ESSAYS ON CURRENT ACCOUNT IMBALANCES IN EUROPEAN COUNTRIES

by

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This dissertation consists of three chapters in exploring the current account imbalances in the European countries. The first chapter investigates the effect of household indebtedness on the Twin Deficits phenomenon in European countries. Annual data from 1981 to 2012 for 28 European countries are used. Panel regression with fixed effects and General Method of Moments (GMM) approaches are adopted to examine the standard determinants of the current account imbalances and the effect of household indebtedness on the Twin Deficits hypothesis. Empirical findings indicate the existence of positive co-movement between the fiscal balance and current account balance, thus indicating the presence of the Twin Deficits phenomenon in the European region. Meanwhile, there is a negative association between gross household debt and the current account balance. This inverse relationship implies consistent behavior with the Twin Deficits between fiscal balance and current account balance, where increase in the gross household debt contribute to the growth of the current account deficit. Thus, the household debt may marginally exacerbate the Twin Deficits phenomenon. These results can be observed particularly in the countries with low fiscal deficits, public debt and household debt.
The second chapter explores the behavior of the current account deficit and fiscal deficit from the view of thresholds to provide additional understanding on the Twin Deficits phenomenon. Annual data of eleven Euro Area countries from 2000 to 2012 are adopted in this study. This paper examines endogenous thresholds namely public debt, fiscal deficit, household debt, trade openness and financial development as threshold variables, using the sample splitting method (Hansen, 2000). The aim is to examine the Twin Deficits behavior from the perspective of countries above or below the threshold levels. This is due to the fact that households may behave in differently in term of consumption and risk preference in the countries above or below the threshold levels. Empirical findings indicate that there is evidence of Twin Deficits phenomenon in the baseline model without threshold effects. In terms of the threshold effects, there is a significant positive association between the current account balance and the fiscal balance in the countries with public debt, household debt, fiscal deficit, trade openness and financial development below their respective threshold levels. On the other hand, there is no or weak evidence of the Twin Deficits phenomenon in the countries with public debt, household debt, fiscal deficit, trade openness and financial development above the threshold levels. Intuitively, household behavior may indicate Ricardian Equivalence as the effect of the fiscal policy is offset by the opposite behavior from households, such that as the government borrows more (fiscal deficit increase), households may save more. This means that Ricardian Equivalence behavior is more likely observed in the countries with high levels of public debt, household debt, fiscal deficit, trade openness and financial development.

The third chapter investigates the current account sustainability in eleven European (EU) countries using annual data of exports and imports from 1980 to 2013. Im et al. (2003)
panel unit root and Pedroni (1999) panel cointegration are employed to identify the stationarity of the variables and existence of a long-run relationship between the parameters of interest, which are exports and imports. The pooled mean group estimator proposed by Pesaran et al. (1999) is used to estimate the magnitude of the interaction of the exports and imports from the long-run and short-run perspective and at the individual country level, based on a series of sub-periods. The determination of the current account sustainability is based on existence of significant long-run association between exports and imports. If the interaction coefficient is within the equilibrium of one, then there is no violation of the long-run budget constraint and current account is sustainable. In addition, significant negative error-correction terms also indicate that existence of convergence in the long-run and current account is consider as sustainable. In terms of the short-run perspective, current account may be unsustainable if the deviation of the short-run coefficient from equilibrium of one is large. Empirical results show no violation of the long-run budget constraint in the eleven EU countries in the long-run, which implies a sustainable current account over time. However, the sustainability of the current account may shift towards unsustainable when taking into consideration different time frames, namely the effect of formation of the EU in 1992 and debt crisis starting in 2008. The short-run results at the individual country level provide different insight as compared to the results of the error-correction terms. Large short-run imbalances may lead to indications of unsustainable current accounts even though there is no evidence of violation of the long-run budget constraint.
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Chapter 1:

Household Indebtedness - Does it Impact the Twin Deficits Hypothesis?

Panel Analysis of European Countries

1.1. Introduction

In the era of globalization, the integration of international trade and financial activities may provide benefits such as efficient resource allocation in terms of saving and investment. At the same time, such integration may lead to global imbalances in the Current Account. These imbalances may be exacerbated by government budget imbalances. One cause for concern has been the tendency of current account deficits and fiscal deficits to grow together, with issues of sustainability of both deficits. There has been a wide debate on the existence of the linkage between current account deficit and the fiscal deficit, known as the ‘Twin Deficit Hypothesis’. Under the Twin Deficit hypothesis, the current account deficit is believed to be associated with the fiscal deficit, with prescriptions to reduce the current account deficits by reducing the fiscal deficit. Recent studies that show the existence of co-movement between current account deficits and fiscal deficits include Piersanti (2000), Leachman and Francis (2002), Chinn and Prasad (2003), Gruber and Kamin (2007), Lane and Milesi-Ferretti (2012) and Brissimis et al. (2013).

If there is a twin deficit, then fiscal policy changes can act as one of the tools for improving the current account imbalance. New challenges emerge, however, from the household perspective that may thwart efforts of the government in improving the current account imbalance. This is due to the greater financial integration and deeper degree of domestic financial development in the countries, particularly in the EU region,
that lead to accumulation of household debt. In fact, household indebtedness plays an essential role as a contributor to economic growth via temporary expansion of demand that stimulates the output volume in the future. Although economic growth may rely on household indebtedness, this may also lead to other effects such as greater income inequalities and constant changes in income distribution due to dissaving among the household (Barba and Pivetti, 2008). In this paper, I examine the role that household indebtedness may play in the twin deficits hypothesis. Household indebtedness may exacerbate or mitigate the twin deficits hypothesis. Household debt may rise at the same time as government deficits, with both playing into increasing current account deficits. On the other hand, households may borrow less (save more) in the face of increased fiscal deficits, thus mitigating the linkage between fiscal deficits and current account deficits. These issues are particularly important for the European Union (EU) countries, as this region has faced a debt crisis in recent years. Using panel data on 28 members of the European Union over the period 1981 to 2012, I explore the evolution of government deficits and household debt for the EU countries in order to examine their potentially dual role in changes in current account behavior.

Investigating the effects of household debt in moderating or exacerbating the Twin Deficits hypothesis is essential for policy makers in ensuring appropriate policies adopted in battling the mounting deficits in the current account and fiscal budgets. This paper distinguishes from previous studies on the Twin Deficit hypothesis in the following elements. First, this study contributes to the literature on current account imbalances with an emphasis on household indebtedness. As far as I can tell, the only paper that includes household debt in investigating current account imbalances is Atoyan et al. (2013). However, they provide little discussion regarding the effect of
household debt in their paper. Furthermore, their model specification differs from the bulk of literature in the selection of exogenous variables such as inclusion of private credit, unemployment rate, exchange rate and relative income. This paper, by contrast, emphasizes discussion on household indebtedness while incorporating standard determinants of current account imbalances in European countries. The standard determinants in empirical studies of the current account consist of the fiscal balance, initial net foreign assets, relative income, GDP growth and age dependencies (Lane and Milesi-Ferretti, 2012; Gruber and Kamin, 2007; Chinn and Prasad, 2003). Second, the empirical approach adopted in this study emphasizes the medium to long-run determinants of current account imbalance where inter-temporal elements are taken into consideration, including demographics, initial wealth, and stage of development. Furthermore, the measurement of some of the exogenous variables such as fiscal balance, relative income, GDP growth, age dependencies and household indebtedness are expressed as deviations from GDP weighted averages, similar to Gruber and Kamin (2007) who use deviations from the GDP-weighted sample means. The purpose of using such deviations is to obtain the real local effects rather than the global effects of the determinants on the current account imbalance.

This study further investigates the effect of household indebtedness in moderating the Twin Deficits via a threshold perspective in terms of the level of fiscal deficit, public debt and household debt. Countries are classified as above or below particular levels of debt or deficit. The results based on the threshold view provide supplementary insight on the behavior of the household and government, which eventually may influence the

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1 Alternatively, Lane and Milesi-Ferretti (2012) use measures defined relative to a weighted average of country i’s trading partners.
current account imbalances when reaching certain degrees of deficit or debts. The focus of this paper is on the EU countries since household debt in the region has grown and may be part of the source of the debt crisis. Household debt in the EU region evolves at a moderate pace in the 2000s prior to the global financial crisis that started in 2008. After the crisis, household debt expanded quickly, especially in the Eastern and Southern EU. For instance, the households of the Netherlands and Ireland had liabilities of 140% of GDP and 128% of GDP respectively in the year 2012 compared to 87% of GDP and 56% of GDP in the year 2000. Germany is the only country in the EU region that reduced household indebtedness over this period, from 74% of GDP in 2000 to 60% of GDP in 2012. The heterogeneous behavior of household indebtedness in the EU countries provides interesting insight on the interaction between public deficits and household debt.

1.1.1. Stylized Facts of the Current Account Deficits and Fiscal Deficits in European Union

The dynamics of the current account as well as fiscal imbalances and household debt in selected EU countries are depicted in Figures 1.1 to 1.3. The objective is to provide insight on the different trends between two main groups in the EU region. The groups refer to the non-periphery countries such as Austria, Finland, France, Germany and the Netherlands, while the periphery countries such as Greece, Ireland, Italy, Portugal and Spain. The values of the current account balance, fiscal balance and household debt are expressed as percentage of GDP and obtained from Eurostat. Figure 1.1 indicates the current account balance of selected EU countries from the year 1990 to 2012. In general, EU countries such as Finland, France and Netherlands experienced surpluses in their current accounts during the sample period. The Netherlands exhibit a consistent current
account surplus with the highest value at 9.7% of GDP in the year 2011. Both Finland and France recorded deteriorating trends of surpluses and eventually settle at current account deficits of 1.7% and 2.4% of GDP respectively in the year 2012, due to the impact of the financial crisis in 2008. Meanwhile, Austria and Germany recorded surpluses in their current accounts after the introduction of the Euro currency in the year 2001. On the other hand, the stressed EU countries in general experienced deteriorating current account deficits during the sample period. Greece, Portugal and Spain reached their highest deficits of 15%, 13% and 10% of GDP respectively at the start of the financial crisis in 2008. However, the deficits diminished over time with Greece, Portugal and Spain recording deficits of 2.9%, 1.5% and 1.1% of GDP in 2012, while Ireland recorded a surplus of 4.9% of GDP.

Figure 1.2 depicts the fiscal balance of selected EU countries during the period 1990 to 2012. Finland experienced large volatility, with a fiscal surplus from the year 1997 to 2008 and a deficit in 2012. The other countries recorded fiscal deficits during the period, except for Germany and the Netherlands, which achieved peak surpluses in the year 2000. The trend of the fiscal balance for the stressed EU countries (lower panel of the graph) exhibit improvements in the fiscal deficits over the late 1990s, with subsequent increases in the deficits following the financial crisis. The fiscal deficit enlarges particularly for Ireland with 31% of GDP in the year 2010 and Greece with 14% of GDP in the year 2009. Although the 2008 financial crisis contributed to the large fiscal deficits for all the EU countries, there were great efforts in attempting to shrink the deficits as moving towards the year 2012. This can be seen via the fiscal austerity measure as a circumstance of bailout funds. For instance, Greece was offered €110
billion bailout loan in May 2010 with one of the condition was to implement fiscal austerity measure in order to restore its fiscal balance.

Figure 1.3 shows the household debt for selected EU countries for the period 1990 to 2012. The household debt for the EU countries indicates an upward trend, except for Germany. For instance, the household debt of the Netherlands exhibits tremendous growth and reached 138% of GDP in the year 2012. Relatively, the household liabilities of Austria, Finland and France indicate diminishing incremental trends with only Germany showing a reduction over time. Likewise, the household debt for the stressed EU countries (lower panel of the figure) also depict mounting debt with Ireland reaching 128% of GDP, followed by Portugal with 106% of GDP and Spain with 90% of GDP in the year 2009. This is due to the real estate market expansion particularly in Ireland and Spain. Household debt expanded at a moderate pace in the early 1990s, but grew significantly following the 2008 financial crisis.

The mounting level of household indebtedness during a period when current account deficits and fiscal deficits also grew indicates a need to examine more fully how the three are intertwined. Thus, I explore this issue using panel regression with period fixed effects. The main reason of adopting this panel period fixed effects is to allow capturing of the variation from across countries. This is due to controlling for country fixed effects may eliminate important information from the cross-country variation. Empirical findings indicate evidence of Twin Deficits in the 28 EU countries and inclusion of the household debt in the model further intensifies the Twin Deficits effect. In addition, there is a significant inverse association between current account balance and household debt. The remainder of the paper is organized as follows: In section 1.2, previous studies
related to Twin Deficits and the linkage between household indebtedness and the Twin Deficits are discussed. In section 1.3, I present the model specification and estimation techniques adopted in this study. Estimation results and conclusions are shown in sections 1.4 and 1.5, respectively.

1.2. Literature Review on Twin Deficits

There are a number of studies on the Twin Deficits hypothesis using different approaches. Some studies portray existence of an association between current account deficits and fiscal deficits while others provide contradictory findings. I summarize a number of these studies below.

In line with the Keynesian approach via the Mundell-Fleming framework, there exists co-movement between current account deficits and fiscal deficits. A surge in the fiscal deficit indirectly leads to appreciation in the currencies, which leads to growth in the current account deficit. These are among the findings from studies such as Rosensweig and Tallman (1993), Vamvoukas (1999) and Leachman and Francis (2002). Rosensweig and Tallman (1993) investigated the association between the trade balance, fiscal deficits and exchange rate of the United States using a five variables Vector Autoregression (VAR) system with quarterly data from 1961 to 1989. Their empirical findings showed that growing fiscal deficits lead to appreciation of the dollar and eventually contribute to the trade deficit. Vamvoukas (1999) studied the relationship between fiscal deficits and current account deficit for Greece with the annual sample period from 1948 to 1994. They adopted time-series analysis, namely cointegration, error-correction modelling (ECM) and Granger trivariate causality. The results implied the existence of positive co-movement between fiscal deficits and current account
deficits in the short-run and long-run and causal effect from fiscal deficits to current account deficits. Leachman and Francis (2002) applied the multi-cointegration method to examine the Twin Deficits issue for the United States post World War II with quarterly data covering 1948 to 1992. They argued that evidence of the Twin Deficits is rather time specific and ECM results indicated that the fiscal deficit contributed to the persistent current account deficit at the latter stage of the sample period.

The Twin Deficits hypothesis can be observed from the literature on the determinants of current account balances, due to the significance of the fiscal balance as one of the key drivers of the current account balance as in Chinn and Prasad (2003), Gruber and Kamin (2007), Lane and Milesi-Ferretti (2012) and Brissimis et al. (2013). Although the main objective of these papers is to investigate the determinants of the current account, the findings point to a positive association between fiscal balances and current account balances. These studies adopt advanced econometric panel approach such as panel regression with period fixed effects and panel cointegration. The first three use samples of countries that include advanced countries and developing countries while Brissimis et al. (2013) focus on the European countries.

Chinn and Prasad (2003) examine the medium-term macroeconomic determinants of the current accounts for 18 developed countries and 71 developing countries, using five year non-overlapping averages of yearly data covering the years 1971 to 1995. They apply cross-section analysis and panel regression in order to capture the variation of the current account across countries and over time. Their core outcomes show the existence of a positive association between fiscal balance and current account balance. The effect of the fiscal balance on the current account balance stood at around 0.31 of magnitude
in the full sample. This coefficient implies that a 1 percentage point increase in the fiscal balance is associated with approximately 0.30 percentage point increase in the current account balance to GDP ratio. Furthermore, there is strong evidence of the fiscal balance effect on the CA in the developing countries, but no evidence of fiscal balance effect on the CA in the developed countries in their panel regression results.

Bussière et al. (2004) investigate the determinants of the current account on a panel of 33 OECD and European accession countries for the time period 1980-2002, from the intertemporal perspective. They adopt the panel data fixed effects and dynamic Generalized Method of Moments (GMM) estimator approach for their estimation purposes. Their empirical findings indicate that fiscal balance, relative income and relative investment are important drivers of the current account in the medium term. There is a positive interaction between fiscal balance on the current account with coefficient around 0.10. Meanwhile, lower level of relative income and higher level of investment tend to worsen the current account deficit.

Gruber and Kamin (2007) adopt a similar approach to Chinn and Prasad (2003) with 61 countries covering the period 1982 to 2003. There are a few differences in their regression model such as the inclusion of the degree of financial development and quality of institutions along with the standard determinants of current account balance. Gruber and Kamin (2007) measure some determinants of the current account balance in terms of difference from the GDP weighted mean of the sample. Their main empirical results also show a positive relationship between the fiscal balance and the current account balance with magnitude around 0.11, implying a smaller magnitude than in Chinn and Prasad (2003).
Lane and Milesi-Ferretti (2012) investigate the behavior of the current account adjustment controlling for the impact of financial crisis in developed countries and emerging economies from 1969 to 2008. They express the exogenous variables in the model in terms of relative to a weighted average as adopted in Gruber and Kamin (2007), but taken as deviation from country i’s trading partner instead of deviation from the sample mean. Their key results depict evidence of Twin Deficits with magnitude around 0.24 in the full sample, 0.27 for developed countries and 0.26 for emerging economies, thus showing smaller impacts than 0.31 in Chinn and Prasad (2003), but greater than 0.11 in Gruber and Kamin (2007). There are some important points that can be drawn from the three studies. All three studies opt for panel regression with period fixed effects rather than panel regression with country specific fixed effects. The argument is that using the country fixed effects may lead to exclusion of essential cross-country variation in the current account balance. The weighted average measurement of the variables adopted in the studies by Gruber and Kamin (2007) and Lane and Milesi-Ferretti (2012) act as an alternative to that in Chinn and Prasad (2003) to remove the common factors across the countries while capturing the local effects rather than global effects. I use a similar weighting to that in Gruber and Kamin (2007), where the common factors are removed by taking deviation from the weighted average GDP. Further, these three papers measure their data using non-overlapping averages of either four or five years to smooth the effect of fluctuations due to the business cycle. In my empirical analysis, I use four year non-overlapping averages of the data to accomplish the same thing.

Brissimis et al. (2013) use a similar approach to the three papers above but focus on the Euro area over the period 1980 to 2008. They apply panel estimation approaches,
namely Fixed Effects method, Seemingly Unrelated Regression, and Fully Modified OLS to explore the drivers of current account imbalances. Empirical results indicate that current account imbalances, particularly for the initial 12 EU members, can be explained by the fundamental drivers where the magnitude of the fiscal balance effect is approximately 0.20 to 0.29 across the three different panel estimation methods.

By contrast, Evans and Hasan (1994) and Kaufmann et al. (2002) show no interaction between current account deficits and fiscal deficits in their empirical studies on Canada and Australia respectively. Their theoretical arguments are based on the Ricardian Equivalence hypothesis. Any distortion in the fiscal deficit via taxes may not have implications on the market interest rate, capital inflows, and eventually the current account deficit. In other words, the key to the explanation lies in the rational expectation theory where households are assumed to be rational agents. This means that for any increase in the fiscal deficit, households will have the tendency to increase their savings to counter the expected surge in taxes in the future when the government starts to pay down the higher deficits. Moreover, Kim and Roubini (2008) conduct empirical study on the relationship between current account balance, fiscal balance and real exchange rate for the United States by employing Vector Auto-Regression (VAR) approach. The empirical findings indicate an inverse association between the two deficits, referred to as Twin Divergence. They argue that any increment in the fiscal deficit in fact helps to improve the current account deficit via depreciation in the domestic currency.

Further studies investigate the relationship between the current account balance and fiscal balance based on specific criteria such as regional analysis or threshold levels of the deficits. Empirical panel cointegration findings from Bagnai (2010) portrays co-