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Remittances and Dutch Disease in the Eurozone

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Abstract

This thesis analysis the connection between remittances and economic growth in the Eurozone. The purpose is to control for remittances impact on GDP growth in absence of Dutch Disease to see if current theory holds. In remittance-research it is assumed that the lack of transmission between the positive micro-economic impact and economic growth is much due to disruptive real exchange appreciation known as Dutch Disease. The Eurozone is not exposed to such effects as the economies share a currency and are part of a trade union. The thesis finds no significant effects on GDP growth from remittances and draws two conclusions; either Dutch Disease effects are not as substantial as currently assumed, or other disruptive variables are much more prominent in the Eurozone.

Keywords: Remittances, Dutch Disease, Real Exchange Rate Appreciation, Economic Growth, Eurozone

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1 Introduction

In today's society cross-border migration is not an unfamiliar concept. Most likely, one will know someone; a family member, an acquaintance or perhaps even oneself, that has travelled to work and lived abroad. Migration movements in the world are larger now than ever and although they are difficult to track, most recent estimations from World Bank Group are 247 million migrants (WorldBankGroup, 2016, p. 5). Many of these migrants send parts of their income back to their economy of origin. Money is transferred through formal channels (e.g. regulated nonbank institutions, banks, financial money transfer operators), informal or semi-formal channels (e.g. cash carried personally, hawala). These funds are known as *remittances*.

Approximately 537 billion USD worth of remittances, money sent from a migrant to her/his economy of origin, was received in 2016. That same year over 441 billion USD transferred to the low-income countries, which constitutes more than triple the amount of international aid that same year (WorldBankGroup, 2016, p. 4). These estimations are believed to be conservative calculations, keeping in mind that money moved through informal channels are difficult to estimate and thus may be unaccounted for. A clear majority of remittances are to developing economies (low-income countries), and the funds are for many countries a significant source of financial inflow. For somewhat 25 countries, remittances are over 10% of their GDP, and with a few exceptions, it is the second largest resource flow (largest is FDI) for developing countries since the late 90s (WorldBankGroup, 2016, p. 4).

However, remittances differ from other resource flows, and their economic impact are not as well known. Remittances have less constraints compared to other resource flows like FDIs, ODAs, private debt and portfolio equity. They do not carry the demands that recipients would typically experience with resources from organizations or governments. By studying its microeconomic effects, we know that a migrant often supports more than one family in their economy of origin and with recipient households in control of the spending funds will primarily support consumption necessities such as food, clothing, medicine, shelter etcetera. Hence, remittances have an impact on poverty relief, often supporting multiple families' consumption and welfare. However, beyond its function in poverty alleviation, there are still questions concerning any large scale macroeconomic impact.

It can be tempting to regard remittances as a powerful influence on developing economies due to its immense volume. For long, policymakers favored remittances as a contributor to positive economic development and attributed many benefits to it. However, empirical data tells a different story as it does not support this belief showing marginal effect on economic growth. Theoretically the influx of funds to a given economy creates certain negative effects that could suppress the positive ones expected, thereby leading to no substantial economic growth. The most prominent one is related to real exchange value. When a low-income country receives remittances, it creates a large internal demand for domestic currency, thus creating currency appreciation. This will lead to a shift in real exchange rate that threatens the export sector, a phenomenon known as the Dutch Disease. A few studies have investigated this macroeconomic effect from remittances by looking into the connection between Dutch Disease and remittances in developing economies. The methods of investigation have been to connect financial inflows to certain economic signs

known to be part of the Dutch Disease, for example inflation rate gaps. However, economic growth is not disrupted exclusively as a result of Dutch Disease, there are degrees of interdependence between many variables and so studies face difficult problems with endogeneity. As there is not much that can be done to avoid these problems, Dutch Disease has to a large extent been accepted as the explanation for low-to-no growth effect. This thesis purpose is to control for this theory by testing the correlation between growth and remittances in the Eurozone.

By testing the Eurozone, we are eliminating the risk of Dutch Disease as the countries with large remittance flow; Latvia, Lithuania among others, will not by themselves or collectively pose a risk to appreciate the exchange rate of the Euro. The unique setting of a monetary union and a trade union allows for a more controlled test that can either strengthen the theory by unveiling a connection or indicate the need for an alternative explanation by showing no connection. Understanding the exact reasons to why growth has not occurred would drastically improve chances for policy makers to adapt appropriate policies.

Many of the countries of interest for this test, have not been members of the monetary union for long. Therefore all countries are tested to derive a conclusion.

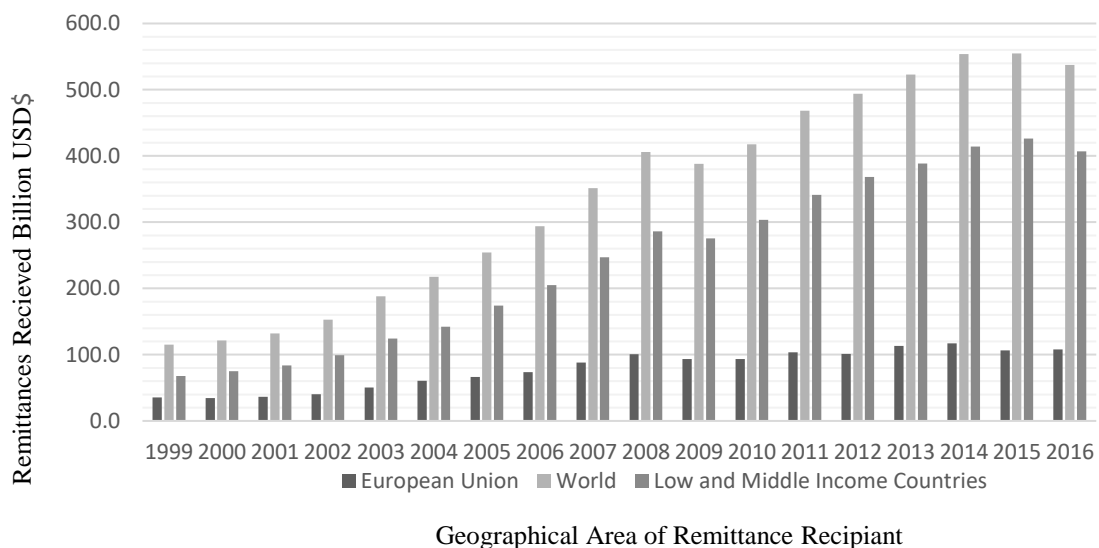
Question: Is it possible to confirm the Dutch Disease to obstruct growth effects from remittances by finding a strong impact from remittances in the Eurozone where risks of Dutch Disease are mitigated?

The remainder of this thesis is organized as follows: Chapter 2; Empirical Literature Review will provide both theoretical and empirical background in three sections. First one will discuss remittances and growth, second will discuss Dutch Disease effect and lastly the papers main thesis will be argued. Chapter 3; Empirical Analysis in three sections will provide the methodology and data; discussing data sample, collection, method and model. Chapter 4 will provide the results from the analysis with subsection containing further interpretations. Lastly, chapter 5 will conclude the paper with final remarks.

2 Empirical Literature Review

Remittances has of late gained attention as a large resource within economic development. Most literature on the subject dates to early 2000s and data collections such as the World Banks' lacked access to many estimations until early 2000s, although one might argue that accurate estimations are still lacking (WorldBank, 2018). As more data has been collected a tremendous increase in amounts of remittances has been seen, and although the numbers are large it is well known that the numbers are an under estimation. With these large amounts many policy makers saw remittances as a mean to influence long-term economic growth. As a result, some countries even actively encouraged working migration, confident it would improve the national economy by development through financial inflows. Philippines for example is such a country where working migration was strongly encouraged by government institutions, leading to more than 10% of their population receding and working abroad (Asis, 2017). The amount of remittances sent to the Philippines has been as high as 13% of their GDP, which demonstrates the prevalence and thereby dependence on remittances (WorldBank, 2018). As is known from the case of Philippines reality has proven to be quite different from theory. This chapter examines the connections between remittances, growth, development and Dutch Disease, to provide a background to the thesis. The first section will start with explaining the underlying theoretical connection between economic growth and remittances, then present the empirical results within micro-economic research. Chapter 2.2 will present the problems from empirical findings and present the latest findings from macro-economic research, and lastly the papers main thesis is presented and argued in chapter 2.3.

2.1.1 Figure: Remittances Received by Year and Geographical Area



Source: World Bank Development Indicators

2.2 Economic Growth and Remittances

As demonstrated by the example above, remittances are a large source income for many developing economies, thus also for the individuals on the receiving end. On a micro-economic level, remittances can make the difference of existence itself. There are many testimonies to remittances lifting entire communities out of crippling states of poverty where there's failure to meet even the most basic needs (Ratha, 2013). However, beyond relieving acute states of poverty, empiric research is not consistent when determining remittances economic impact on growth.

Remittances can impact growth in many ways. Therefore, previous research on the subject can be more simply understood by categorizing them by microeconomic and macroeconomic focus, referring to what channels to growth the authors have studied. Fundamentally the idea that remittances would increase GDP growth stems from the neoclassical ideology. Though development theory of economic growth relied heavily on neoclassical theories it has shifted focus to include more variables, going from a purely macroeconomic focus to including microeconomic elements (Todaro & Smith, 2015). However, neoclassical theory gives us an understanding of the subject. Following the logics of growth models like Solow neoclassical growth model (AK model), an increased capital inflow to an economy would directly impact growth by raising the rate of technological progress and yield investments to industrial development (Todaro & Smith, 2015, p. 138). The key for growth is investments into physical capital. Looking to Rostow's stages of growth, economic growth was expressed as self-sustaining at a certain level of development. Growth occurred in a linier manner as development stages, so by investing enough in capital, the preconditions were fulfilled, and growth would happen as a natural consequence without further interventions. The AK model and Rostow's theory show the essence of neoclassical growth theory by expressing that if sufficient amounts of domestic and foreign savings could be made for investments, not only growth but long-term growth would follow (Todaro & Smith, 2015, pp. 118-123). As remittances acts as a foreign investment to the recipient economy, it is not a long leap to see remittances as source of growth as it can be utilized for investments.

Empirical evidence has proven the relationships to be much more complex than neoclassical theory proposes. Economic growth is not a linier development as suggested by Rostow's theory. Today, development theory show investments are needed not only into physical capital, but also human capital such as education and healthcare as there are high rates of return from these types of investments. Especially if the investment targets women which remittances often do by being sent to female headed households (Amuedo-Dorantes, et al., 2010).

Economic research on remittances has mostly focused on developing countries and scholars have primarily investigated its impact on poverty (Ratha, 2013) (Chami, et al., 2008). Research show that remittances relax the budget constraints of recipients by increasing disposable income. The households get a better economy, which in turn leads to improved standard of living (Ratha, 2013, pp. 1-13). The micro-economic studies have collectively produced compelling result, indicating remittances to influence economic growth principally through effects on human capital investments such as increased caloric intake, lowered drop-out rates from schools, and increased health knowledge (Hildebrandt & McKenzie, 2005, p. 1) (UNPD, 2009, pp. 159-162) (Fajnzylber & Lopez, 2008). Even

though many questions are yet to be answered on remittances micro-economic effects, there is no shortage of evidence of a positive effect on human capital attainment, and in extension long-term growth. The Global Knowledge Partnership on Migration and Development (KNOMAD), including among other partners the World Bank Group and the Government of Sweden, regularly realises rapports with a large focus on remittances and suggestions on how policy makers are to optimize their effects (KNOMAD, 2018). Between them and UN's International Organization for Migration (IOM/OIM) remittances have led to several recommendations for optimizing growth and is perceived as an important mean to reach sustainable growth. However, macroeconomic research has given varying results and does not entirely justify the focus placed by above mentioned agencies on remittances. We have today a body of work investigating the relationship with ambivalent results with no paper is showing as much of a macro-economic impact as theory would suggest (Chami, et al., 2008). Perhaps the strongest evidence is that the world lacks a single good example of large scale economic growth from remittances (Fullenkamp, 2015). A few explanations for the missing growth have been presented in the literature with varying support in empirical data. Among others Bansak and Chezum (2009) similarly to Amureto-Dorantes, Georges and Pozo (2010) shows how absenteeism from the working migration puts remaining family under an increased strain, leading to lowered human capital attainment. Kim (2007) finds evidence for moral hazard problems, suggesting that there is a connection between remittance and recipient's productive efforts. With remittances working as an insurance for hardship the incentive for labour decreases, leading to loss of growth. Although many factors can contribute, three points are particularly prominent in macro-economic literature:

First is that investments are commonly made through purchases of the recipients' current residence and land. These purchases do not contribute to economic growth and might even harm it by driving property-market speculation (Fullenkamp, 2015). Second is 'Brain-drain', where an economy loose skilled and educated labour to overseas working migration (Faini, 2007). Lastly, the receiving economy might experience a real exchange rate appreciation, effects of a phenomenon known as 'Dutch Disease'. The Dutch Disease theory is particularly prominent as an explanation to the disruptions. Next section will further analyse the effects of Dutch Disease and its effect on growth.

2.3 Dutch Disease and Remittances

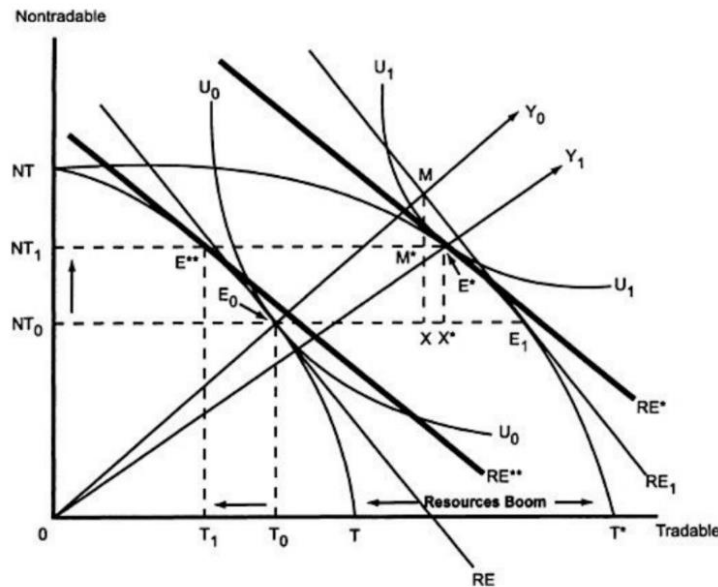
Previous section described how remittances have shown to affect economic growth positively through microeconomic channels such as human capital attainment. However, these effect where not observed to the predicted extent in macroeconomic research which has lead scholars to believe that there are other counter effect suppressing the impact. A large one among these effects is believed to be the Dutch Disease and has been observed as a counter effect not only in the case of remittances, but also aid and other capital inflows such as FDI (Magud & Sosa, 2010)

Dutch Disease refers to an economic phenomenon that happened in Dutch economy during the 1960s where capital from natural resources worsened the country's economy. Essentially the Dutch Disease theory is the theoretical understanding of capital inflows

leading to real exchange rate appreciation and deteriorated economic competitiveness. There are extensive amounts of literature on the theory of Dutch Disease. Early contributors formulating the theories from 1950s onwards are among others Corden, Meade, Salter and Swan, and the theoretical approached has been developed comprehensively over the years (Dornbusch, 1995, pp. 42-50) (Magud & Sosa, 2010, pp. 8-12). The ‘tradable-squeeze effect’ can be illustrated by Corden’s (1985) adaptation of the Salter diagram (1959) in order to describe the mechanisms.

2.3.1 Figure: Adaptation of Salter diagram of ‘tradable-squeeze effect’

Source: Chowdhury, 2004, p. 176



In this model the economy is a small open economy with two types of commodities; tradable goods (T) and non-tradable goods (NT). The assumptions are that the domestic economy cannot independently affect the world market in terms of trade, and that relative prices are fixed within each group. Before capital inflow the economy is at point E_0 which is the highest point on the indifference curve U_0 and RE_0 reflects the real exchange rate at the production of T_0 and NT_0 . The economy now experiences a capital inflow (illustrated as a ‘resource boom’) and production will expand more in tradable goods as there are limited domestic availability on non-tradable goods, T^* and NT_0 . Equilibrium will be at point E_1 . Assuming positive income elasticity, a rise in disposable income will lead to an upwards move along the income expansion path Y_0 until demand reaches point M with NT_0 output. The aggregated demand has increased and the limited availability on NT_0 leads to prices becoming relatively higher on non-tradable goods as there is a limited domestic availability. This is known as a spending effect. Due to the spending effect and the exogenously determined prices on tradable goods, an appreciation in real exchange currency will occur, RE_1 to RE^* . Shifting demand to M^* , to equilibrium point will be at E^* , along income expansion path Y_1 . Demand in the non-tradable sector will result in higher compensations of the product factors in this sector relative to other sectors. Naturally, more resources will be allocated from the tradable to the non-tradable sector, which known as a resource movement effect. This leads to an output increase in the non-

tradable sector, NT_0 to NT_1 , at exchange rate RE^{**} that is parallel to RE^* , and a diminished output from the tradable sector, T_0 to T_1 . Meaning the economy will have less tradable goods produced which hurts the competitiveness of the country.

In reality the economic mechanisms do not always work exactly as the model predicts. The model is a simplification; however, it offers an insight as to why problems associated with growth from remittances are alleged to come from Dutch Disease effects. As a general, Dutch Disease can be assumed to have implications for growth, but at what extent is debatable as the effects may not always be long term and as Dutch Disease empirically has not coherently lower overall growth (Magud & Sosa, 2010). Focusing on the connections between remittances and Dutch Disease the current body of literature consists of approximately 11 studies. The studies primarily examine real exchange rate, labour supply and/or ratio non-tradable to tradable sectors. The methods as well as results are varying (see table 7.1.1 and 7.1.2 for overview).

The three largest studies conducted uses samples of 109 countries, spanning over a decade and finds evidence for Dutch Disease with decline in labour supply, spending effects of increased demand favoring non-tradable goods, resource movement effects, and upward pressure on real exchange rate (Acosta, et al., 2009) (Acosta, et al., 2009) (Lartey, et al., 2008). The authors find countries with more sophisticated financial markets to be much less vulnerable to its effects, retaining their competitiveness even with large inflows of remittances. Accordingly, Edsel (2010) finds upper income countries with more developed financial markets unaffected by remittance-induced Dutch Disease, but also finds no evidence for effects in low income countries. Only the middle-income countries are observed to have a significant negative impact from remittances. Similarly, two studies on the Philippines did not find the economic decline associated with Dutch Disease even though finding prevalence of its effects in the economic market through weakened competitiveness (Tuaño-Amador, et al., 2007) (Jensen & Bayangos, 2011). Different results are found by Niklas and Blouchoutzi (2014) when examining the two transitional economies Albania and Moldova, with one country experiencing Dutch Disease and the other country surprisingly a depreciation of real exchange rate. For Bangladesh, authors Chowdhury and Rabbi (2013) find a strong connection where as for Cape Verde authors Bourdet and Falck (2006) do not find the connection to be strong. Bourdet and Falck also study the effects of monetary aid as do Makhoul and Mughal (2013), finding the impacts from remittances to be larger than those from FDI and ODA in Pakistan. The authors Mankoul and Mughal separates the remittance origin in their research and find evidence that the origin of remittances (senders continent) to make a difference in whether or not the money promotes real exchange rate appreciation. However, there are little other evidence to support these results. Lastly, Wahba (2006) when examining the oil-boom in the Gulf states concludes that the Dutch Disease is transmitted to the labour-exporting countries (the migrant workers economy of origin that typically is the receiver of remittances).

2.3 Main Thesis

In macro-economic research on remittances and growth, the positive connection is assumed to be crippled by effects known as the ‘Dutch Disease’ where a real exchange rate appreciation declines the economies’ competitiveness and therefor hinders economic

growth. Theoretically, as above illustrated by the adaptation of Salter's diagram, it is both a possible and a likely explanation. The current body of literature is empirically finding a connection between remittances and Dutch Disease, yet it is not coherent as to which degree remittances have an impact, which type of economy is affected by it and which type is not. Much of these inconsistencies can be explained by the magnitude of variables affecting an economy, making the connection between remittances, growth and Dutch Disease difficult to map. Dutch Disease can come as an effect of several other factors, like aid, FDI or other resource inflows, making it challenging to affirmatively connect remittances to Dutch Disease. The lack of data also inhibits the choice of suitable instrument variables (IV), where many of the IV are not only correlated to the endogenous explanatory variable, but also indirectly the dependent variable, often through GDP. Hence, further complicating a clear connection between remittances and Dutch Disease.

Consensus is that Dutch Disease obscures growth from remittances but as illustrated above there are irregularities with the empirical evidence. Therefore, this thesis proposes an alternative method to compliment previous ones. By eliminating the factor making the effects of Dutch Disease even possible, namely currency, we can without risk for real exchange rate appreciation control for growth from remittances. A unique opportunity is presented in the European Unions Eurozone. A few smaller economies, most of them transitional economies, currently use Euro (e.g. Latvia, Lithuania, Estonia), making them very suitable for the investigation of Dutch Disease effects from remittances. Many European countries receive high amounts of remittances but are by themselves much too small of an economy to make a real impact on Euro's real exchange rate, thus avoiding the hindering effects. For example, Latvia has had over 6% of their GDP in personal remittances but has a total GDP approximately 126 times smaller than that of Germany's. By examining the Euro-countries for connections between remittances and growth we can strengthen current beliefs if finding a significant impact or find reason to further question it if not finding any evidence for an impact. Euro is a relatively new currency and the difficulty with this method is gathering sufficient data for a significant test. Many of the smaller economies only recently joined the EU, making it necessary to expand the sample to include other Euro-countries. Data sample and method will be discussed further in next chapter.

3 Empirical analysis

The purpose of the thesis is to investigate if a connection between growth and remittances can be found in an environment where Dutch Disease is unlikely to obscure the results, namely in the European Eurozone. The reason for this is the current consensus that a major inhibitor to growth through remittances is the economic phenomenon ‘Dutch Disease’ that leads to real exchange rate appreciation. By testing data from Euro-countries similarly to previous studies we can either strengthen empirical findings or find cause to be critical.

Question: *Is it possible to confirm the Dutch Disease to obstruct growth effects from remittances by finding a strong impact from remittances in the Eurozone where risks of Dutch Disease are mitigated?*

3.1 Methodology

The thesis strives to contribute to the literature on remittances and to add dimensions to the task on how to make remittances more efficient for economic welfare. To do so a model comparable to previous research is needed so that also the results are comparable and can be related to previous findings. In the interest of building on today's literature, the thesis aims to use trades of the most common models in the current body of literature. However, it is not possible to avoid adaptations as previous researchers have approached the problem differently with various methods and variables. Most commonly researchers have used OLS regressions, but also dynamic models, Lagrange models and Bayesian models are common (see table 7.1.2 for a sample overview of some prominent studies conducted in the subject).

3.1.1 Table: Determinants of GDP growth (annual %)

Variable	Definition	Expected sign
REM	Personal remittances received (% of GDP)	(+)
INF	Inflation, consumer prices (annual %)	(-)
FDI	Foreign direct investment, net inflows (% of GDP)	(+)
EXR	Price level ratio of PPP conversion factor (GDP) to market exchange rate	(-)
GCF	Gross capital formation (% of GDP)	(+)
NEU	Net gain from EU, expenditures - contribution (GDP%)	(?)

Note: a positive sign implies an expectation of a rise in the dependent variable when increasing, and a decline in the dependent variable when negative

Source: World Bank Development Indicators and EUROSTAT

The variables often consist of GDP growth as a dependent variable and remittances, FDI and openness as independent. Other common variables are capital formation, inflation, government expenditures, and price index/exchange rate. The data variation can partly be explained by the country of subject, which will influence the decisions of variables as not all country data is available, specially not in developing countries.

The first five variables are collected from World Bank's Development Indicators and are chosen to as closely as possible mirror variables from previous studies. The thesis uses panel data on all Euro-countries from the time of entry to Euro until 2016 (see table 7.1.3 for more detailed information on entry year of each country). First eleven countries to enter did so in 1999, and the last country to enter, Lithuania, did so in 2015. This study does not include government expenditures (applicable in developing countries) or trade openness as all Euro-countries are part of the trade union EU. However, to account for some inflows from the union it includes a measurement for funds transferred between the EU countries [expenditures to EU - contributions from EU]. This data is collected from EUROSTAT and converted to USD to match the data set. The variables are all defined in relations to domestic GDP to increase comparability (exception is inflation).

The thesis uses a one-way error component model with four time dummies for the divergent years 2008-2009, 2012-2013.

$$(1) \quad Y_{it} = \beta_1 + \beta_2 \text{REM}_{it} + \beta_3 \text{INF}_{it} + \beta_4 \text{FDI}_{it} + \beta_5 \text{EXR}_{it} + \beta_6 \text{GCF}_{it} + \beta_7 \text{NEU}_{it} + \gamma_1 dX_{2008} + \gamma_2 dX_{2009} + \gamma_3 dX_{2012} + \gamma_4 dX_{2013} + \varepsilon_{it}$$

Where:

$$(1) \quad \varepsilon_{it} = \alpha_i + \mu_{it}$$

The time dummies are created to account for the time specific effects otherwise not captured in a one-way error component model.

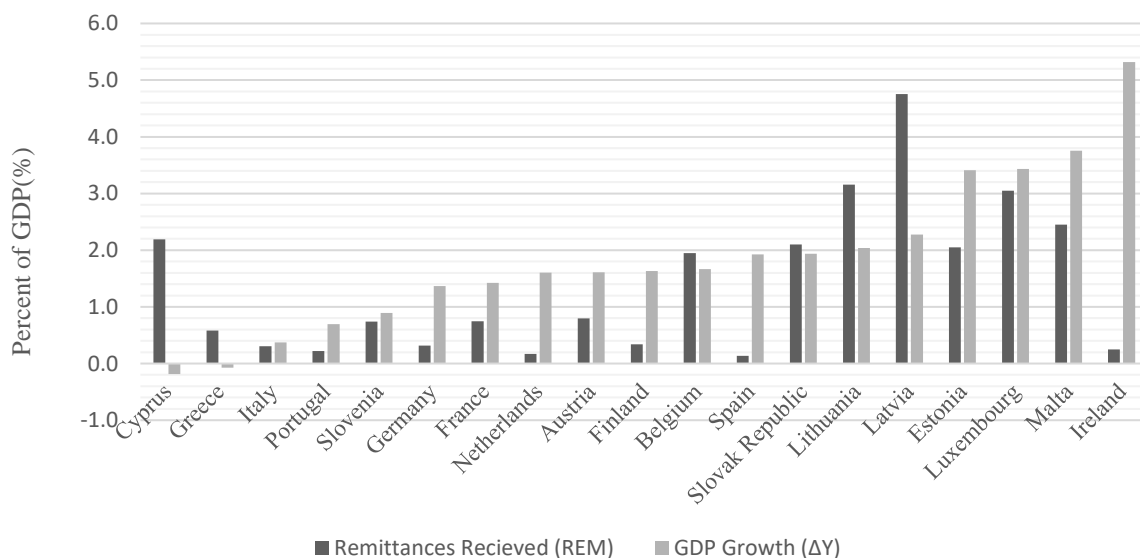
3.2 Data

Before analysing the data, a few points are best taken into consideration. The European Union is unique in its structure and the nature of the trade union will undoubtedly affect our data samples. The movements of working migration within EU are significant and the complexity of intra-European company networks will lead to substantial difficulties in separating workers by economy of origin. Another problem that arises are the developed intra-European financial systems enabling money to flow freely and be spent in other countries without being transferred between institutions thus capturing them as remittances. The close geographical proximity further enables movements and thereby estimation difficulties. Consider this example; a worker lives in west Luxembourg. The worker is employed by a German medical company as a bilingual sales representative for regions in both Belgium and France. The worker receives a salary on a German account, which the workers partner also can access, and the money is spent

primary in Luxembourg. Since there is no fee and no currency exchange associated with using the German bank card in Luxembourg they will do so instead of transferring the money from a German account to Luxembourg based account. This example can be made even more complex considering the bank to be perhaps a French bank. The point with this example is that defining remittances within EU is challenging and the free movement, although very beneficial for the population, leaves calculations on remittance presumably largely underestimated. There is little incentive for the worker to transfer money and pay the fees associated when they instead can provide the recipient with a bank card linked to their account. As mentioned in the introduction the semi-formal and informal channels are problematic in obtaining good data and although Europeans are large remittance senders and receivers, to and from, the rest of the world much of the transfers within EU must be carefully considered underestimated.

Initial viewing of the data shows one country to stand out in terms of the absolute amount of remittances received. In 2014 France received a staggering 2.53 billion USD in remittances, far more than the number two country Germany with 1.73 billion USD same year. France have consecutively since 2007 received the highest amount of remittances among the Euro-countries, but when compared to GDP it falls from number one receiver to number ten. Latvia is by far the largest remittance recipient in relations to GDP. During their time in Eurozone they have received an average amount of 4.8% of GDP, much larger than France's average of 0.7%. Yet, Latvia has only received 1.5 billion USD at most. This illustrates the large differences in economic power between the Euro-countries, with the original six having a more sophisticated financial market and higher amounts of gross domestic product.

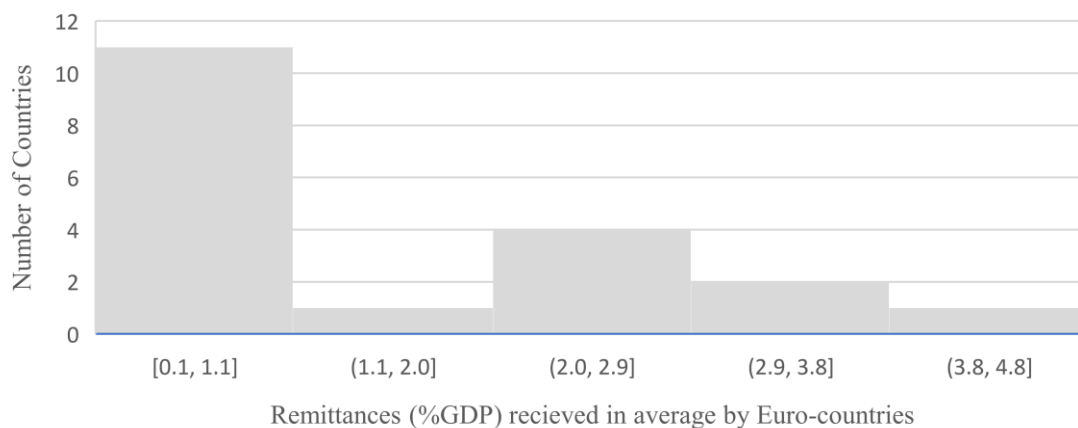
3.2.1 Figure: Relationship between GDP Growth and Remittances



Note: Data is country specific averages of remittances (REM) and growth (ΔY) while using Euro
Source: World Bank Development Indicators and EUROSTAT

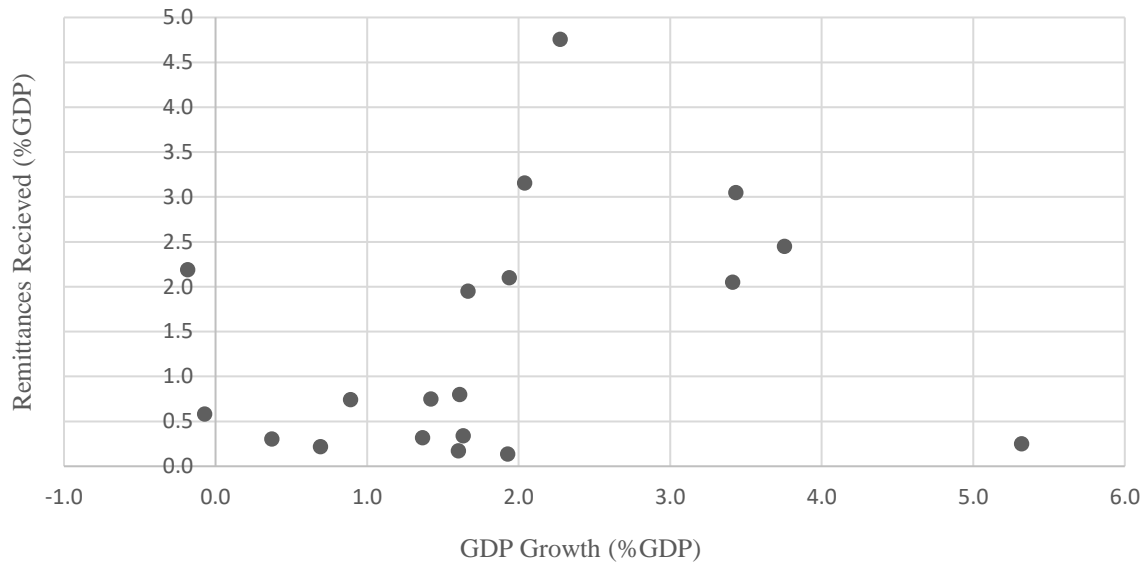
Viewing graph 3.2.2 we can compare every individual countries' relationship between growth and remittances. The graph is presented with the smallest percentage (negative) growth on the left, and largest on the right. Both growth and remittances are adjusted to country specific GDP to be comparable. The top receiving countries in relations to GDP is largely a mix between smaller and transitional economies; Latvia, Lithuania, Luxembourg, Malta, Cyprus, Slovak Republic and Estonia. Luxembourg is the odd contributor but considering Luxembourg's function in the European Union as one of its' three capitals and its' small size it has very logical explanations as to why they are a large recipient country. A large amount of EU staff works there due to the EU institutions that are in Luxembourg and since the country is small landlocked, many works cross-border in France, Belgium and Germany, even while residing in Luxembourg (see example above). The only countries among the top recipients that are not transitional economies are the two small and geographically limited economies Malta and Cyprus. Again, these countries likely to be affected by the migration patterns around the union and relative to other EU countries their GDP is low. Malta has during the years in Eurozone experienced a high GDP growth (relative to their own GDP), but Cyprus have in average experienced negative growth. Latvia, Lithuania, Slovak Republic and Estonia are all transitional economies however not all transitional economies are among the top receivers as Slovenia is only the eleventh largest after France. From this graph one cannot recognize a pattern between the two variables as certain countries with high GDP have low remittances and visa averse. Ireland have one of the lowest amounts of remittance compared to GDP while the highest growth, and Cyprus have high remittances while negative growth. A scatter plot and a histogram provide a clearer overview.

3.2.2 Histogram: Distribution of Eurozone's Remittances Received (GDP%)



Source: Wold Bank Development Indicators

3.2.3 Scatter Plot: Eurozone's average Remittances and GDP Growth



From figure 3.2.2 we see that majority of the countries are in the first bin receiving in average 0.1-1.1% of their GDP in remittances. There is only one country receiving between 1.1-2% and only one 3.8-4.8%, and the rest falls between 2-3.8%, illustrating that most of the Euro-countries does not receive much in remittances. This might affect the analysis as remittance is not a substantial inflow of funds to many of these countries. Figure 3.2.3 displays more of a pattern with higher amounts of remittances associated with countries of around 2-3% growth. Cautiously without a quantitative analysis this might be an indication of a correlation between remittances and growth. Nevertheless, this cannot be predicted from this figure as the extremities of the graph (very low and very high GDP growth) are not consistent enough to say how remittances act. Indications of remittances acting contra-cycle, as an economic buffer against hard times, minimizing recipients' income volatility and financial stress, is also not evident in this graph.

4 Results

The thesis uses unbalanced panel data ranging from 1999-2016 from the 19 countries in the Eurozone (see table 7.1.3). There are in total 261 observations, the error term controls for individual specific effects and four dummies are used to mitigate the time specific effects from the 2008-2009 and 2012-2013. A Hausman specification test was conducted to test the consistency resulting in a P-value significant at 10%, but not at 5% (See 7.1.4.). Since the null-hypothesis would be accepted at the lower significance levels results for both fixed and random effects are presented. A Breusch-Pagan test was conducted to estimate heteroscedasticity (see table 7.1.4), significant at 1% and thereby leading to the models being estimated robust standard errors. First equation is a Pooled OLS regression, second is GLS random-effects, robust standard error equation, and lastly Fixed-effects equation with robust standard errors.

4.1.1 Table: Results of analysis; Determinants on GDP Growth

Variables	Equation		
	(1) Pooled OLS	(2) GLS R-effects	(3) F-effects
REM	0.274 (0.718)	0.279 (0.377)	-0.097 (0.407)
INF	-0.283 (0.136)*	-0.275 (0.182)	-0.261 (0.201)
FDI	0.182 (0.006)**	0.017 (0.016)	0.004 (0.012)
EXR	0.540 (0.914)	0.256 (1.052)	-3.650 (2.537)
GCF	0.356 (0.049)***	0.353 (0.743)***	0.359 (0.101)***
NEU	-18.042 (16.458)	-15.27 (15.524)	7.335 (33.465)
t8	-2.590 (0.708)***	-2.533 (0.779)***	-1.689 (0.567)***
t9	-7.084 (0.665)***	-7.052 (0.611)***	-6.576 (0.527)***
t12	-3.132 (0.653)***	-3.100 (0.630)***	2.670 (0.612)***
t13	-1.866 (0.626)***	-1.872 (0.343)***	-1.765 (3.467)***
R ²	0.4882	0.4878	0.4092
F-Value	23.85		41.80
Wald chi ²		245.43	

Note: Coefficient (Standard Errors) *p<0.1; **p<0.05; ***p<0.01

The P-value for all three equations show the models to have significant results, R-squared range around 0.4-0.5 indicating how much of all variability along the regression line the model can explain. By themselves, not many of the variables are giving significant results. There are variations along the tests with shifts in sign (positive/negative) and in coefficient size. The largest difference in coefficient is between the fixed-effects equation and the other equations, with signs switching in remittances (REM), exchange rate (EXR),

net gain EU (NEU) and 2012 time dummy. In accordance to economic theory foreign direct investment (FDI) and gross capital formation (GCF) are across the table positive, and inflation (INF) negative. Gross capital formation is also across the table significant meaning for every percentage increase in GCF we can expect an increase in our dependent variable GDP growth by the amount of corresponding coefficient.

Starting with the Pooled OLS, more significant values than in the other equations can be found here with significant results for inflation and FDI. Compared to the other equations the pooled OLS will not account for the random or fixed-effects yet provides an overview of the analysis. With the GLS-equation there are slight differences, FDI and inflation are no longer significant, and there is a surprisingly large difference in FDI's coefficient and standard error compared to OLS, meaning much of the individual specific effect is in this variable. In both random and fixed-effects models FDI has a surprisingly high P-value, around 0.13, rendering it insignificant even at 10% level. Both FDI and capital gross formation are known driving forces for economic growth, which risks questioning the results. However, the signs on the coefficients are as expected (see 3.1.1 for expected signs). Remittances (REM) show a very low value, close to zero in both equations, and although positive it is far from what theory would indicate.

The main difference between random and fixed effects model is whether or not the individual specific effects is assumed to be correlated to the independent variable. When testing with fixed-effects model, assuming correlation, the variables exchange rate (EXR), and remittances show negative coefficients. The remittance-coefficient shows a negative relationship at -0.097 which is unexpected and contradicts theory. None of the three equations can account for the impact from remittances (presumably existing) however, they do not necessarily have to capture the impact to be informative. These results indicate that the relationship between growth and remittances is weak even in absence of disruptive real exchange rate appreciation. Even when risks of Dutch Disease are mitigated remittances' effect are not strong enough to give a significant result which is contrary to current theoretical beliefs.

4.2 Further Interpretations and Analysis

In chapter 4 three equations were performed; OLS, GLS and fixed-effects, to test if an impact from the main variable remittances (REM) could be found on GDP growth. This subsection aims to interpret the results and analyse what can be said on remittances in the Eurozone.

The analysis shows insignificant and very limited results. The two first equations show positive coefficients around 0.2 and the fixed-effects equation show -0.097. As previously mentioned these results are not necessarily without content of information as the insignificance of these results indicate the remittance-effects to be weaker than expected. With the theoretical background presented on remittances the Eurozone should show a large correlation between remittance and growth (see chapter 2). Since it does not, the results are contradicting current literature on remittances and the paper cannot confirm Dutch Disease to be an inhibitor of long-term economic gains from remittances.

Although mitigated for Dutch Disease it is possible that other variables are inhibiting the positive impact. This could be previously mentioned effects such as the moral hazard or absenteeism, but EU has a unique economic environment and problems facing the developing economies are not likely to effect Europeans equally. Still, this does not mean that the Eurozone immune to the same problems. Take for example the phenomena ‘brain drain’ that was previously mentioned in chapter 2.2. As large migration movements are enabled by the EU policy, the differences in wages and standard of living is likely to drive qualified migrants to seek work in countries that offers higher income possibilities, which in turn is likely to cause symptoms of brain drain. Yet, the consequences may not be identical to cases of development countries as movements are still within a common market. The purpose of this example is to illustrate that effects obstructing the positive results in the Eurozone is likely to be different from the mechanisms affecting the developing economies and would thereby require further investigation. Although some of the effects from obstructions would be captured by the individual specific component in the analysis, the individual specific effect is not varying over time and thereby not capturing any volatile effects.

Another concern in this analysis is the lack of data from the most interesting individuals, namely the small and transitional economies (see chapter 3.2). These countries with large remittances inflows and still developing economic markets are the most interesting subjects of an analysis. However, they have not been members of the Eurozone long enough to generate the data necessary for a satisfactory analysis (see table 7.1.3). Question remains if these economies are as unaffected by remittances as the Eurozone collectively, or if these countries when accumulated more years with Euro would display positive results.

5 Conclusion

This thesis focuses on the relationship between remittances, economic growth and Dutch Disease. Remittances has a great potential to increase GDP growth by increasing disposable income and thereby potential investments, especially in developing economies. However, previous studies indicate that there are disrupting forces within the economies inhibiting many of the positive outcomes. It has been generally accepted that Dutch Disease is such a disruptive force, and this thesis suggests that by applying the same theoretical framework on data from the Eurozone the effects from Dutch Disease can be mitigated. Some of the smaller and transitional economies currently using Euro receive high amounts of remittances compared to GDP but are in no risk of appreciating the currency because of their relatively small economy. Hence, making them very attractive in understanding the economic connection between remittances and growth. However, due to the small amount of data when only examining the smaller and transitional economies all Euro-countries are included in the analysis. Thereby, remittances are expected to be weakened as an explanatory variable as it makes out a smaller share of GDP in large economies. Yet, remittances display no significant impact in this analysis which contradicts previous research (See table 4.1.1 for expected signs). Two possible conclusions can be drawn from these results; either other disrupting forces (e.g. moral hazard problem, absenteeism) are inhibiting the effects to a large extent, or Dutch Disease is not as large of a disruptive force as first thought. The paper's main thesis makes an important point as an analysis without interference from Dutch Disease should have shown a larger impact than normal if previous theory was valid. However, since this is not the case it remains to be seen if the Eurozone is affected by other disruptive forces disproportionately compared to other economies studied. If they are not affected differently, then Dutch Disease can not be assumed to be as much of a disruptive force as previously estimated.

6 References

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7 Appendix

7.1.1 Table: Examples of variables used in Remittances and Growth research

Authors	Titel	Variables used
Acosta, et al., 2009	Financial development, Remittances, and Real Exchange Rate Appreciation	GDP Remittances Bank credits Bank deposits M2 Terms of trade Openness
Akinpelu, et al., 2013	Effects of Remittance Inflows on Economic Growth of Nigeria	GDP Remittances Capital Formation Foreign Exchange Rate Foreign Direct Investment Openness
Bayar, 2015	Impact of Remittances on the Economic Growth in the Transitional Economies of the European Union	GDP per capita growth Remittances Foreign Direct Investment
Catrinescu, et al., 2005	Remittances, Institutions, and Economic Growth	GDP Remittances Openness and inflation Net Private Capital Flow The human development index (UNHDI) TI Corruption Perceptions Index (CPI) Voice and Accountability Political Stability and Absence of Violence Government Effectiveness Regulatory Quality Rule of Law Corruption ICRG Composite Political Risk Indicator
Gapen, et al., 2009	Do Workers' Remittances Promote Economic Growth?	GDP Remittances Secondary school enrollment Private Domestic Credit ICRG political risk index Openness Inflation rate Real Exchange Rate overvaluation Government Consumption to GDP Further tests with: - Interaction terms for remittances and education - Remittances and financial depth - Remittances and institutional quality
Giuliano & Ruiz-Arranz, 2005	Remittances, Financial Development, and Growth	GDP Remittances Investment Fiscal Balance Openness Inflation Population growth Years of Education

		Loans Credit M2 Deposits
Rao & Hassan, 2009	A panel data analysis of the growth effects of remittances	GDP Remittance Foreign Direct Investment Openness M2 Bank credit to private sector Investment Government expenditure rate of inflation
Shera & Meyer, 2013	The impact of remittances on economic growth	GDP per capita Remittances Capital formation Secondary school enrollment Openness Final Consumption expenditures Inflation rate

7.1.2 Table: Detailed overview of findings on Remittances and Dutch Disease

Authors	Title	Short description	Findings
Acosta, et al., 2009	Remittances and the Dutch disease	Panel data for 109 developing and transitional countries. Two-sector dynamic stochastic general equilibrium model	<i>"...an increase in remittance flows leads to a decline in labor supply and an increase in consumption demand that is biased toward non-tradables"</i>
Acosta, et al., 2009	Financial development, remittances, and real exchange rate appreciation	Using panel data for 109 developing and transition countries for 1990–2003	<i>"...remittances by themselves tend to put upward pressure on the real exchange rate. But this effect is weaker in countries with deeper and more sophisticated financial markets, which seem to retain trade competitiveness."</i>
Bourdet & Falck, 2003	Emigrants' remittances and Dutch Disease in Cape Verde	6 equations with panel data from Cape Verde, period 1980–2000	<i>"A main conclusion is that remittances give rise to a sort of Dutch Disease effect and thereby have an adverse effect on the competitiveness of the tradable sector. The magnitude of this effect in Cape Verde is not that large, however."</i>
Catrinescu, et al., 2005	Workers' remittances and Dutch Disease in Bangladesh	1971 to 2008, Regression analysis with Chow Breakpoint Test, Vector Error Correction Model (VECM), Augmented Dickey Fuller (ADF), Dickey Fuller GLS (GLS AD) and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests	<i>"The results of the study suggest that the influx of workers' remittances significantly appreciates the real exchange rate and deteriorates the external trade competitiveness of Bangladesh."</i>
Edsel, 2010	Do international remittances cause Dutch Disease?	The dataset includes 20 countries, 1984-2008. Regression using the Seemingly Unrelated Regression procedure	<i>"Dutch disease caused by international remittances afflicts the middle income countries but not the upper income and low income countries."</i>
Jensen & Bayangos, 2011	Remittances and Competitiveness: The Case of the Philippines	1996-2010 Pairwise Granger Causality Test	<i>"...remittances have a significant impact on competitiveness that goes beyond the traditional exchange rate effect (...) find no decline in growth."</i>
Lartey, et al., 2008	Remittances, exchange rate regimes, and the Dutch disease: A panel data analysis	109 developing and transition countries for the period 1990-2003. Generalized method of moments estimator (GMM) and OLS regression with fixed effects.	<i>"rising levels of remittances have spending effects that lead to real exchange rate appreciation and resource movement effects that favor the nontradable sector at the expense of tradable goods production."</i>
Makhlouf & Mughal, 2013	Remittances, Dutch Disease, and Competitiveness: a Bayesian analysis Farid Makhlouf; Mazhar Mughal	IV Bayesian Pakistan In our studied period, six years (1992, 1996, 1998, 1999, 2005 and 2007)	<i>"We find evidence for both spending and resource movement effects in both the short and the long-run. These impacts are stronger and different from those the Official Development Assistance and the FDI exert. We find that while aggregate remittances and the remittances from Persian Gulf contribute to the Dutch disease in Pakistan, those from North America and Europe do not"</i>
Nikas & Blouchoutzi, 2014	Emigrants' Remittances and	Ordinary Least Squares with fixed	<i>"...impact of the workers' remittances on the real exchange rate varies"</i>

	the “Dutch Disease” in Small Transition Economies: the Case Of Albania and Moldova	Effects on Albanian and Moldovian data	<i>among the countries examined. The results confirm that the macroeconomic implications of these large capital inflows have been actually different between the countries.”</i>
Tuaño-Amador, et al., 2007	Philippine overseas workers and migrants’ remittances: the Dutch disease question and the cyclical issue	1989-2007 Philippines data. OLS model with Hodrick-Prescott filter	<i>“There is evidence to suggest that remittances have led to some of the symptoms of the Dutch disease phenomenon in the Philippines. (...) we do not find the sharp decline in economic growth that some studies suggest could visit those countries that suffer from the disease. In contrast, real output growth has been respectable since 2002, when remittances started to rise appreciably.”</i>
Wahba, 1998	The transmission of Dutch disease and labour migration	Gulf states 1970s and 1980s specific-factor model	<i>“...indicates that labour immigration may offset the effects of Dutch disease in the Gulf states. However, this may effectively shift the symptoms of Dutch disease to labour-exporting countries.”</i>

7.1.3 Table: Eurozone -Country and year of conversion to Euro €

Country	Year
Austria	1999
Belgium	1999
Finland	1999
France	1999
Germany	1999
Italy	1999
Ireland	1999
Luxembourg	1999
Netherlands	1999
Portugal	1999
Spain	1999
Greece	2001
Slovenia	2007
Cyprus	2008
Malta	2008
Slovakia	2009
Estonia	2011
Latvia	2014
Lithuania	2015

Source: European Central Bank

7.1.4 Stata output: Hausman test for heteroscedasticity

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
REM	-.0966647	.2791168	-.3757815	.6384136
INF	-.261077	-.2754423	.0143653	.
FDI	.0041439	.0166423	-.0124984	.0005701
EXR	-3.650338	.2564701	-3.906808	.9414425
GCF	.3590319	.3530155	.0060165	.0282825
NEU	7.334965	-15.26996	22.60492	22.59104
t2008	-1.689487	-2.532527	.8430404	.
t2009	-6.575513	-7.051739	.4762264	.
t2012	-2.669809	-3.100865	.4310561	.
t2013	-1.764879	-1.872092	.1072125	.

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 16.07
 Prob>chi2 = 0.0654

7.1.5 Stata output: Breusch-Pagan LM test for random effects

Breusch and Pagan Lagrangian multiplier test for random effects

$$Y[ID,t] = Xb + u[ID] + e[ID,t]$$

Estimated results:

	Var	sd = sqrt(Var)
Y	10.98996	3.315111
e	4.842461	2.200559
u	.0547556	.2339992

Test: Var(u) = 0

chibar2(01) = 27.73
 Prob > chibar2 = 0.0000