhang as the hypothesis. Since this hypothesis has becoming popular and attracts other researchers' attention, this proposition has been supported and they also agreed that debt relief did bring benefits to both creditors and debtors. The debt relief is beneficial to them as it can help to

stimulate the investment and growth. This also can be claimed in Aguiar et al. (2008). In this journal, debt relief can be used to improve the investment and be beneficial to the government. However, owing to the long run behavior of investment is unique; this debt relief only can have effects in short run but not long run.

Besides, the effect of resources wastage and boost up fiscal responsibilities are being increased by the uncertainty in the market (Afxentiou & Serletis, 1996). The default risk that faced by the government may cause the government having higher debt. In order to settle the debts, increase tax would be one of the ways that government may use. This may lead to the foreign investors' confidence are affected, and the FDI of the country decreased significantly. At the end, debts are showing negative effect to FDI.

2.2.2 Empirical Review

Besides reviewing the relationship between FDI and debt theoretically, it can also be reviewed based on the results that analyzed by several researchers. Borensztein (1990) had examined the effect of debt overhang and credit rationing on FDI from 1983 to early 1990. The result showed that FDI is negatively related to debt overhang. By using numerical simulations of a rational expectation two-period growth model, the author found that the ability to obtain new resources of financing may be a powerful disincentive to investment. This can be further explained by the Iyoha (1999) who examined the movement of foreign investment in sub-Saharan African countries with the circumstance of debt overhang. By using the two-stages least square technique, the author has found that a heavy debt burden will depress further investment inflows critically from year 1974 to 1994. In addition, Baranenko (2011) has also found similar result whereby a significant debt overhang discourages the country's attractiveness level in FDI. The author found that debt overhang is the key

decision to be considered when choosing whether to invest into the countries or not.

For Nunnenkamp (1991) research, the result obtained shown that the consideration of debt overhang may deter the supplying of FDI. Based on the research, those foreign investors were found to be fairly reluctant in increasing involvement in their investment in 35 lower rating countries. However, FDI has found to be positive related to debt overhang in the same journal where the author found that the result will turn from negative to positive when the research is carried on by using the FDI data from Germany. This implies that Germany investors did not reduce the amount of the investment in countries even the countries are staying with a threatening debt level.

Based on Warbuton's research (2003), by using Feasible GLS and applied data from year 1978-1998, the results were shown that the cumulative effects of immense debts significantly discouraged FDI. The author found that the element of huge debt for a particular country is strongly affected the inflow of FDI. According to the investment report of UNCTAD in 2009, many developed countries (Finland, Germany, Hungary, Italy and the United Kingdom) with highly indebted level were directly hit by global financial crisis, these countries showed a significantly decline in FDI inflow to 33 percent compared to the level in year 2007. This result implied that the higher debt burden will create an unfavorable incentive for foreign investors to trade overseas significantly. Meanwhile, tremendous burden of debt will not only create a serious obstacle and also will hinder the growth of cross boundaries investment. According to Ajisafe, Nassar, Fatokun, Soile and Gidado (2006), they examined the causality between debt burden and foreign investment in Nigeria. They have conducted their investigation by using Augmented Dickey Fuller and Philip Perron test in 23 years data length. Their results indicated that foreign investment of the country was declining during the period when Nigeria is in high debt level. Furthermore, Cohen (1993) used a different method which is White's heteroscedasticity that consist consistent covariance matrix to conduct his

investigation in examining the relationship between debt and FDI. To make his results more precise he includes panel data in 81 countries and with a 22 years data length. The results emphasized that an unanticipated drop in foreign trade inflow was also significantly negatively correlated to the surprisingly increase in debt level.

Besides that, several empirical evidences have been identified that a country that defaults on debt payment will become a key determinant of the FDI inflow for considering putting investment into the country (Fuentes & Saravia, 2010; Eaton & Fernandez-Ruiz, 1996; Martinez & Sandleris, 2008). Based on these authors' research, they found that falloff in FDI inflows was greater during the years that are closer to the default date and for those countries that have been default in many times. Fuentes and Saravia's research showed that the distinction was decisive since the largely decline of FDI inflows after the debt crisis was resulted onto those defaulters countries. The results showed that those indebtedness countries in defaults reduced the amount of FDI by approximately 0.05 percentage points. According to his puzzling finding, FDI from countries that affected by the default in debt payment declined substantially, while FDI from countries that were not defaulting in payment showed a large increment.

Furthermore, Martinez and Sandleris used a methodology similar to Fuentes and Saravia to investigate the relationship between the debt and FDI. The former found that the total FDI inflow was showing a declining tendency in those highly defaults countries. They found that a decrement in total trade for the defaulting country by approximately 3.2 percentage point per year during the first five years following the defaults. However, Corbo and Hernandez (1998) argued that the FDI is positively related to the level of debt. Their estimated results discovered that the total foreign trade was in a growing tendency in those highly indebted countries such as Cuba. This is because the foreign investors believed that the cross boundaries investment will provide a more secure conduit against the potential expropriation that may make a reduction in their profits.

In a nutshell, although larger proportions of studies were still believes that the expansion of FDI inflow was highly depends on debt level and probability in default with empirical evidence, there was still some examination showing a positive relationship between debt and FDI.

2.3 Review on Foreign Direct Investment and Government Spending

Government spending is one of the important independent variable that used to examine the movement of foreign direct investment. The expenses that spend by government such as the purchase of the final goods and services, gross domestic product and transaction of payment but it excludes the funds that transfer between the states. The government will pay the expenses by using two ways which are pay from taxes or borrow funds. Some of the researchers have done research about investigating the relationships between government spending and foreign direct investment.

Based on Yamin and Sinkovics (2009); and Bende-Nabende and Ford (1998), their results on the relation between both of them are similar. Their results showed that the government spending will bring positive effect to foreign direct investment at the beginning. The reason is the government spends these funds to build up the basic facilities of the country. Therefore, the improvement of the facilities will attract more investors to invest into the country due to the cost of trading will be lower. On the other hands, the time consuming of transfer goods from seller to buyer also decreased. With these confidences, the FDI inflow of the country will increase at the end.

The researchers also have another result which was when the government spending over a certain level, it will have a negative impact on FDI. This is because too high level for the government spending will lead to the government facing debts issue, for example, the government borrows a lot of funds to develop the infrastructure in the country. These infrastructures are over developments

which will bring ineffective impact to the economy where the economic growth of the country will not increase so much but the debt level is higher. So, the growth of the GDP also will be affected by the too high government spending. The investors' confidence also will be affected if the government does not have sufficient money to settle the debts. The investor will withdraw the capital or choose not to invest again into that particular country. Therefore, the FDI of the country will be affected and decrease significantly. Therefore, the government should control their spending in order to get the positive impact to the FDI.

Lastly, we can conclude that government spending should include in determining FDI. From journals above, it showed that government spending will bring positive effect on FDI when the country develop the basic infrastructure which will lead to an effective growth in economic condition, but it will change to negative effect after the government spending reached a certain level due to the outcome of the development is not good as before but the debt is keep on increasing. Therefore, the model should include it to present a more accurate result to determine FDI.

2.4 Review on Foreign Direct Investment and Trade Openness

There are a number of research had been done on examining the determinants of foreign direct investment. One of the important variables that included is trade openness. As we know, trade openness referring the level of releasing in the trading policy in a country. It also can be represented by the ratio of export plus import to GDP.

During the last decade, quite a number of researches are proposing on investigating the relationships between trade openness and FDI and they shared similar results where there are positive impacts of openness on the FDI. This can be proven by Botric and Skuflic (2005); Kim (2011). The former justified that trade openness is important for FDI as the government is implementing new policies that are relatively more attractive to foreign investors, which in turns

leads to the increment inflows of FDI to the country. In addition, the latter's empirical results showed that when international trade increases, it may help to smooth the progress of the dissemination of knowledge and innovations from FDI. In contrast, yet it is less evidence on the different impact of trade openness on FDI for countries that are in different development stage or whether the flows of FDI, either inflows or outflows, will react differently when types of goods trade flows are different. This has been examined by Aizenman and Noy (2005) to find the intertemporal linkages between FDI and international trade and they suggested that the existence of large benefits is when there is a reduction in the restriction to trade. The result presented by this researcher showed that there is strongest feedback between both FDI and manufacturing trade after holding for other controlled variables (macroeconomic and institutional effects).

In conclusion, it is proven by most of the papers cited above, which showed that there is relationship between trade openness and FDI and usually a positive impact of trade on FDI will be resulted. Therefore, it is important to include it in the model as it will help to increase the inflows of FDI into the country which is beneficial for that particular country, especially for those countries that are developing countries or are in needs of money (Buthe & Milner, 2008).

CHAPTER 3: METHODOLOGY

3.1 Overview

In this chapter, the methodology of research is being discussed. This included theoretical of methodology, regression model, data descriptions and sources. This report has used panel data that included cross sectional and time series data to examine their relationship. Unit Root Test was used to examine the stationary of the model. This estimator included LLC test, IPS test and MW test. Furthermore, Pool Mean Group (PMG) estimator and Mean Group (MG) estimator are being applied and Hausman test is being used to examine the suitability of both methods. Overall, this paper intends to examine the impact of indebtedness level, trade openness, and government spending on FDI.

3.2 Panel Unit Root Test

When the series is stationary at the significant level of 10%, 5%, 1%, therefore, the variables are expected that it might contain one or more unit roots. However, first difference was not sufficient for specific variable which is debt. In this case, the second differentiation needs to be preceded and satisfied by containing a unit root by rejecting the null hypothesis. As a conclusion, all variables in the model are expected to contain one unit root and there is no higher order of differencing is required.

3.2.1 Levin, Lin and Chu (LLC) Test

LLC has suggested a powerful panel unit root test than performing individual unit root test. The main core of LLC test is the probability of rejecting the null when it is false where the null hypothesis is unit root. LLC stated that the unit specific fixed effects are very important component due to this test allowing for heterogeneity as the coefficient of lagged Y_i is restricted to be homogeneous across all units of the panel.

Model:

$$\Delta y_{it} = \rho y_{i,t-1} + \sum_{L=1}^{p_i} \theta_{iL} \Delta y_{it} - L + \alpha_{mi} d_{mt} + \varepsilon_{it} \quad \text{where } m = 1, 2, 3$$

$H_0 : \rho = 0$ (each time series in the panel has unit root)

$H_1 : \rho < 0$ (each time series is stationary)

If p-value is less than significant level (1%, 5% and 10%), reject H_0 . This means that each time series in the panel is stationary. If p-value is greater than significant level, do not reject H_0 . This shows that each time series in the panel has unit root. LLC test is conducted again at first different or second different until obtain stationarity.

3.2.2 Im, Pesaran and Shin (IPS) Test

The IPS test is not as restrictive as LLC test due to it allows for heterogeneous coefficients. IPS has proposed an alternative testing procedure based on averaging individual unit root ADF test statistic. Null hypothesis is whereby each series in the panel contains a unit root. The alternative hypothesis allows for some but not all of the individual series to have unit roots.

Model:

$$\Delta Y_{i,t} = \alpha_i + \rho_i Y_{i,t-1} + \sum_{k=1}^p \varphi_k \Delta Y_{i,t-k} + \delta_{it} + u_{it}$$

$H_0 : \rho_i = 0$ for all i (each time series in the panel contains a unit root)

$H_1 : \rho_i < 0$ for at least one i (some of the individual time series have unit roots)

If p-value is less than significant level (1%, 5% and 10%), reject H_0 . This means that some but not all time series in the panel has unit root. If p-value is greater than significant level, do not reject H_0 . This shows that each time series in the panel is stationary. IPS test is conducted again at first different or second different until some of the individual time series obtain stationarity.

3.2.3 Maddala and Wu (MW) Test

Maddala and Wu have noted a few drawbacks of LLC and IPS tests. In 1999, they proposed a model that can be estimated with unbalanced panels. They are agreed with the assumption of a heterogeneous alternative is preferable, however they disagreed with the use of average ADF statistics by arguing that it is not the most effective way of evaluating stationarity.

Model:

$$\lambda = -2 \sum \ln \pi_i$$

H_0 : Panel contains unit root.

H_1 : Panel does not contain unit roots

If p-value is less than significant level (1%, 5% and 10%), reject H_0 . This means that panel does not contain unit root. If p-value is greater than significant level, do not reject H_0 . This shows that panel contains unit root. MW test is conducted again at first different or second different until stationarity has been obtained.

3.3 Theoretical Framework and Methodology

Recently, panel data has been widely used as methodology to carry out research. The panel data which consists of number of time series observations (T) and number of cross-sectional observation (N) allowed better significant studies between them. Generally, there are two procedures commonly used which are mean group (MG) estimators and traditional pooled estimators.

MG estimator is whereby the regression and coefficient of mean are separately estimated and calculated. Consistent estimates of the average for the parameter can be resulted by using MG estimator. However, this estimator does not take into account the fact that some parameters may be same for cross-sectional observation. Besides, traditional pooled estimators that comprised of fixed and random effect estimators where the intercepts are allowed to differ for cross-sectional observation while all other coefficients and error variances are constrained to be the same.

Pooled mean group (PMG) estimator which is known as intermediate procedure that constraints long run coefficients to be identical, however it allows short run coefficient and error variance to differ for cross-sectional observation. The constraints of long run coefficients to be identical due to budget or solvency constraints, arbitrage conditions or common technologies. These factors do not over perform in long run thus that is the reason to assume long run coefficients to be identical. The use of PMG estimator allows the research to estimate common long run coefficient without making less plausible assumption of identical dynamics in EU (European Union). PMG estimator allows short run coefficient and error variance are differ for cross-sectional observation due to different countries having different aspect that may affect the performance of outcome. The performances of outcome have included financial condition, market size, policy implementation and others. However, to determine the efficiency and consistency of the PMG estimator relative to the MG estimator, it is possible to estimate their suitability by using the Hausman test. Under the Hausman estimation, the homogeneity of long run coefficient between the PMG and MG estimator can be

obviously distinguished. However, Pesaran (1999) stated that PMG is more efficient than MG estimator due to the null hypothesis of the homogeneity in the long run coefficient can be verified accurately under the Hausman test.

Additionally, the magnitude of T and N are contributed significantly to relationship of the PMG estimator. There are several category included 'small N , large T ' and 'small T , large N '. First category 'small N , large T ', in the case of individual time series when N equals to 1, traditional approach was used to estimate an autoregressive distributed lag (ARDL) model. Besides, when N greater than 1, seemingly unrelated regression equation (SURE) procedure is used (Zellner, 1962). SURE procedure allows the contemporaneous error covariances to be freely estimated. However, this procedure only can applicable when N is reasonably smaller relative to T .

Second category that referring 'small T , large N ', in the case that T is small, the cross-section regression based on time averages of the variable will provide consistent estimates of the long run coefficient only if it is with strong assumption (Pesaran and Smith, 1995). Strong assumptions that stand in this case require group-specific parameters are distributed independently of the regressors and these regressors are strictly exogenous. In the case that T is large, when slope coefficients are in fact identical, fixed effect, instrumental variables and generalized method-of-moments (GMM) estimators can provide inconsistent and potentially very misleading estimates of the average value of the parameters in dynamic panel data models.

The choices between fixed and random effects formulations are carefully studied. Indeed, decision making is depended on a number of related considerations. First, the purpose of the exercise matters. For instance, if someone requires making inference about macro relationship from micro estimates based on a separation of population, then it should choose random effect. Second, the perceived degree of similarity in the parameters matters. Third, the matters those need to be considered during estimation. The fixed effect approach used conditional likelihood while the random approach used the unconditional or marginal likelihood. Fourth, the important practical issue whether the effects are independent of the regressors.

Furthermore, the dynamic models have been improved further and became more complex, which initial conditions can be treated as fixed or random. The long run parameter here is nonlinear functions of the short run parameters. Therefore, researchers must ensure that the joint distribution for the short run parameters indicated a meaningful joint distribution for the long run parameter when applicable of random coefficient approach.

Virtue of these concerns promotes improvement in foregoing approaches. This paper purposes to employ the PMG approach to observe the effects of debt on the FDI inflows. Hence, this paper forms an empirical equation for the purpose of examining the constancy and sensitivity of the models. The long run models are as follow:

$$FDI_{it} = \alpha_{1i} + \beta_{1i}DEBT_{it} + \kappa_{1i}GS_{it} + \tau_{1i}TO_{it} + \varepsilon_{1it}$$

Equation 1

where *FDI* is the foreign direct investment (as percentage of GDP), *DEBT* is the debt (as percentage of GDP), while *GS* is the government spending (as percentage of GDP), *TO* is the trade openness (as percentage of GDP) and ε_{it} is the error term. The cross-section units which referring the countries are denoted by $i = 1, 2, 3, \dots, (N)$ and $t = 1, 2, 3, \dots, (T)$ represents time periods. With this condition, the conceivable objective of containing debt in Equation 1 is being used to capture direct effects of debt burden to the FDI.. As it depending on the degree of debt on the selected country, the impact of debt stocks on FDI could be positive or negative. According to Corbo and Hernandez (1998), they mentioned that FDI is positively correlated to the level of debt due to their empirical estimation which showing a growing tendency of FDI in those highly indebtedness countries. However, Schnitzer (2002) argued that debt level has moved in different direction with FDI inflows. The author stated that risk of expropriation on profit through tax distortion or nationalization of foreign investment might arise due to the irremediable debt overhang on the indebtedness country. Therefore, high debt environment might hinder foreign investors to access into domestic credit market. Consequently, this would also alleviate the productivity and spillover effects of FDI. Similarly, the impact of government spending is predictable to be either

positive or negative on FDI as it was depending on different zone and region (Liu, Daly & Varua, 2012). Nonetheless, trade openness is expected to engender a positive effect on FDI since as it was being found that the country that with higher level of liberalization and greater involvement of foreign investment was able to attract more FDI to expand their economic growth (Goldar and Banga, 2007). Furthermore, the ARDL (p, q,..., q) dynamic panel specification proposed by Pesaran et al. for Equation 1 are:

$$FDI_{it} = \mu_{li} + \sum_{j=1}^p \eta_{li,j} FDI_{i,t-j} + \sum_{j=0}^q \nu_{li,j} DEBT_{i,t-j} + \sum_{j=0}^q \omega_{li,j} GS_{i,t-j} + \sum_{j=0}^q \phi_{li,j} TO_{i,t-j} + \varepsilon_{lit}$$

Equation 2

where μ_i denotes the fixed effects, η_{ij} are scalars for the coefficients of lagged dependent variables and ν_{ij} , ω_{ij} and ϕ_{ij} are coefficient vectors in Equation 2 respectively.

With PMG procedure, the Equation 2 can re-parameterization as an Error Correction Model (ECM):

$$\Delta FDI_{it} = \phi_{li} (FDI_{i,t-1} - \alpha_{li} - \beta_{li} DEBT_{it} - \kappa_{li} GS_{it} - \tau_{li} TO_{it}) + \sum_{j=1}^{p-1} \eta_{li,j}^* \Delta FDI_{i,t-j} + \sum_{j=0}^{q-1} \nu_{li,j}^* \Delta DEBT_{i,t-j} + \sum_{j=0}^{q-1} \omega_{li,j}^* \Delta GS_{i,t-j} + \sum_{j=0}^{q-1} \phi_{li,j}^* \Delta TO_{i,t-j} + \mu_{li} + \varepsilon_{lit}$$

Equation 3

where $\phi_{li} = -\left(1 - \sum_{j=1}^p \eta_{li,j}\right)$, $\alpha_{li} = \mu_{li}$, $\beta_{li} = \sum_{j=0}^q \nu_{li,j}$, $\kappa_{li} = \sum_{j=0}^q \omega_{li,j}$, $\tau_{li} = \sum_{j=0}^q \phi_{li,j}$ are based on Equation 3. The coefficient of the error correction term, ϕ_i that from Equation 3 represents the speed of adjustment of FDI towards its long run equilibrium following the stock to the short run. Therefore, the ϕ_i is expected to be negative and significant to ensure a long run relationship between FDI and control variables exists. β_i , κ_i , τ_i are the equilibrium relationships of debt, government spending, trade openness and interaction term respectively with FDI. In contrast, η_{ij} , ν_{ij} , ω_{ij} , and ϕ_{ij} are the short run coefficients relating to the past value of FDI

and all repressors respectively. Similarly to the previous equation, μ_{1i} indicates fixed while ε_{1it} is the error term or disturbance.

3.4 Data Descriptions and Sources

This research discussed about the impact of debt level on the FDI in European countries. These impacts investigated with annual observation in the period from 1991 until 2011 on ten countries. These countries are among the European Union which included Greece, Portugal, Ireland, Italy, Spain, Germany, Austria, France, United Kingdom and Iceland. The endogenous variable is FDI of the country while debt level as the single regime-variable. The unit measurement of FDI and debt level refer to the net inflow of FDI as percentage of GDP and general government gross debt as percentage of GDP respectively. Besides, general government total expenditure as in percentage of GDP is used to measure the government spending of the country. To intensify the result on the empirical testing and avoid the model having specification errors, other control variables are included to modify the model. These control variables include trade openness (determine by sum of the export and import goods and services divided by GDP) and the government spending of the country. The data source of debts level and government spending is taken from the International Monetary Fund (IMF), whereby foreign direct investment and trade openness data are taken from the World Bank database.

CHAPTER 4: DATA ANALYSIS

4.1 Overview

This chapter has discussed the empirical results for panel unit root tests, MG and PMG estimators based on selected EU-10. First, panel unit root is conducted to check the stationarity. After these MG and PMG tests have been run and the results have been obtained. Besides, Hausman test has been carried out to determine whether to use MG or PMG test in the model. If p-value is being rejected, then the data have to be examined using PMG which allowing long run coefficient to be identical. Lastly, the ECM will be discussed based on MG and PMG estimators.

4.2 Panel Unit Root Test

Table 4.1 reports the results of Im, Pesaran and Shin (IPS) test, Maddala and Wu (MW) test and Levin, Lin and Chu (LLC) test. Based on the results reported in Table 4.1, the p-value for IPS and LLC for all series is insignificant to reject null hypothesis at unit root at even 1% significance level, with the exception of FDI. Based on MW test, the majority of variables are to be non-stationary at level form since the null hypothesis of unit root cannot be rejected at 1% significance level. After first difference, however, the p-value for all the variables indicates that the null hypothesis is rejected at 1%. Only the result of LLC on FDI is not rejected at 1% significance level. Therefore, all variables are to be integrated at first difference, $I(1)$.

Table 4.1: Result of LLC, IPS and MW Test for EU-10

	IPS	IPS	MW	MW	LLC	LLC
	Constant	Constant	Constant	Constant	Constant	Constant
	Without trend	With trend	Without Trend	With Trend	Without trend	With trend
Level						
FDI	-2.61889*	-0.45273	73.0200*	51.0857*	-1.72332**	0.31950
Debt	1.31872	1.98487	18.46771	15.41757	1.52753	3.07308
Trade Openness	1.75730	-1.40615	10.2769	29.4592***	0.47974	-0.75411
Gov. Spending	-1.19626	-0.15876	19.0806	15.5787	-0.96594	-1.03321
First Difference						
FDI	-7.38237***	-5.16993***	490.030***	168.484***	-4.65105***	-2.14828**
Debt	-5.17617***	-5.31690***	103.041***	94.6355***	-4.82164***	-4.37243***
Trade Openness	-5.82159***	-3.91670***	134.031***	106.755***	-5.59694***	-2.60094***
Gov. Spending	-5.18829***	-5.32880***	104.058***	94.7499***	-4.99354***	-4.39353***

Note: *, **, ***, indicates the rejection of the null hypothesis at 10%, 5%, and 1% significance levels. Lag length for the 3 tests above are based on Newey-West bandwidth selection using Bartlett kernel.

4.3 Pooled Mean Group (PMG)

Table 4.2: Regional's ECM model for EU-10

	MG	PMG
LR		
debt	-0.0258483** (0.0110463)	-0.0245117** (0.0103247)
gs	1.407309* (0.7784044)	-0.0613982 (0.0419337)
to	-26.08147 (32.22613)	2.735575*** (0.7798351)
ec	-0.101221*** (0.2118481)	-0.0793873*** (0.1876004)
SR		
d.debt _{t-1}	-0.6293929* (0.328259)	-0.3140364** (0.1526581)
d.debt _{t-2}	0.7138966* (0.3987074)	0.3702489 (0.2711139)
d.debt _{t-3}	-0.3251313* (0.1917061)	-0.2013428* (0.1112195)
d.to _{t-1}	-5.156701 (9.671709)	5.954348 (6.74629)
d.gs _{t-1}	-0.7030267* (0.4133527)	-0.2419041 (0.3077054)
_cons	-32.8527 (23.89801)	4.298957*** (1.00683)
Hausman	0.7358	

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

Table 4.2 reports the estimates that obtained from MG and PMG estimators for the long run coefficients and the estimated speed of convergence across countries. Based on the results of MG, the estimated long-run coefficients for all variables are significant with the exception of trade openness. The positive coefficient of government spending in MG is 1.407309 which means that the increment in government spending will lead to increase in FDI. On the other hand, the results of PMG show all the variables are significant, except government spending. With the coefficient of -0.0245117, debt is negatively affecting the movement of FDI. It means that the higher the debt, then FDI will reduce. While the coefficient of trade openness is 2.735575, if the country economy is in high liberalization, the foreign investor will choose to invest in the country, thus FDI will increase.

Furthermore, the error-correction term should be negative and significant in long-run. The result shows that the coefficients of error-correction term are negatively significant in both techniques at 1% significance level. In simplicity, there is having speed of adjustment in the long-run and the coefficients are about -0.101221 and -0.0793873 in MG and PMG, respectively. In light of the finding in ECM based on MG and PMG, FDI is corrected towards its long run equilibrium at the rate of 10.12% and 7.9% with respect to MG and PMG estimators.

Besides, Hausman test is used to determine which estimators can provide better results in the estimation. Based on the results obtained, Hausman test shows that the p-value of chi-square is 0.7358; therefore the null hypothesis of homogeneity in long-run coefficient cannot be rejected. In conclusion, PMG provides more accurate and better estimation as compare with MG.

CHAPTER 5: CONCLUSION, POLICY IMPLICATION, LIMITATION AND RECOMMENDATION

5.1 Conclusion

FDI have become a crucial and vital conduit that can facilitate the economic development of a country through its spillover effect. Therefore, most of the countries had created their own strategies to attract the FDI inflows. Generally, better infrastructure base will lead to higher attractiveness of foreign direct investment but not all the countries have abundant capital to build up their fundamental infrastructure due to the lower liquidity of funds available. Thus, debt has become the major source that used to finance infrastructure of host country. However, over borrowing debt of a country could result in negative impact on economy stability. When the problem of debt overhang exists, government may impose higher tax distortion and capital remittance on foreign investors and these uncertainties make the potential and existing foreign investors to loss their confidence level and thus economic growth cannot be improved. Forasmuch, this paper intends to investigate the relationship between FDI and debt in EU-10 from the period 1991 to 2011.

To examine the relation between FDI and debt, this paper applies several panel unit root test which are MW, IPS and LLC tests for the purpose of determining the stationarity of the series. Besides, MG and PMG estimators are used long run coefficient and dynamics speed of convergence of the interest variables. In the context of MG, its estimates the regressor separately based on ARDL model while PMG is used pooling to estimate long run coefficient. MG estimator with characteristic of it does not take account that certain parameters may be same across groups. Meanwhile, the PMG estimator allows the intercepts, short run coefficients and error variances to differ freely across groups but the long run coefficient is constrained to be identical. Lastly, Hausman test is conducted to identify the efficient estimator between MG and PMG. In light of the findings, the MG estimator shows that debt level is negatively significant and the coefficient of

ECM is -0.101221, which means that the FDI would be corrected 10.12% in the next period. Besides, the result of PMG estimators shows significant and negative relationship between debt and FDI with -0.0793873 coefficient of ECM where it shows FDI would corrected 7.9% in the next period. Based on the result of Hausman test, PMG estimator is more suitable to investigate the relation between FDI and debt compare with MG estimator.

5.2 Policy Implication

This paper has ascertained that debt is significantly affecting FDI in EU-10. Therefore, government should implement new policies or improve the existing policies in order to maintain the stability in the economy.

Debt issue is the major concern by the policy maker as it may cause the whole economy to become unstable and bring many adverse effects to the country. Thus, a well debt management is required in order to maintain debt level at sustainable level. This can be done through supervisory and monitory of government policy. First of all, EU-10 is advised to empower a mechanism that focus on monitoring the financial system that has been applied in EU-10. This committees that involve in this mechanism must be the representatives that appointed by EU-10. In addition, the first legislative act that should be implemented is the EU members have to obey the minimum rules and regulation to ensure the financial system to be stable.

When EU-10 has lesser restrictive on rules and regulation on debt control could confuse both public and the financial agencies, which include central bank or ministry of finance. Without specific models or guidelines, it will bring unfavorable outcome as they might execute inappropriate practices. In order to maintain a well debt management, transparency and accountability are needed to be established in all the financial debt management. For such, clear guidelines on the roles, responsibilities and objectives are stipulated for EU-10 to abide. For instance, those guidelines could help EU-10's financial agencies in major decision

making as they could define the floor and ceiling that bind under the debt control and thus, the harmful decisions are avoided. In addition, publication of the debt management reports is also needed to be transparent to the public. Other than that, financial agency also needs to disseminate the information, for instance, past and current information, budgetary report and others, to keep public in aware of the country's current financial position. Meanwhile, to ensure the fairness of the debt management activities, financial agency needs to report to an independent mechanism in an annual basis. This will not only increase the reliability of the financial activities but also elevate the public's confidence on the activities conducted.

Last but not least, since macroeconomic stability would affect FDI; hence government is advised to construct better framework to attract the incoming of FDI. In other words, when there is well controlled in the debt level, the economy is more stabilized, and thus can attract more FDI to invest into the country. The importance of attracting FDI to invest into the country is mainly due to there is decrement in the exchange rate value when FDI value has fallen. This is because based on the findings of this paper, it has been discovered that FDI has been inversely affected by debt. Thus, by managing debt well, it can help to stabilize the exchange rate as exchange rate has positive relationship with debt. Especially in importing and exporting countries, the policy maker has drawn much concern on the stability of exchange rate. When debt level keeps increasing, it will lead to the unstable in the economy and thus exchange rate will be affected. The decrement in exchange rate would cause the depreciation of the home currency and thus it will affect the current account component in the balance of payment of the country. With an unstable exchange rate quote in the country, government will face difficulties in constituting the annual budget as the import and export amount are uncertain. Therefore, the exchange rate of a country needs to be maintained in a reasonable range so that it helps to ease the operational management of the country.

5.3 Limitation and Recommendation

This paper has investigated the nexus between FDI and debt on EU-10. The results reveal that debt and FDI have negative relationship with each other. However, the result was based on the countries in EU which consist of higher debt level during the subprime crisis happened in U.S. It is advice to the future researchers that they could look at the result of FDI and debt in comparison among developed countries and developing countries. In addition, the researchers could also suggest to compare high debt countries and low debt countries in groups and thus, more detailed research could be investigate in the relationship between FDI and debt.

Other than that, this research has examined the nexus between debt level and FDI movement. Since FDI is to be proved that it is affected by debt level, further exploration is suggested to be done on whether the increment in debt level would affect the spillover effect of FDI on economic growth. Whether the high increment in debt level will weaken or strengthen the spillover effect of FDI on growth is worth to be investigated as it can provide better knowledge to policy maker. It is suggested that the future researchers to examine the nexus between debt and spillover effect of FDI on growth.

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