

# Impact of remittances on economic growth in ASEAN

*An empirical analysis, 1980-2012*

Marita Garvik Fagerheim



Thesis for the Master of Philosophy in Environmental  
and Development Economics

Department of Economics  
UNIVERSITY OF OSLO

May 2015



# **Impact of remittances on economic growth in ASEAN**

An empirical analysis, 1980-2012

Copyright Marita Garvik Fagerheim

2015

Impact of remittances on economic growth in ASEAN

Marita Garvik Fagerheim

<http://www.duo.uio.no>

Trykk: Reprosentralen, Universitetet i Oslo

# Summary

In this thesis, I study the inflow of remittances into the Association of Southeast Asian Nations (ASEAN). The flow of remittances has increased massively during the recent decades and is expected to continue growing as migration increases as a result of globalization (Maimbo and Ratha, 2005). Many Southeast Asian countries have a long tradition of migration, largely due to the labor surpluses in these countries. Correlated to the increase in outflow of migration is the inflow of remittances. Many migrants feel an obligation to financially assist the family in the place of origin. Carling (2008) found a positive association between remittances and the household size at origin and a negative association to the household size at place of destination. An interesting aspect of the flow of remittances is the usage at the receiving end. Is the money only used for consumption and therefore have small impacts on economic growth, or is the money invested in education, live stock or fixed capital that can boost economic growth in the receiving country? Hence, the main purpose of this thesis is to find the impact of remittances on economic growth. Using panel data for the time period 1980-2012, I use both Ordinary Least Squares (OLS) method and Instrumental Variable Two-Stage Least Squares (IV 2sls) to estimate the impact, and decide to rely on the OLS estimates after ensuring that no endogeneity problems exist. The estimations state that remittances have a mixed impact on economic growth.



# Preface

First of all, I wish to thank my supervisor Professor Karen Helene Ulltveit-Moe for her valuable feedback and providing guidance throughout the work on this thesis.

This thesis is a part of the Master program in Economics with specialization in Environmental-, Resource and Development Economics, at the University of Oslo, where I have spent the last two years of my education. The idea for this thesis came on a trip to Tonga during my exchange year in New Zealand. Here I noted the dependence the local population has on family members working abroad to provide necessary money to cover basic consumption.

I would like to thank Kristoffer Fosse Hanssen and Cameron McKee for their assistance with proofreading and their comments on my work. Finally, I wish to thank Roy Kenneth for his patience and encouraging words during this process.

Oslo, May 2015

*Marita Garvik Fagerheim*





# Table contents

<b>1</b>	<b>Introduction .....</b>	<b>1</b>
<b>2</b>	<b>Background .....</b>	<b>3</b>
2.1	ASEAN .....	4
2.1.1	<i>The Asian Financial Crisis of 1997 .....</i>	<i>5</i>
2.1.2	<i>Remittances in Southeast Asia .....</i>	<i>7</i>
2.1.3	<i>Remittances into the Philippines.....</i>	<i>9</i>
<b>3</b>	<b>Review of the theory of migration and remittances .....</b>	<b>13</b>
3.1	Theory of Migration .....	13
3.1.1	<i>Neo-classical theory.....</i>	<i>14</i>
3.1.2	<i>Historical-structural theory.....</i>	<i>15</i>
3.1.3	<i>New economics of labor migration .....</i>	<i>16</i>
3.2	Theory of Remittances.....	16
3.2.1	<i>Theories of remittances.....</i>	<i>18</i>
3.2.2	<i>Determinants of remittance.....</i>	<i>20</i>
3.2.3	<i>Remittance corridors and the cost of remitting .....</i>	<i>21</i>
<b>4</b>	<b>Review of empirical analyses of remittances.....</b>	<b>23</b>
<b>5</b>	<b>Empirical analysis of the impact of remittances on the ASEAN countries .....</b>	<b>27</b>
5.1	Data .....	27
5.2	Descriptive statistics.....	28
5.3	Empirical specification .....	31
5.3.1	<i>Empirical framework.....</i>	<i>31</i>
5.3.2	<i>Endogeneity problems and threats to validity.....</i>	<i>32</i>
5.3.3	<i>Traditional growth theory and explanations of set of control variables .....</i>	<i>34</i>
5.4	Results.....	37
5.4.1	<i>Ordinary least squares method.....</i>	<i>37</i>
5.4.2	<i>IV regression and endogeneity problems .....</i>	<i>40</i>
5.4.3	<i>Estimation without the Philippines .....</i>	<i>44</i>
<b>6</b>	<b>Conclusion.....</b>	<b>48</b>
	<b>Bibliography .....</b>	<b>50</b>
	<b>Appendix .....</b>	<b>57</b>

## List of tables

Table 2.1: Statistics about ASEAN countries.....	4
Table 2.2: Exchange rate (national currency to US dollar) around the Asian Currency Crisis .....	6
Table 2.3: Money flows into the Philippines .....	12
Table 3.1: Remittances corridors to ASEAN countries .....	21
Table 5.1: Impact of remittances on GDP growth (OLS regression).....	37
Table 5.2: Impact of remittances on GDP growth (OLS regression including control variables) .....	39
Table 5.3: IV 2sls regression with GDP growth as dependent variable and remittances as instrument .....	41
Table 5.4: Hausman test for endogeneity problems.....	42
Table 5.5: Durbin-Wu-Hausman tests for endogeneity.....	42
Table 5.6: Effect of remittances on GDP growth in the individual ASEAN countries (OLS regression) .....	44
Table 5.7: Hausman test for endogeneity problems in regression without data from the Philippines.....	45
Table 5.8: Impact of remittances on GDP growth excluding data from the Philippines (OLS regression) .....	46
Table A1: List of countries in dataset .....	57
Table A2: Data descriptions of dataset .....	57
Table A3: Cost of remitting money in common corridors to the Philippines .....	58
Table A4: STATA regression on individual countries effect of remittances on GDP growth .....	59

## List of figures

Figure 2.1: Top 10 remittance receiving and Top 10 remittances-sending countries, 2012 .....	3
Figure 2.2: Remittances and migration in the ASEAN countries .....	8
Figure 2.3: Remittances into ASEAN .....	9
Figure 3.1: Harris-Todaro model .....	15
Figure 5.1: Growth rates in the ASEAN countries, 1980-2012 .....	29
Figure 5.2: Remittances growth in the ASEAN countries, 1980-2012 .....	30





# 1 Introduction

Remittances are the flow of money from migrants abroad to their families in their country of origin (Koser, 2007). The flows of remittances have increased significantly during recent decades and are expected to continue increasing into the foreseeable future as more people migrates in response to globalization and increasing wage differences (Maimbo and Ratha, 2005). Contributions to the expansion in global migration include income inequalities between origin and destination country, low travel cost and a rise in South-South migration. The present magnitude of remittance flow and the expected increases, makes it interesting to test whether the remittance flow has an effect on the economy of the receiving country, or whether remittances, as a single factor, are a source of income for individual households.

The Association of Southeast Asian Nations (ASEAN) is a group of countries with different economic, cultural and historical backgrounds. The increasing fear of communism and a desire to increase national economic growth were the motivating factors behind its creation. Because of the large differences between the ASEAN countries, there are also large differences in the amount of received remittance. The Philippines has a long tradition of migration and of sending money home. This is probably why the Philippines are one of the top recipients countries of remittances in the world. While Malaysia with an expanding market, attracts more labor migrants, and therefore the outflow of remittances are larger than the inflow in Malaysia (IFAD, 2014). With almost 13 million migrants living abroad, Southeast Asia is one of the world's most active remittance markets. The largest outflow of migrants is from the Philippines with 4 billion emigrants the last decade, and Malaysia has the largest inflow with 2 billion immigrants (IFAD, 2014).

This thesis is based on the fact that remittances into the Philippines are such a vast part of the economy (Tchantchane et al., 2013), and the database is extended to see the impact of the inflow of remittances on the ASEAN economies. Due to the lack of available data this thesis will concentrate on seven of the ASEAN countries: Cambodia, Indonesia, Lao PDR, Malaysia, the Philippines, Thailand and Vietnam. When discussing ASEAN this relates to the seven chosen countries stated, and there might be differences to Singapore, Myanmar and Brunei Darussalam. Despite the large differences these countries remain closely connected. This was evident during the Asian Financial Crisis as one of the main sources for the

escalation of the crisis was not market spillovers, but direct financial linkage between the ASEAN countries. As a result of this, the main research question is to find the impact of remittances on economic growth in the Southeast Asian region, focusing on the ASEAN.

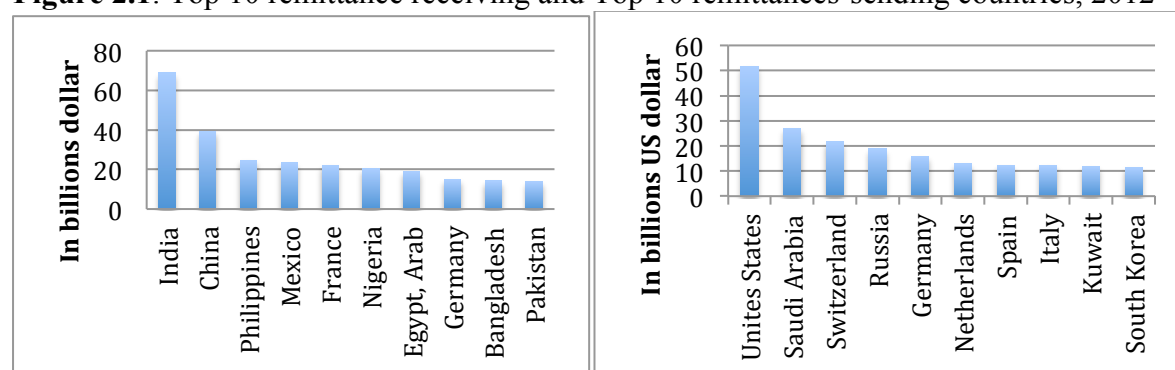
The following outlines the structure of this thesis: In the next section I present background information about the Association of Southeast Asian Nations (ASEAN) including economic factors and the Asian Financial Crisis, and I introduce the inflow of remittances into the Southeast Asian region, especially into the Philippines. The third section reviews theories about migration and remittances, including determinants for remittances and the cost of remitting money. In section four, previous literature and empirical studies are presented. The data I rely on is presented in the beginning of section five, followed by descriptions about the model, and at the end of section five the results are presented. Section six concludes.

## 2 Background

The purpose of this section is to give some background information about the ASEAN and remittances. First, I will present some background information about ASEAN, the establishment and the effect of the Asian Currency Crisis on the association. Second, I will present information about remittances in the ASEAN region. Lastly I will present background information about remittances into the Philippines.

The countries that receive the highest number of migrants internationally, such as the United States, Russia and Canada, are the largest origin countries of the flow of remittances. The top recipients of remittances, measured in US dollars, are large countries such as India, Mexico and China, while top recipients of remittances per capita are smaller countries such as Tonga, Lesotho and Lebanon.<sup>1</sup> This chapter will briefly look into the relations between receiving and sending countries of remittances and the costs of remitting money.

**Figure 2.1:** Top 10 remittance receiving and Top 10 remittances-sending countries, 2012<sup>2</sup>



<sup>1</sup> Data from the World Bank database

<sup>2</sup> In billions US dollars

## 2.1 ASEAN

The Association of Southeast Asian Nations (ASEAN) was established in 1967 as an economic and political association, to promote economic and social development in and between the member countries. The motivating factor for the creation of ASEAN was the increasing fear of communism and a desire to increase national economic growth. The first members were Indonesia, Malaysia, the Philippines, Singapore and Thailand, during the next three decades Brunei Darussalam, Vietnam, Lao PDR, Myanmar and Cambodia joined the association (ASEAN, 2014a).

ASEAN consists of 600 million people (in 2012), where 40,6% of the ASEAN population lives in Indonesia, 15,9% in the Philippines, 14,6% in Vietnam and 11% in Thailand (ASEAN, 2014b). The association has a total GDP of US\$ 2,3 trillion, which is approximately 3% of the worlds GDP. Excluding the Asian Financial Crisis in 1997-1998 and the Global Financial Crisis in 2008-2009, the real GDP growth of ASEAN has been constant around 6% for the last 20 years (Hansakul, 2013). Despite the constant growth rates, 13% of the population lives below the international poverty line of US\$1,25 a day (Hsieh, 2013).

**Table 2.1:** Statistics about ASEAN countries<sup>3</sup>

	Population 2012	GDP 1980*	GDP 2012*	GNI 2012**	GDP growth 2012	Income level (defined by WB)
<b>Cambodia</b>	14 864 646	n/a	14 054,4	880	7 %	Low
<b>Indonesia</b>	264 864 191	78 013,2	874 485,9	3420	6 %	Lower middle
<b>Lao PDR</b>	6 645 827	n/a	9 359,2	1260	8 %	Lower middle
<b>Malaysia</b>	29 239 927	24 937,0	304 389,7	9820	6 %	Upper middle
<b>Philippines</b>	96 706 764	32 450,4	250 603,0	2960	4 %	Lower middle
<b>Thailand</b>	66 785 001	33 353,5	366 126,6	5250	0 %	Upper middle
<b>Vietnam</b>	88 772 900	n/a	155 820,0	1560	6 %	Lower middle

During the period from 1965 to 1990 the East Asian region had an economic growth larger than any other region in the world, due mostly to Japan, Hong Kong, Korea, Taiwan, Singapore, Indonesia, Thailand and Malaysia. Approximately two-thirds of the observed

<sup>3</sup> \* in current US\$ millions and \*\* per capita current US\$. Due to lack of available data this thesis will concentrate on the ASEAN countries: the Philippines, Thailand, Cambodia, Indonesia, Malaysia, Lao PDR and Vietnam. Data retrieved from the World Bank database.



growth in these economies is due to the accumulation of physical and human capital, especially related to increased primary education. The remaining growth relates to total factor productivity growth (Ray, 1998). As a result of this large economic growth, over the extended time period, the region was called the “Asian Miracle”.

The large differences in national GDP between the ASEAN-members separates the association from other trade blocs such as the European Union (EU) and the North American Free Trade Area (NAFTA). In addition, the poverty rates are significantly higher for ASEAN member. The European Union operates as a government working for common interest for all member countries. This is a stark contrast to how the ASEAN works. In ASEAN all nations work on an equal level to find common guidelines when needed. Hsieh (2013) highlights that the economic integration of the ASEAN cannot succeed without reducing the development gap between the member states, and “...for all ASEAN states, internal integration prompts FDI inflows that create a poverty-decreasing effect through economic growth, employment and training”.<sup>4</sup>

### **2.1.1 The Asian Financial Crisis of 1997**

The Asian Financial Crisis involved several of the ASEAN countries. It started with a devaluation of the Thai Baht in 1997 before reaching Malaysia, Indonesia and the Philippines and further to South Korea, Hong Kong and China (Frontline). In the beginning of the 1990s the Southeast Asian countries experienced impressive economic growth rates of between 6% and 10% annually (Hill). This “Asian Miracle” came to a sudden end in 1997 when the local stock markets and currency markets in one country after another collapsed. During the collapse of 1997 many states lost over 70% of their stock market value and their currencies depreciated against the US dollar. According to Hill, the leaders of these Asian countries were forced to seek massive financial assistance from the International Monetary Fund (IMF).

In the beginning of the 1990s Thailand experienced an increase in the demand for Thai baht that created a rise in the value against other currencies. Since the Thai Central Bank required the Thai baht to be fixed to the American dollar, they had to offset the increase in the demand

---

<sup>4</sup> Hsieh, 2013, p. 3

for the baht by increasing the supply. By selling baht and buying currencies like dollar or yen, the money supply of the baht increased. The money multiplier process led to a massive expansion of credit supply because of a rise in loans from abroad. The situation began to look like Japan's "bubble economy" of the 1980s (Krugman, 2008, p.80). On July 2 1997, the Thai baht devaluated and was no longer fixed to the US dollar.

**Table 2.2:** Exchange rate (national currency to US dollar) around the Asian Currency Crisis<sup>5</sup>

	1996	1997	1998	1999	2000
<b>Cambodia</b>	2681	3436 (-28,2%)	3770 (-9,7%)	3789 (-0,5%)	3899 (-2,9%)
<b>Indonesia</b>	2377	4908 (-106,5%)	7752 (-57,9%)	7156 (+7,7%)	9486 (-32,6%)
<b>Lao PDR</b>	921	2019 (-119,2%)	4217 (-108,9%)	7674 (-82,0%)	8238 (-7,3%)
<b>Malaysia</b>	2,53	3,77 (-49,0%)	3,8 (-0,8%)	3,8 (0%)	3,8 (0%)
<b>Philippines</b>	26,29	37,17 (-41,4%)	39,07 (-5,1%)	40,62 (-4,0%)	49,90 (-22,8%)
<b>Thailand</b>	25,55	45,29 (-77,3%)	36,26 (+19,9%)	43,06 (-18,8%)	43,86 (-1,9%)
<b>Vietnam</b>	11124	12291 (-10,5%)	13894 (-13,0%)	14030 (-1,0%)	14511 (-3,4%)

Devaluation against the US dollar in the parenthesis.

*"Typical calculations suggested that the baht would have to fall something like 15 percent to make Thai industry cost-competitive again, so a decline of roughly that magnitude seemed likely. But instead, the currency went into free fall: the baht price of a dollar soared 50 percent over the next few months, and would have risen even further if Thailand had not sharply raised interest rates".<sup>6</sup>*

The devaluation triggered an economic collapse in Thailand, which rapidly spread to other economies in South Asia. GDP growth rates declined quickly, companies with high foreign-currency risk declared bankruptcy and the governments in the worst affected countries needed to ask for IMF led bailouts (Economist, 2007). The countries worst affected by the currency crisis were Thailand, Indonesia and South Korea, and to a lesser extent Hong Kong, Lao PDR, Malaysia and the Philippines. Brunei, China, Singapore, Taiwan and Vietnam were less affected, but had noticeable changes in demand and there was an overall loss in confidence throughout the region.

<sup>5</sup> Raw data are retrieved from the CEIC database and devaluation is estimated with own calculations.

<sup>6</sup> Krugman (2008, p.88)

One of the main sources for the escalation of the crisis in Southeast Asia was not market spillovers, but direct financial linkage. The majority of the money flows to the region were routed through emerging market funds and then out to the different countries. As the news about the crisis in Thailand began to spread, these funds shrunk the flows of money to the region. Another reason for the reduction in investments was that the region was not seen as individual countries, but as one. As the crisis in Thailand was unfolding, the expectation was that the same would happen to the rest of the region, this made investors hold back money. The loss in confidence to the “Asian Miracle” started a brutal circle of economic and financial breakdown (Krugman, 2008).

It did not take long after the crisis before the growth rates were back up to normal levels. Lessons were learned from the crisis, and a decade later the economic fundamentals are generally strong. Thailand has had a current account surplus since 1997, decreased external debt, and the Bank of Thailand has imposed controls on the inflow of capital to control the currency. In Indonesia the external debt has dropped, and the exchange rate is no longer artificially high. The banking sector has undergone changes to reduce the repayment risk associated with currency volatility. A decade after the crisis, the Malaysian economy benefits from an increasing external demand for electronics, and a strong domestic consumption. Restructuring in the financial sector made the economy prepared for dealing with future financial difficulties (Economist, 2007).

### **2.1.2 Remittances in Southeast Asia**

Remittances sent to the Southeast Asia region are of significant size. With almost 13 million migrants living abroad, Southeast Asia is one of the world’s most active remittance markets. The largest outflow of migrants is from the Philippines with 4 billion emigrants the last decade, and Malaysia has the largest inflow with 2 billion immigrants (IFAD, 2014).

In a global perspective, the Philippines is the third largest receivers of remittances after India and China with an inflow of US\$ 24,6 billion in 2012.<sup>7</sup> Of the ASEAN countries Indonesia is 12<sup>th</sup> on the list, with an inflow of US\$ 7,2 billion in 2012. Following Indonesia is Thailand

---

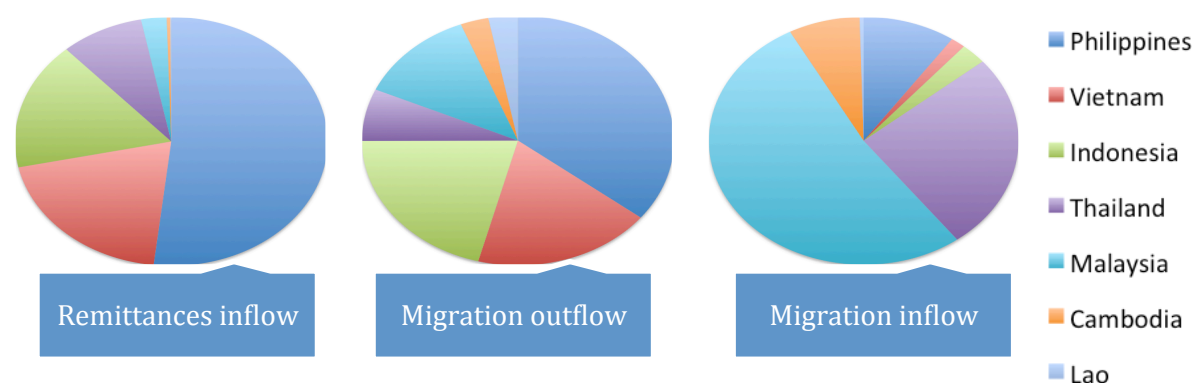
<sup>7</sup> Data from the World Bank database

(US\$ 4,7 billion), Malaysia (US\$ 1,3 billion), Cambodia (US\$ 172 million) and Lao PDR (US\$ 58 million). Vietnam received US\$ 8,6 billion of remitted money in 2011, but has no registered figures for 2012. Also, as percentage of GDP, the Philippines receives the most remittances, with 9,8% in 2012, followed by Thailand (1,3%), Cambodia (1,2%), Indonesia (0,8%), Lao PDR (0,6%) and Malaysia (0,4%). In 2011 Vietnam received remittances equal to 6,3% of GDP.<sup>8</sup>

The outflow of migrants and inflow of remittances in South Asian countries have increased significantly during the past decades. One of the main driving forces behind this is the increased economic activity in the Gulf region and the increase in the price of oil. Migration has provided a source of income and employment to countless workers from the South Asian-region, which is know for having a labor surplus.

Figure 2.3 shows the total amount of remittances into the ASEAN in 2010 and the shares into the different countries. The Philippines alone received more than half of the total amount of remittances into the region. Other major recipients are Vietnam, Indonesia and Thailand. At the same time, Malaysia is a small receiver of remittances, but with an expanding market like the market of Singapore, Malaysia attracts a large number of migrants and the outflow of remittances from Malaysia is larger than the inflow (IFAD, 2014).

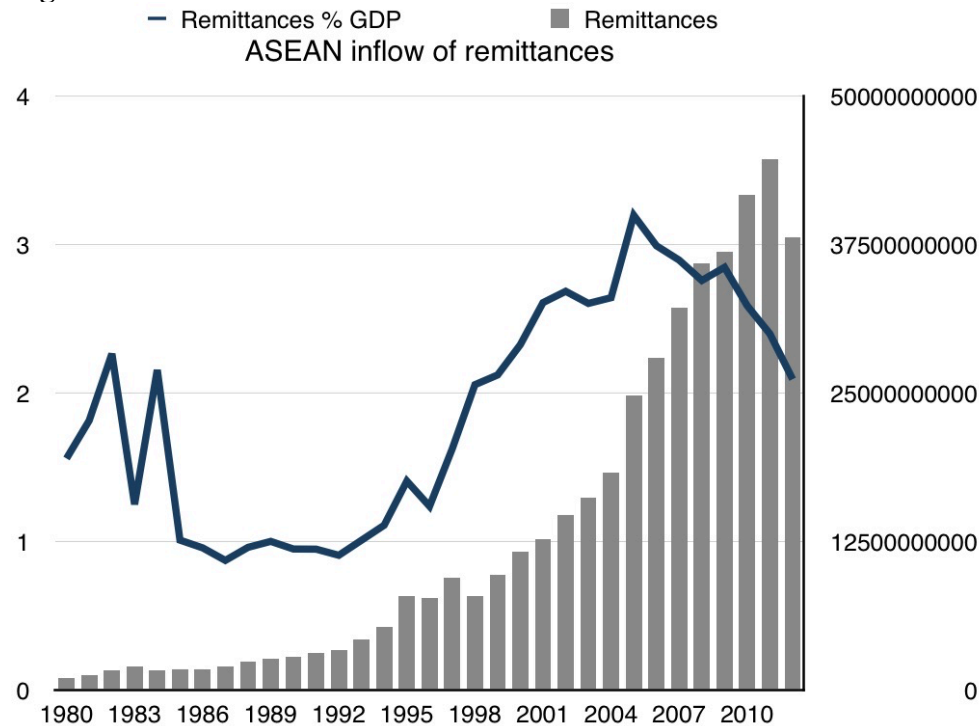
**Figure 2.2:** Remittances and migration in the ASEAN countries<sup>9</sup>



<sup>8</sup> Data from the World Bank database

<sup>9</sup> Remittances data from the World Bank database and migration data from IFAD (2014)

**Figure 2.3: Remittances into ASEAN**



The inflow of remittances into the region, as shown in Figure 2.4, has steadily increased from 1980 to 2010, with a growth rate between 1% and 3%. From the graph, it is not clear whether the financial crisis of 1997 had any impact on remittances, but it seems more likely that remittances is less prone to external events, and therefore a less volatile flow than other financial flows.

### 2.1.3 Remittances into the Philippines

Since the flow of remittances is expected to have a greater impact on the economy in the Philippines, this part will describe some of the aspects of the inflow to the Philippines.

Remittances have been a pillar in the Philippine economy, and for many families and households it is the main source of income. Remittances from Overseas Filipino workers (OFWs) have had a huge impact on the economy in the Philippines. According to Abinales and Amoroso (2005, p.256), remittance protected the Philippines during the Asian financial crisis in 1997 from the same impact that the crisis had on other Southeast Asian countries. This was due to the Philippines low exposure to external debt since the Philippine investment market was less attractive for foreign investors than other Asian markets. In addition the

Bangko Sentral ng Pilipinas (the Central Bank in the Philippines, BSP) was imposing strong capitalization requirements. When the crisis struck in 1997, remittances accounted for 20 percent of export earnings.

The overseas workers bring knowledge and skills back home, as well as economic impact through remitted money. Overseas workers annually send home over US\$ 20 billion in remittances to their families and communities back in the Philippines (Bangko Sentral ng Pilipinas, 2015). And these numbers only account for transfers through official banks. A huge contribution to this constant increase in remittances is the improved accessibility to transfers through official channels such as banks and money transfer operators, and improved technology to make the remittance sending cost-effective. Remittances account for about 10% of GDP and therefore “... *making overseas employment among the most important sources of the Philippines export earnings*” (IOM, 2013, p. 7).<sup>10</sup>

The main driver in the Philippine migration policy came with the establishment of the Labor Code in 1974. The policy was created to promote and assist overseas employment, protect the migrants' rights and to maximize the benefits. The program was introduced as a temporary measure to improve the economy. Further more the policy has been developed with the Migrant Workers and Overseas Filipinos Act of 1995 (Republic Act 8042) that was further altered in 2007 and 2010 (Republic Act 10022) (IOM, 2013, p.8). Philippines labor migration policy has always alternated between promotion and protection, and between encouragement and regulation. The tension between the two objectives explains the variety of measures that have been adopted and the comprehensive framework where every aspect of the migration process has received policy attention. The government has three main objectives: promote overseas labor, protect Filipino migrants and maximize the benefits of migration (IOM, 2013).

To increase the amount of remittances through official channels, the Philippine government has undertaken policies during the beginning of the 2000s to ensure secure and fast delivery at a lower cost, particularly from the main source countries like the US and the UK. In June 2006 the BSP issued Circular No.534. This requires banks and non-bank financial institutions to post the charges for their various remittance products, including classification of costs,

---

<sup>10</sup> More about remittances channels in part 3.2.3

estimated delivery time to beneficiaries, product/service description, and directory of remittance centers and branches, to promote the efficient delivery of competitively priced remittance services by banks and other financial institutions. In March 2007 the BSP launched an OFW portal with specific pages in the BSP website, that link the users to the financial institution's relevant information on remittances (IOM, 2013).

Bangko Sentral ng Pilipinas (BSP) conducts a survey about consumer expectations that gives indicators on the use of remitted money. The Consumer Expectations Survey (CES) was first conducted in 2004 and measures the consumers' beliefs and confidence in the economic future. According to the CES 2012 (Bangko Sentral ng Pilipinas, 2012), 95,4% of remittances was used to buy food, 68,8% was used on education, 65,5% on medical care and 44,1% on debt payments. These data confirm other surveys and research about the use of remittances, among others Bagasao (2005) list basic household needs, education, medical expenses and payments of debt as some of the applications of remittances. Other studies highlight the long term beneficial effect of remittances that are spent on improving the life quality for the families back home, money invested in better food, housing and education. Orbeta (2008) concludes that remittance-receiving households spend more capital on human resource development than non-receiving households.

As well as remitting to their families, many migrants raise funds to small infrastructure projects and other humanitarian causes in the Philippines. These include school buildings, hospitals, churches, water well, medical missions, support of street children and orphans (Bagasao, 2005). In 2011 The National Economic and Development Authority implemented the Commission on Filipinos Overseas (CFO), under the United Nations Development Program and with support from the Western Union Foundations. The project supports local administrators in developing policies for multi-stakeholder to cooperate on a pool of remittances. Since many of the overseas Filipino workers are interested in supporting local development initiatives the pool has the purpose of using remittances as a source of knowledge and ideas. A part of the program is called "Youth Leaders in the Diaspora", this initiative targets third generation overseas Filipinos who are considered innovators and achievers in their sector and community, to contribute in the Philippines. The program aims to promote the Filipino identity, good governance and leadership, volunteerism and social responsibility, and diaspora to development (IOM, 2013).

**Table 2.3: Money flows into the Philippines<sup>11</sup>**

<b>Year</b>	<b>Remittances % of GDP</b>	<b>Foreign direct investments % of GDP</b>	<b>Official development aid % of GDP</b>
<b>1980</b>	1,93	-0,33	0,92
<b>1985</b>	2,62	0,04	1,49
<b>1990</b>	3,31	1,20	2,87
<b>1995</b>	7,23	1,99	1,22
<b>2000</b>	8,59	2,76	0,71
<b>2005</b>	13,32	1,61	0,55
<b>2010</b>	10,80	0,54	0,27

There are incontrovertible facts highlighting the relevance of remittance for the Philippine economy. During the last 30 years, the amount of remittances has gradually increased, accounting for 13% of GDP in 2005. Compared to Foreign Direct Investments (FDI) and Official Development Aid (ODA) as percent of gross domestic product (GDP), they respectively account for 1,61% and 0,55%. Remittances contribute to an increase in the overall supply of foreign exchange that the Philippines use to purchase imported items such as crude oil and machinery. According to IOM (2013), remittance regarded as a support to economic growth as a driver of consumption expenditure, which constitutes more than 52% of gross national income (GNI). Other ways remittances contribute to economic growth is through generating employment through increased entrepreneurship, and thereby increasing the base of taxpayers, and increased household savings.

---

<sup>11</sup> Data from the World Bank



# 3 Review of the theory of migration and remittances

This theoretical chapter will cover theories about migration and theories about remittances including determinants and the cost of remitting money. The reason for including theory about migration is due to the relationship between migration and the flow of remittances, and that several determinants of remittances relates to reasons for migration.

## 3.1 Theory of Migration

*“Migration is often a collective action, arising out of social, economic and political change and affecting the whole society in both sending and receiving areas”.<sup>12</sup>*

The United Nations defines a migrant as a person that for any reason has lived away from the country of origin for more than a year (IOM, 2015).

Statistics from the United Nations show that there are about 214 million international migrants, which constitutes roughly 3% of the world’s population. The number of internal migrants is estimated to be 8% (381 million migrants) of the world’s population (IOM, 2013).<sup>13</sup> There are several different categories of migrants, voluntary or forced and legal or illegal (Koser, 2007). A refugee or asylum-seeker is a forced migrant due to political or environmental reasons, while most labor migrants are legal and voluntary. Due to the uncertainty about the size of illegal migrants all statistics about migrants are estimates. At the same time, many labor migrants move to countries with an agreement about free movement. As a result the migrants never have to register as a labor migrant in the new country, and are therefore hard to accurately measure. An example is the flow of migrant labor from Nepal to India, as Nepali citizens are not required to apply for permits to work in India (Dahal, 2014).

The theories of migration during the past 70 years have moved from an optimistic view to a pessimistic view, and then back again. According to de Haas (2008) the latter change is due

---

<sup>12</sup> Castles (2014, p.25)

<sup>13</sup> Estimates from 2012

to the increase in remittance flows, and the belief that remittances are a better way to reduce poverty and increase economic growth in developing countries. In the 1950s and 1960s the main theory was a neo-classical theory with a positive view on development, including the Gravity Model and the Todaro Model. During the late 1970s and 1980s a historical-structural theory with roots in Marxist political economy, was the main focus with concerns about brain drain and integration. In the 1990s as a critical response to earlier theories, a new theory called new economics of labor migration (NELM) became the central theory, with a positive view on migration. After 2000, remittances have improved the positive view on migration (Lamvik, 2012; Castles, 2014; de Haas, 2008; Massey, 1993).

As early as 1885 geographer Ravenstein expressed his “Laws of Migration” that based migration purely on economical reasons. Since then several explanations for migration have followed, such as the Gravity model that predicts the migration streams to be based on distances and population size, and “Push-and-Pull” model determining economic, environmental and demographical reasons for why people migrate (Castles, 2014).

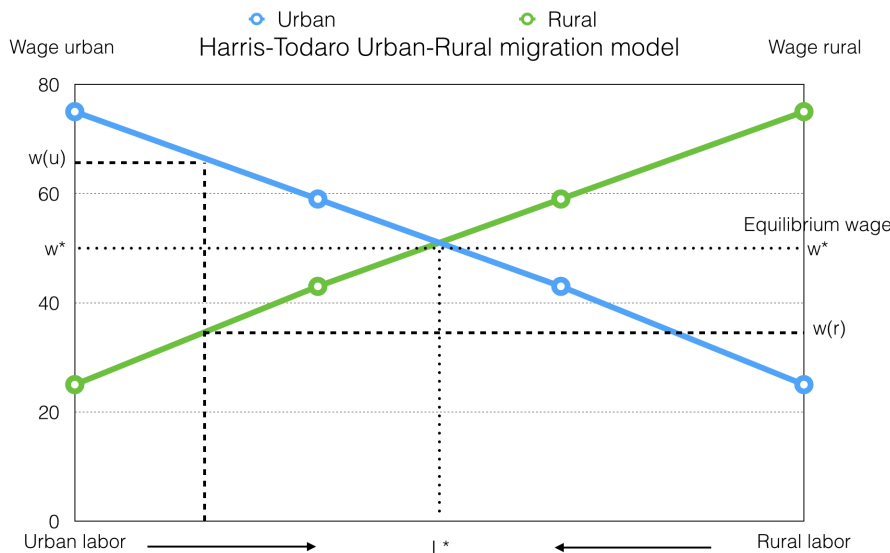
### **3.1.1 Neo-classical theory**

The Neo-classical migration theory can be separated into two main categories: micro-level and macro-level. Wage, labor possibilities and migrations costs are determinants for both categories (Massey, 1993). The neo-classical macro-level theory suggests that labor moves because of wage differences, from low-wage countries to high-wage countries, and that capital will move in the opposite direction. Low-wage countries have relatively more labor and the large supply of labor keeps the wages low. High-wage countries have relatively more capital and this is the reason capital will move towards low-wage countries and labor towards high-wage. As this movement takes place, the salaries will move towards a common level. In the long run, according to the neo-classical theory, the migration stream will decline because the wage convergences will reduce the incentives to move. This can be explained in the same way as the Harris-Todaro model with rural-urban migration and fixed amount of labor in a country.

Labor migrations from rural areas to urban areas (as from poor to rich countries), as long as the wage in urban sector is higher than in rural sector ( $w(u) > w(r)$ ). As more labor moves

from rural (poor) to urban (rich) areas, the wage level will equalize and more people will be hired in the urban sector.

**Figure 3.1:** Harris-Todaro model



The micro perspective of neo-classical migration theory explains migration through cost-benefit analysis as individuals wish to maximize their private income. Individuals consider their net return of migration before making a decision. If the probability of getting work, and expected income abroad is greater than the cost of migration and opportunities at home, the individual may find it attractive to migrate. But because of the individual choice at the micro-level, different individuals have different net return of migration (Massey, 1993; de Haas, 2008; Castles, 2014).

### 3.1.2 Historical-structural theory

In the 1970s and 1980s, as a critical response to the neo-classical migration theory, a theory with roots in Marxist political economy called historical-structural theory was developed. This theory focused on large-scale employment of labor stating that migration was not a free choice of individuals, but that the traditional economic system forced people to migrate to maintain the unequal distribution of resources between rich and poor countries. Castles (2014, p.32) explains the view on migration as a way of preserving the cheap flow of labor into rich, capital-intensive countries. This dependency theory argues that migration causes

underdevelopment and does not promote development in poor countries (Castles, 2014; de Haas, 2008).

### **3.1.3 New economics of labor migration**

New economics of labor migration (NELM) came in the 1990s as a critical response to earlier migration theories, especially the neo-classical. The essence of this theory is that the decision of migration is no longer an individual choice. It is a collective decision made by a family or household. Decisions about migration are made to maximize household income, as well as minimize risk and loosen constraints related to market failures. Remittances can work as an insurance against future risk, since the family depends on different income sources. Remittances are also seen as capital for investments, when there is no access to public or private insurance and credit markets (Massey, 1993; Taylor and Martin, 2001; de Haas, 2008).

## **3.2 Theory of Remittances**

Remittances are the flow of money from migrants abroad to their families in their country of origin (Koser, 2007). In other words, remittances are foreign exchange that is remitted through individuals living abroad. The term remittances only refer to financial contributions and transfers, and therefore not include other transfers such as technology and information (Eversole, 2005). According to Carling (2008) is the prospect of remitting often a key element in the motivation to migrate.

The flows of remittances globally have rapidly increased in the last couple of decades. In 1990 the amount was estimated to be US\$ 67,8 billion. This number doubled during the next ten years, amounting to US\$ 135,5 billions in 2000, 60% of this is transferred to developing countries (Gammeltoft, 2002). Remittances are a larger source of income than official development aid in developing countries, and the gap between the two money flows have kept increasing. At the same time remittances are a more stable source of income than other flows, especially compared to foreign direct investments that tend to be more volatile and limited (Gammeltoft, 2002). Overseas migrants are more likely to continue to invest in their home country despite economic difficulties, than what foreign investors are (Ratha, 2005).

This stability has encouraged emerging markets to use remittances as a security, instead of borrowing on international capital markets. Another contrast between international capital flows and remittances is that remittances are significantly higher in countries with high risk (measured by Institutional Investor rating<sup>14</sup>) and in countries with a high level of debt relative to GDP.

Remitted money can be transferred through either a formal channel or an informal channel. Over US\$ 300 billion were transferred worldwide in 2007, through official remittance channels as money transfer operators, and it is predicted that billions more were transferred through unofficial channels (Barajas et al., 2009). This thesis will be based on data from the formal and official flow of remittances, due to difficulties with estimating the amount through unofficial channels. Data retrieved from the World Bank and IMF is based on official transferred remittances records.

The global stock of migrants affects more people than just the migrant alone, since the migrant typically leaves several family members behind and supports them through remittances. Millions of people are directly affected by remittances, and the remitted money are generally spent to lift people out of poverty through consumption (food, clothing, medicine, shelter) (Barajas et al., 2009). Remittance supplements the recipients' income and increases their country's foreign exchange reserves. Remittance contributes to output growth through consumption, as this generates positive multiplier effects, and through investments in local markets. Thus, the money flow might offset some of the output losses that the country may suffer from emigration of high skilled workers (Ratha, 2005). Adelman and Taylor (1990) found that for every dollar Mexico receives from workers abroad, the gross national product (GNP) increase by US\$ 2,49 and US\$ 3,17, depending on whether an urban or a rural household received the remittances. The difference between urban and rural is justified by the tendency that rural households tend to consume more domestically produced goods and hence generate larger multiplier effects than urban households. Lowell and de la Garza (2000) also found that, even when not invested, remittances have an important multiplier effect since money spent on basic needs stimulate retail sales, which further stimulates demand for goods and services leading to increased output and employment.

---

<sup>14</sup> Institutional investors rating is an indicator used to identify and measure economic conditions of booms and crisis and the country risk refers to a collection of risks related to investing in a foreign country. This is an important consideration for individuals and institutions interested in foreign investments.

### 3.2.1 Theories of remittances

The literature on remittances can be divided into two segments. The first focus on macroeconomic impact of remittances and a large share of the literature focus on the impact remittances have on a family's consumption. The second focus on the causes and uses of remittances, and emphasizes the role of altruism and family ties as a motivation for remittances. This section will look at three types of remittances theory related to altruism and the role of family ties.

Lucas and Stark (1985) distinguish between three types of remittance theory, which all predict that remittances increase with migrant's income: (i) pure altruism, (ii) pure self-interest, and (iii) tempered altruism. Altruism refers to the willingness of a migrant to provide financial assistance to someone in the need of it, and in this case to the family at the place of origin (Bouhga-Hagbe, 2006).

Pure altruism requires that a person is willing to sacrifice something, like consumption, for another person without considering personal gain. The theory of pure altruism assumes that the migrant maximizes his own utility,  $u_m$ , with respect to the amount remitted ( $r$ ), since the family at the place of origin will gain from increased income that implies increased consumption:

$$u_m = u \left( c_m(w - r), \sum_{h=1}^n a_h u(c_h) \right)$$

The utility of the migrant,  $u_m$ , is derived from the utility of those left at home that are dependent on per capita consumption in place of origin,  $c_h$ . The migrant's consumption is  $c_m$ ,  $a_h$  is the altruism weights attached to household members,  $w$  is the migrant's wage abroad and  $n$  is the household size. Assuming that consumption per capita is increasing with income per capita available at home, where  $y$  is the income per capita before any remittances. Then the migrant choose a level to remit provided by

$$r = r(w, y, n)$$

From the assumption that the migrant cares about his home family and their utility, the prediction is that

$$\partial r / \partial w > 0 \text{ and } \partial r / \partial y < 0$$

Meaning that the amount of remitted money will increase with the migrant's wage rate and decrease with the income per capita at home. The pure altruism model shows the migrant care about the well being of the family left behind (Strubhaar and Vãdean, 2006). Antonidas et al. (2013) find that altruism can have a significant effect on the remitting behavior of certain migrants, depending on the possession of loan obligations at the place of origin, held by the migrant. Loan obligations refer to property related loans, marriage expenses, personal loans and educational expenses, among others. Migrants without loan obligations are less certain about the expectations for remittances, than those with explicit loan obligations.

The pure self-interest model is a stark contrast to the pure altruism view, because the pure self-interest view has three reasons to remit, purely based on selfish motivations. The first motivation is the ambition to inherit property in the country of origin. With this motivation, the money is sent home with intentions of using it for investments today, which the migrant can inherit in the future. The second motivation is related to the intention of investing in the home area with the remitted money and that the family will maintain the property until the migrant returns. The last one is based on making the transition home easier for the migrant so the remitted money is used to invest in either fixed capital such as land or livestock, in public assets such as political influence, or in social assets (Lucas and Stark, 1985).

The last theory of remittances is the tempered altruism, which view remittances as a part of an intertemporal, mutually beneficial contractual arrangement between migrant and home. Investment and risk may cause the arrangement. In developing countries education is often costly and usually borne by the immediate family. Lucas and Stark (1985) refer to studies like Johnson and Whitelaw (1974), which find a positive association between the amount remitted and the education of the migrant. The investment argument would therefore predict that the effect on education of increased remittances should be greater among the immediate family than the extended. The other underlying factor of the mutually contract is that in economies without complete insurance and capital markets, the act of migration is an insurance against risk through several income sources. Remittances would flow to the family

in times of crop failures or other reasons for a change in income, and to the migrant during times of unemployment. The only criterion for this type of motivation to remit is that the arrangement has to be voluntary and self-enforcing (Lucas and Stark, 1985).

### **3.2.2 Determinants of remittance**

The determinants of remittances are strongly linked to the theory of migration, as remittances are the economic contribution of migrants into labor-sending areas. The setting of migration differs depending on whether the migration is temporary or permanent, or international or internal. The macro-level perspective of remittances is looking at how the flow responds to key macroeconomic variables such as exchange rate, imports, exports and the stock of migrants. The micro-level determinants of remittances look at two household perspectives: the migrant's remittance-sending pattern and the receiving parts use of the received remittances (Carling, 2008).

The level of remittance flows depends on migrants' ability to remit, their motivation and willingness. The first relates to their income and savings, while the latter two are determined by the duration of migration and the family situation both at home and in the country of destination.

Related to a migrant's ability to remit is the income level of the migrant. That not all migrants remit money applies to individual characteristics such as education and gender, but income in particular. The migrant's income has been found to have a positive effect on remittances, but it is not necessarily a correlation between income and the amount remitted, as many migrants give a high priority to help their family back home. Lucas and Stark (1985) hypothesized that migrants remit as repayment of the costs their families have incurred for their education, and found empirical evidence for this. While Posel (2001) find evidence that woman remit a substantially larger proportion of their wage than male migrants.

Related to a migrant's motivation to remit is the family situation both at home and abroad. According to Carling (2008), demographics and kinship variables have an effect on whether a migrant remits or not. If the migrants' have a spouse, children or parents in the country of origin then it is more likely that they will remit. Carling (2008) also states that there is a



positive association between remittances and the household size at origin, and a negative association to the household size at the place of destination. A study by Koncia and Filer (2005) find an inverse relationship between remittances and the number of emigrants from the same households. A migrant is less likely to remit a proportion of his income if a sibling has emigrated as well. Also the time spent abroad affect the likelihood of remitting money since the ties to the home community weakens with time.

### 3.2.3 Remittance corridors and the cost of remitting

Carling (2008) considers whether a country-to-country remittance corridor affect the amount of money transferred and finds that a remittance corridor makes it easier and relatively cheaper to remit, and that the likelihood of remittances being sent is greater with high-quality and low-cost services. A remittance corridor is typically between two countries where migration is common, such as between the United Kingdom and Somalia or between Norway and Poland (Carling, 2008, p.593). The World Bank<sup>15</sup> reports the most common remittance corridors to the ASEAN countries as listed in the Table 3.1.

**Table 3.1:** Remittances corridors to ASEAN countries

<b>Receiving country</b>	<b>Corridors to</b>	
<b>Indonesia</b>	Malaysia	Netherlands
	Singapore	United States
<b>Malaysia</b>	Singapore	
<b>Philippines</b>	Australia	Canada
	Italy	Japan
	Malaysia	New Zealand
	Qatar	Saudi Arabia
	United States	
<b>Thailand</b>	Singapore	United States
<b>Vietnam</b>	Australia	Canada
	Czech Republic	France
	New Zealand	South Korea
	United States	

<sup>15</sup> World Bank (2015)

By strengthening the financial sector infrastructure in both the source and recipient countries, the remittance flows could increase through the formal channels. The transaction costs often exceed 20% of the amount remitted. According to the Economist (2010), transferring money through banks is the most expensive as they on average charge 13% of the amount, while post offices and money-transfer operators charge 9% and 7% respectively. Included in Appendix 3 is the estimated cost of sending remittances to the Philippines. The cost vary between no cost from United States to the Philippines, and the largest cost from Canada to the Philippines with a cost of sending of 25,39% of the transferred amount.

The Economist (2010) also finds that the cost of sending remittances is negatively correlated with the number of migrants and services providers, so more competition reduces the cost of transferring. This coincides with Carling's (2008) conclusion regarding the remittances corridors. The IMF (2011) also states the same findings, and highlights that if the cost of transferring money is reduced by 5%, migrants and recipients could save about US\$16 billion each year.

## 4 Review of empirical analyses of remittances

In this section some previous literature on the topic, impact of remittances on economic growth, will be covered. Studies on the effect of remittances on economic growth and financial development have different results.

The impact of remittances on Asian countries is studied several times, largely due to the large, high-skilled migration flow out of this region. Cooray (2012), Siddique et al. (2012) and Salahuddin (2013) all look at some of the South Asian countries, while Dahal (2014) focus on Nepal and Ang (2007) focus on the Philippines. Jongwanich (2007) expands the area of interest and include the entire Asian region and the Pacific states.

Cooray (2012) tries to identify the contribution of migrant remittances on economic growth in South Asia (Bangladesh, India, Nepal, Maldives, Pakistan and Sri Lanka), and finds that remittances have a positive and significant effect on economic growth when education levels and financial sector development are comparatively high. Siddique et al. (2012) researched whether remittances had any effect on the economies of Bangladesh, India and Sri Lanka, and found mixed results. Using a Vector Autoregression with time series over 25 years, they found a significant impact of growth in remittances on economic growth in Bangladesh and that it was a one-way causal relationship. For India they found no significant results and therefore no causal relationship between the two variables, but for Sri Lanka it was a two-way direct causality. In other words, growth in remittances into Sri Lanka promotes economic growth and vice versa. Related to this relationship they highlight that migrants from Sri Lanka are a unique group as most of them come from families living above the poverty line. This can support the two-way causal relationship because the receiving families use the money for investments like education, not in the necessity of survival. Siddique et al. (2012) concludes that it is not possible to reject that remittances have an impact on the economy. Although there was no significant effect on India this does not mean that the flow of remittances into India cannot make a change for poor, rural families. Salahuddin (2013) also find a long-run positive relationship confirming that remittance spurs economic growth, with evidence from Bangladesh, India, Pakistan and the Philippines. The author also conclude that remittances have short-run effects on poverty reduction in small economies

through investments in productive sectors such as infrastructure and education, and that larger economies, like India, can benefit from remittances income especially to reverse brain drain. Studying the effect of remittances on growth and poverty rates in both Asia and the Pacific, Jongwanich (2007) find strong evidence that remittances have a significant effect on poverty reduction in the region, but only a marginal impact on economic growth.

Remittances effect poverty reduction through increased income, consumption smoothing and easing capital constraints, and effect growth through domestic capital and human capital development. Dahal's (2014) study indicates a mixed impact on remittances inflow on economic growth in Nepal. The study analyses the impact through financial development, productivity, international trade and human capital accumulation, and lists positive and negative impacts remittances have on these determinants of economic growth. Positive impacts of remittances on financial development include increased bank deposits and credits, and negative impacts include increased inflation through exchange rate appreciation and increased money supply. Productivity can be positively affected by remittances through promotion of entrepreneurship and transfers of knowledge and skill, while productivity can be negatively affected through promoting corruption. Dahal (2014) finds that remittances into Nepal have positive relations regarding financial development and human capital accumulation, and negative relations regarding productivity and international trade. Ang (2007) looks at four areas including remittance and overall growth, the linkage between remittances and microfinance, tracing the contribution of remittances to countryside development and the relationship between worker remittances and structural reform policies. The findings show that on a national level that remittances have a positively and significantly influence on economic growth.

In other regions of the world, the same relations between remittances and economic growth have been studied. Orrenius et al. (2009) studies the impact in Mexican states, and Glytsos (2002) looks at five Mediterranean countries.

Orrenius et al. (2009) estimates the impact in Mexican states, by looking at the effect on macroeconomic variables such as wages and employment in the formal sector, unemployment rates, wage inequalities and school enrolment rates. Their basis for the paper is that through macroeconomic theory remittances can boost aggregate demand and thereby GDP and economic growth, but also that remittances can increase income inequalities and reduce labor supply. Their finding is that remittances have several positive effects on the Mexican economy, such as increased average wages and employment rates. But they find no

effect on the school enrolment rates. Glytsos (2002) estimates short- and long-run multiplier effects of exogenous shocks of remittances in five Mediterranean countries. His estimated model shows a great structural consistency, but it also exhibits the relative significance of country specific conditions. The short- and long-run distinction of remittance effects uncovers different inter-country priorities of spending remittances on consumption, investment or imports.

Yaseen (2012) and Berguellil et al. (2013) uses a different approach to find the impact of remittances on economic growth, as they divide different countries into groups.

Using a panel data over two groups of countries Barguellil et al. (2013) try to find the relationship between the variables of interest; remittances, economic growth and education. The first group in their regression consists of ten countries with remittances as a large share of GDP (such as Nepal and Lesotho), and the other consists of ten countries with large total amount of received remittances (such as China and India). Their findings are inconclusive. In the first group they find a positive, but insignificant relation between remittances and education, and that remittances have a negative impact on economic growth. When they include the second group, the significant effect disappears. Yaseen (2012) uses panel data estimation over the MEAN countries<sup>16</sup> to observe the impact of remittances on economic growth. Some of these countries are net providers of remittances, such as the Gulf Cooperation Council Countries, and others are known to receive large amounts of remittances, such as Jordan and Lebanon. With a fixed effects approach Yaseen points that institutions and financial development play an important role in how remittances affect economic growth. Through financial development remittances are found to have a mixed effect on the economies, but that remittances promote growth by complementing total liquidity and by substituting credit.

Other studies use bigger datasets including over 80 countries to estimate the impact, such as Catrinescu et al. (2006), Giuliano and Ruiz-Arranz (2005) and Barajas et al. (2009). The basis for the paper by Catrinescu et al. (2006) is the discussion whether remittances contribute to long-term growth through building human and financial capital, or if remittances reduce long-term growth through labor substitutions and Dutch disease effects. In the dataset, observations from 162 countries over 34 years are included. As a conclusion they

---

<sup>16</sup> Algeria, Egypt, Jordan, Libya, Marocco, Oman, Syria, Lebanon and Tunisia

reject that remittances have a negative impact on economic growth, and points out that the quality of institutions play an important role in how remittances affect economic growth. Using internal instruments (lagged explanatory variables) and generalized method of moments (GMM) with a dataset covering 100 countries over the period 1975-2002, Giuliano and Ruiz-Arranz (2005) regress per capita GDP growth on total remittance-to-GDP ratio with several conditions related to human capital and institutional quality. They find no statistically significant effect of remittances on economic growth, but they found support to that remittances relax credit constraints, hence that remittances have a positive effect on growth only in countries with small financial sectors. Barajas et al. (2009) focus on appropriate measurements and could not find a robust and significant positive impact of remittance on long-term growth, but they found a negative relationship between remittances and growth. They conclude that “*Remittances lift people out of poverty but they do not typically turn their recipients into entrepreneurs.*”

The empirical literature on the effects of remittance flows on growth appears to be inconclusive, as seen in the studies discussed above. According to Barajas et al. (2009) this can be traced to several sources. The first relates to how the different studies define remittances, as there are a large difference between the behavior of employee compensation and migrant transfers, and workers’ remittances. Employee compensations are often seasonal labor and migrant transfers are one-time movement of funds. For the most, the above studies simply use a combination of the three categories and call it “workers’ remittances”. The second source relates to how to identify the effects, either through cross-sections, annual panels or with different estimators. And the third source relates to the dataset estimates, differences in time periods and set of countries included. Which control variables for economic growth that are included can cause the fourth source of disparity, and the last source relates to the choice of variables used as instruments for remittance flows.

# 5 Empirical analysis of the impact of remittances on the ASEAN countries

The findings in previous literature either find a positive impact or that remittances have no impact on economic growth. The motivation for my empirical analysis is even though similar research have been conducted, no one (at least among the studies I have been able to find) have yet to study the impact of remittances on ASEAN economies. Most of the studies either focus of Sub-Saharan Africa, Latin America or South Asia (Nepal, Bangladesh, India, Sri Lanka and Pakistan among others).

The main research question of this thesis is to find the impact of remittances on economic growth, in the ASEAN countries. In order to study this, I have constructed a dataset with statistics on seven of the ten ASEAN countries, covering the years 1980-2012. The dataset is stated as strongly balanced in STATA, but the time series differ in length between the countries. To keep it simpler, I follow the mainstream literature and assume reasons for the missing data is not correlated with the error terms in the regression and that the estimations therefore are valid. The following sections describe data and variables, before I present the model and results. All regressions, estimations and figures in this chapter are done with own calculations in the statistics program STATA.

## 5.1 Data

The dataset is constructed with observations from 1980-2012, for seven of the ASEAN countries: the Philippines, Thailand, Vietnam, Malaysia, Indonesia, Lao People's Democratic Republic (PDR) and Cambodia. The reason for not including the last three members of ASEAN, Singapore, Myanmar and Brunei Darussalam, is due to lack of data available. All raw data are collected from the World Development Indicators (The World Bank) and the CEIC Global database.<sup>17</sup>

---

<sup>17</sup> Raw data collected from the World Bank and CEIC database, see Bibliography

All the time periods are included in the dataset and estimations, but the number of observations for each variable varies between 231 (for variables such as population growth and life expectancy) and 62 for the poverty variable because the raw data is only constructed every other year.<sup>18</sup> The problem that could arise from having few observations is that the observations could be unrepresentative or omitted, which the resulting coefficient could be a poor guide on the impact of remittances on economic growth. Using a dataset with few observations can possibly make the OLS regression very sensitive to large outliers. Accepting the possible problem with few observations, I still assume that the estimations are valid and rather be skeptical to the results.

## 5.2 Descriptive statistics

This section will cover descriptive statistics about the dependent and independent variable, over the time period 1980-2012 and across the seven countries in the dataset.

The dependent variable in the model is the variable for economic growth, and it is defined as the GDP per capita annual growth. The data for this variable is collected from the World Bank, which defines it as the annual percentage growth rate of GDP at market prices based on constant local currency. Definition of GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products (Smukkestad, 2008). In this thesis referring to economic growth relates to the growth in GDP.

The independent variable is the variable for personal remittances as ratio of GDP

$(\frac{Remittance}{GDP} * 100)$ . The flow of remittances into the ASEAN countries have increased steadily and therefore interesting to see the effects of this addition capital on the economy.

The World Bank defines the flow of remitted money as all private current transfers in cash or in kind made by residents of a households living abroad.

---

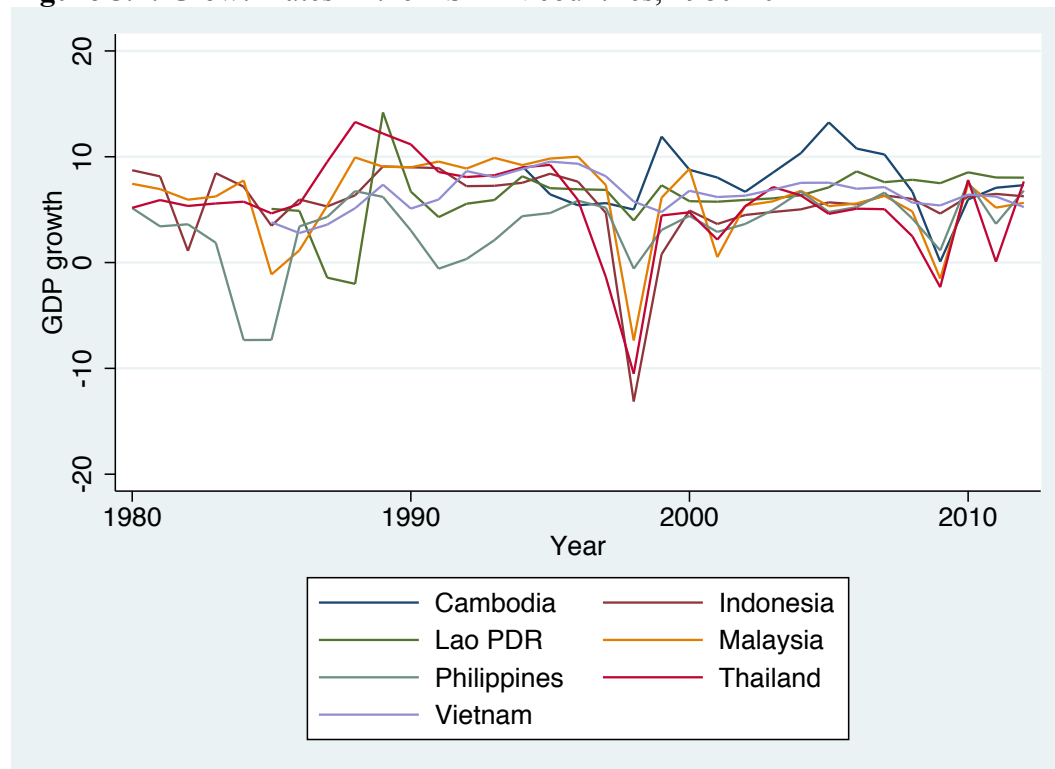
<sup>18</sup> See Appendix 2



### Growth rates for ASEAN 1980-2012

As shown in Figure 5.1, the GDP growth for the seven ASEAN countries has in the time period between 1984 and 2012 been relatively similar, with few outliers. In the 1980s the Philippines generally had a lower economic growth than the other countries, most likely due to political instability under President Marcos dictatorship (IOM, 2013).<sup>19</sup> The second large fluctuation is similar for several of the countries and relates to the Asian Financial Currency Crisis of 1997-1998. The growth rates in the affected countries dropped below zero in the years of the crisis, but quickly recovered. The last visible variation is the growth rate of Cambodia, which has been generally higher during the beginning of 2000s. Apart from these three noticeable fluctuations have the growth rates in the ASEAN countries been stable between 5% and 10%.

**Figure 5.1:** Growth rates in the ASEAN countries, 1980-2012

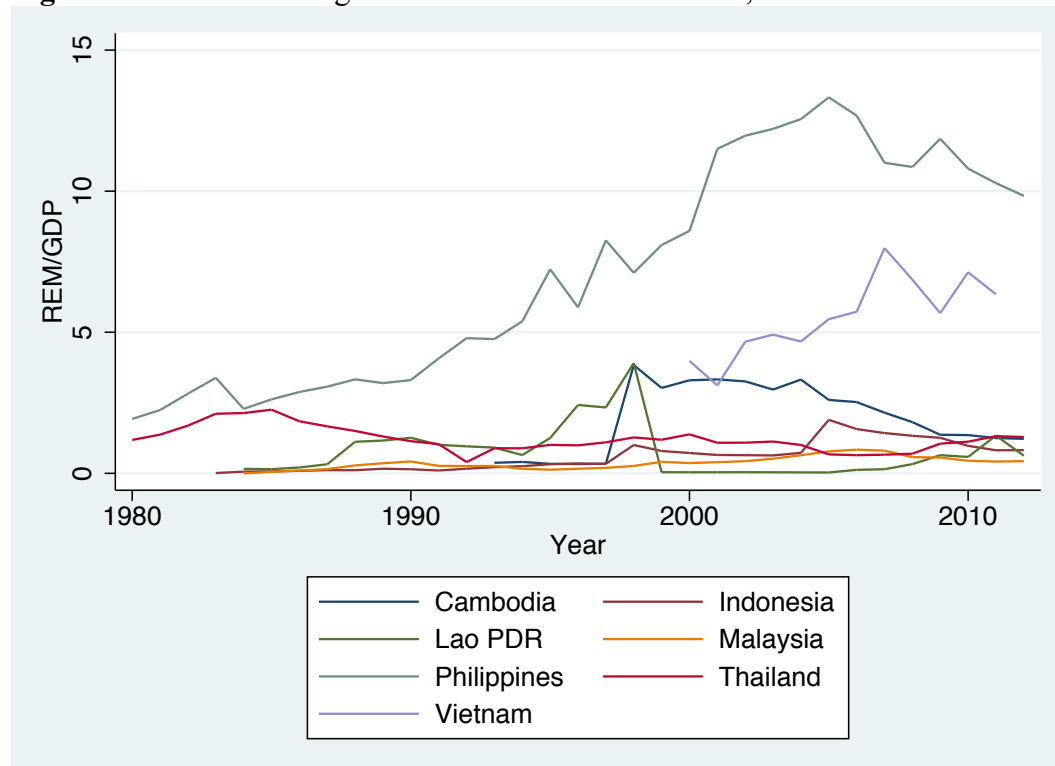


<sup>19</sup> Ferdinand Marcos was president of the Philippines in the period between 1965-1986. September 1972 Marcos declared martial law due to threats from a Muslim separatist movement in the south, the re-establishment of the Filipino Communist Party and student protests. Under the martial law, Marcos increased the power for himself and his relatives, and he used the military as defence against his political enemies, displaying a ruthless approach to opposition. In 1981 lifted President Marcos the martial law and for the first time since 1969 were a presidential election held (Szczipanski, 2015).

## Remittances inflow into ASEAN 1980-2012

Figure 5.2 evidently shows the differences in remittances into the different ASEAN countries. The remittance to GDP ratio into the Philippines is higher for the entire time period, because of the substantial amounts received by the Philippine population. With the available data after 2000, Vietnam is a distinct number two in the received amount as percentage of GDP. The rest of the ASEAN countries in the dataset receive between 0% and 5% of GDP.

**Figure 5.2:** Remittances growth in the ASEAN countries, 1980-2012



At the end of the 1990s, Cambodia and Lao PDR experienced a sharp shift in the inflow. Whether the increase in remittances into Cambodia was related to a sudden increase in remittances or a decrease in GDP is not possible to conclude with from this graph. But Figure 5.2 show a decrease in the economic growth in Cambodia related to the Asian Financial Crisis of 1997, and therefore it is possible to assume that the increase in remittances as percentage of GDP around this time is related to a fall in GDP. Opposite happened for Lao PDR, which experienced a sudden decrease. For Lao PDR is not possible to make the same conclusion, as the Asian Financial Crisis in 1997 did not have the same impact on the economic growth.

## 5.3 Empirical specification

Using panel data allows for several different opportunities in the estimation of impact of remittances on economic growth. Since remittances is measured in percentage of GDP, there is no need for transforming the variables since both the dependent and independent variable is represented as growth rates. This section will elaborate the empirical framework for the estimations and possible endogeneity problems that may arise related to the independent variable, and quite briefly explain the variables included as controls.

### 5.3.1 Empirical framework

I adopt the empirical framework used by Gupta, Pattillo and Wagh (2007), to estimate the impact of remittances on economic growth, controlling for a set of economic variables characterizing the economic development in the respective country.

$$Y_{it} = \beta_0 + \beta_1 R_{it} + \beta_2 Z_{it} + \varepsilon_{it}$$

Where  $Y_{it}$  is the dependent variable for economic growth,  $R_{it}$  is the independent variable for remittances as percentage of GDP, and  $Z_{it}$  is a set of control variables. I also include country fixed effects,  $\alpha_i$ , and time fixed effects,  $\tau_t$ . The country fixed effect removes the effect of those time-invariant characteristics so we can assess the net effect of the predictors on the outcome variable and time fixed effects control for entity-invariant characteristics such as an external event affect the variables.

$$Y_{it} = \alpha_i + \tau_t + \beta_0 + \beta_1 R_{it} + \beta_2 Z_{it} + \varepsilon_{it}$$

First, I conduct Ordinary Least Square regression including different independent variables to see if some of the effect of remittances is really captured by other explanatory variables.

Then I use Instrumental Variable estimation to see if there are reasons to believe that there are endogeneity problems related to the remittances as percentage of GDP variable.

The Ordinary Least square (OLS) method is estimated with the baseline model in the thesis:

$$\log(GDP\ growth_{it}) = \beta_0 + \beta_1 \log(rem_{it}) + \beta_2 \log(Z_{it}) + \varepsilon_{it}$$

This model estimates the effect of remittances as percentage of GDP ( $rem_{it}$ ) on economic growth ( $GDP\ growth_{it}$ ), and  $Z_{it}$  is a set of control variables. The set of control variables include income per capita, domestic capital, population growth, trade openness represented by import and export as percentage of GDP, the exchange rate, estimate for life expectancy, poverty rate, and unemployment rate. Dependent variable, independent variable and the individual control variables are all transformed using logarithm. Using logarithm on the variables allows for interpreting the estimations in terms of percentage change.

The instrumental variable two-stage least squares (IV 2sls) method is also estimated with the baseline model, but including a first stage regression controlling for a set of variables on remittances as percentage of GDP.

$$(1) \quad \log(rem_{it}) = \beta_0 + \beta_1 \log(X_{it}) + u_{it}$$

$$(2) \quad \log(GDP\ growth_{it}) = \beta_0 + \beta_1 \log(rem_{it}) + \beta_2 \log(Z_{it}) + \varepsilon_{it}$$

The first stage regression estimates the effect of a set of economic control variables on remittances, including variables for trade openness (import and export as percentage of GDP), the exchange rate, life expectancy, poverty, and unemployment rate. The second stage of the regression uses the first regression as an instrumental variable, and measure the effect of remittances on economic growth including control variables for per capita income, domestic capital and population growth. Also in the IV method, all the variables are transformed using logarithm.

### 5.3.2 Endogeneity problems and threats to validity

In econometric modeling, variations in the dependent variable is explained by variations in the independent variables and by an error term, which is included to capture effects that is not from the independent variables. The theoretical counterpart to the empirical residuals is disturbance. A set of assumptions about this disturbance has to be fulfilled for the estimates to be unbiased, consistent and with minimum variance (BLUE-estimates) (Hill, 2001).

1. The expectation of the disturbance is zero.
2. The variance of the disturbances is constant and they are uncorrelated.

3. The values of the independent variables are not random; there is no exact linear relationship between any of the independent variables.
4. The disturbance is normally distributed.

It can be a problem with empirical data that the raw data seldom fulfill all these assumptions, especially in multiple country regressions with few observations. The estimates are not necessarily BLUE-estimates, but they can still be consistent and unbiased.

Empirical data allows us to understand the real behavior and it is not possible to establish a laboratory to estimate the effects. Therefore, the estimations can be biased suffering from endogeneity problems. There are three circumstances under which endogeneity problems can be triggered:

1. Omitted variables,  $Cov(R_i, \varepsilon_i) \neq 0$
2. Measurement errors in the independent variable
3. Simultaneity

The effect of endogeneity is bias in the estimates, and therefore possibilities of Type I Error (rejecting a true hypothesis) and Type II Error (failing to reject a false hypothesis).

Endogeneity is said to occur if  $E(R_i * \varepsilon_i) \neq 0$  (Reichstein, 2011).

When expecting possible endogeneity problems, one needs to apply an Instrumental Variable regression to determine whether the problem exists or not. When using an Instrumental Variable it is necessary to determine the instruments relevance and exogeneity. To determine the relevance I will use a F-test, and I will assume that the instruments are uncorrelated with the error terms to determine the instruments exogeneity. As long as these two conditions are fulfilled the instruments are valid.

Endogeneity problem relates to threats to internal validity and a causal relationship between economic growth and remittances. Using Hausman- and Durbin-Wu-Hausman test is it possible to control for endogeneity problems. If these tests state that there is no problem, then the results from the OLS regression is valid and unbiased, and a give a better estimation than the IV regression.

The Hausman test involves fitting the model by both IV and OLS, and compares a weighted square of the differences between the two beta-estimators. The test statistic is defined as:

$$m = \frac{(\hat{\beta}^{IV} - \hat{\beta}^{OLS})^2}{\text{var}(\hat{\beta}^{OLS}) - \text{var}(\hat{\beta}^{IV})}$$

The test statistic is distributed as chi-squared, with k degrees of freedom equal to the number of endogenous variables. Under the null hypothesis, the OLS estimation is the appropriate technique, and if rejecting the null hypothesis, the IV 2sls is the necessary estimation (Stock and Watson, 2012).

Threats to external validity relate to differences in population and settings. Because of the large inflow of remittances into the Philippines, compared to the other countries, I am concerned about validity due to the large differences. To check for this I will exclude the data from the Philippines in section 5.4.3, and see whether the results change.

### **5.3.3 Traditional growth theory and explanations of set of control variables**

I use a set of control variables in the estimations: income per capita, domestic investments, population growth, trade openness, exchange rate, life expectancy, poverty, and unemployment rate, which all will be defined below.

The tradition for growth theory models have stretched over several decades and can be split into three sections: the Harrod-Domar growth theory in the 1940s, the “neo-classical” growth theory with Solow’s growth model in the 1950s, and the “endogenous” growth theory in the 1980s (Hægeland, 2000). It started in the 1950s with Rostow’s stages growth model and the Harrod-Domar model. These are defined as a part of the “traditional” growth theories. Rostow claimed that the transition from underdevelopment to development would pass through different stages, from the tradition society to the age of mass consumption. Harrod-Domar model emphasizes that the major motivator of the economy is investments (Dang and Sui Pheng, 2015). Before the Solow growth model, the Harrod-Domar was the most common approach (also referred to in part 3.1.1. *Neo-classical Theory*). The “traditional” theories were further developed in the “neo-classical” growth theories with Solow’s growth model as a central theory. The focus of the Solow growth model is the neoclassical aggregate production function (Acemoglu, 2011), and the model stresses the importance of three factors

of output growth. First are the increases in labor with population growth and labor quality through education. Second are increases in capital through savings and investments, and third are improvements in technology. The “neo-classical” theories were the central theories for several decades, before the “new” growth theory became central in the 1980s. The “new” growth models or “endogeneity” growth models are characterized by the mechanisms leading to technological progress. The model has endogenously determined technological progress and long-term growth rates as assumptions for the competitive equilibrium to be fulfilled (Hægeland, 2000).

Two of the control variables in my regression, domestic investments and population growth, relates to Solow’s growth model, which in 1957 generated the theoretical basis for growth accounting. In this growth model, output is linked to capital and labor through a production function,  $f$ .

$$Y = f(K, L)$$

$Y$  is output produced in the economy,  $K$  is capital and  $L$  is labor. The idea is that growth in the output is only possible from growth in the inputs, labor and capital. In the neoclassical approach the production function satisfies three properties: (i) positive and diminishing marginal products, (ii) constant returns to scale and (iii) the Inada conditions.

$$\begin{aligned} (i) \quad & \frac{\partial f}{\partial K} > 0, \frac{\partial f}{\partial L} > 0, \frac{\partial^2 f}{\partial K^2} < 0 \text{ and } \frac{\partial^2 f}{\partial L^2} < 0 \\ (ii) \quad & f(cK, cL) = cf(K, L), \text{ for all } c \geq 0 \\ (iii) \quad & \lim_{K \rightarrow 0} \frac{\partial f}{\partial K} = \lim_{L \rightarrow 0} \frac{\partial f}{\partial L} = \infty \text{ and } \lim_{K \rightarrow \infty} \frac{\partial f}{\partial K} = \lim_{L \rightarrow \infty} \frac{\partial f}{\partial L} = 0 \end{aligned}$$

This relation between output and capital and labor is the background for including domestic capital and population growth. The reason for including income per capita as a control is to create a basis of the economic level in the country, trade openness and exchange rate create a basis for institutional quality, a basis human capital is generated by life expectancy and the unemployment rate, and the rate of poverty might determine whether a migrant transfer remittances or not.

**Income per capita:** To estimate the initial level of income per capita, the data for adjusted net national income per capita in current US dollars are used, collected from the World Bank. This variable is defined as the gross national income (GNI) minus any consumption of fixed capital and natural resource depletion. GNI is the gross national income and measures national production and include income made abroad (Smukkestad, 2008).

**Domestic investments:** The variable for domestic investment is measured by the gross capital formation (GCF) as percentage of GDP. This measures additions to the fixed assets of the economy plus net changes in the level of inventories.

**Population growth:** This variable is measured through the percentage increase in the population size from one year to the next.

**Trade openness:** Including trade openness implies the country's association and connection with the rest of the world. The variable is measured through import as percentage of GDP and export as percentage of GDP. Imports of goods and services represent the value of all goods and other market services received from the rest of the world, while exports of goods and services represent the value of all goods and other market services provided to the rest of the world.

**Exchange rate:** For the exchange rate variable is the end-of-year exchange rate from the CEIC database used. The exchange rate is the national currency per US dollar. The currencies used in the ASEAN-7 countries are Philippine Pesos (PHP), Thai Baht (THB), Cambodian Riel (KHR), Indonesian Rupiah (IDR), Malaysian Ringgit (MYR), Laotian Kit (LAK) and Vietnamese Dong (VND).

**Health care:** Variable for life expectancy is an estimate of the total numbers of years a person is expected to live at birth and data retrieved from the World Bank database.

**Poverty:** A poverty headcount ratio at US\$ 1,25 a day (PPP adjusted) is used as variable for poverty. This is as percentage of total population.

**Unemployment rate:** The unemployment rate refers to the share of the labor force that is without work but available for and seeking employment.



## 5.4 Results

To estimate the effect of remittances on the economy in the ASEAN countries, the methods used are Ordinary Least Squares (OLS) and Instrumental Variable with Two-Stage Least Squares (IV 2sls), including control variables, time and country fixed effects.

An endogeneity test will determine whether it is necessary to use a two-stage least squares regression or if the OLS is sufficient. This decision will follow after the two-stage least squares estimations and will make it possible to conclude which of the two estimation methods that are best suited to estimate the impact of remittances on economic growth.

This section will first discuss results using Ordinary Least Squares method, before covering the Instrumental Variable method. Because of the concerns about endogeneity problems, a test will follow after the estimations to conclude which of the two that give the best estimation. Afterwards, I will exclude the data from the Philippines to control for the large differences between the countries in the dataset.

### 5.4.1 Ordinary least squares method

**Table 5.1:** Impact of remittances on GDP growth (OLS regression)

	(1) GDP growth	(2) GDP growth	(3) GDP growth	(4) GDP growth
<b>Remittance as percentage of GDP</b>	-0,0794** (0,0295)	0,0129 (0,0413)	-0,0852** (0,0288)	-0,0049 (0,0397)
<b>Constant term</b>	1,4194*** (0,0439)	1,6788*** (0,1157)	1,0044** (0,3596)	1,4676*** (0,3204)
<b>Country fixed effects</b>	No	Yes	No	Yes
<b>Time fixed effects</b>	No	No	Yes	Yes
Observations	161	161	161	161
R-squared	0,0437	0,3021	0,3627	0,5870
Adj. R-squared	0,0377	0,2701	0,1971	0,4539

\* p < 0,05; \*\* p < 0,01; \*\*\* p < 0,001. Standard errors in parenthesis.

Before extending the OLS regression with control variables, I will look at the effect of remittances on GDP growth, described in Table 5.1. In regression (1), only the effect of

remittances on economic growth is estimated, without time or country fixed effects. The second regression (2) includes country fixed effects, the next (3) includes only time fixed effects and the last regression (4), includes both country and time fixed effects.

In estimation (1), the effect of remittances on economic growth is significant and negative. The flow of remittances varies largely between the ASEAN countries, such as Malaysia has a greater outflow while the Philippines has a greater inflow, than the rest of the countries. An increase in remittances as percentage of GDP of 1% is expected to decrease the economic growth by 0,08%. The effect is significant, but the  $R^2$  states that only a small fraction, 4%, of the variation in economic growth is explained. Therefore, one can predict that the estimates are weak and might change when including control variables.

When controlling for both country- and time fixed effects in estimation (4), the estimates show a negative, but insignificant effect. Still the  $R^2$  states that only 58% of the variation is explained in the estimations, which indicate that remittances alone is not enough to estimate the variation in economic growth, and including more control variables might change the relation between the independent and dependent variable.

Controlling for a set of economic variables for the ASEAN countries changes the estimation results slightly. In Table 5.2, estimation (1) implies a negative and insignificant relation between the dependent and independent variable. Here, the only significant variable is the negative effect of unemployment on economic growth, but the  $R^2$  shows that the model explains only parts of the variation in the dependent variable, 45%. Though, when including both country and time fixed effects, the  $R^2$  implies that large parts of the variation in the dependent variable is included in the model, 89,83%. The estimation still shows a negative and statistically insignificant impact of remittances, implying that a one percent increase in remittances contributes to a 0,04 percentage decrease in GDP growth. The only concern is the lack of observations, which could affect the estimations. Bearing in mind this problem, the estimation results are still strong considering the  $R^2$ , and I assume that these results give an indication that remittances have an effect on the economy in ASEAN.

**Table 5.2:** Impact of remittances on GDP growth (OLS regression including control variables)

	(1) GDP growth	(2) GDP growth	(3) GDP growth	(4) GDP growth
<b>Remittances as percentage of GDP</b>	-0,0374 (0,0664)	0,2299 (0,1269)	-0,0928 (0,0780)	-0,0398 (0,1849)
<b>Control variables:</b>				
Income per capita	0,0526 (0,1537)	0,1122 (0,2212)	2,3204** (0,6077)	1,4013 (1,1237)
Domestic investments	0,4414 (0,2819)	0,8990* (0,4321)	1,9216* (0,7330)	1,2957 (1,1767)
Population growth	0,0488 (0,1328)	-0,4033 (0,2327)	-0,3501* (0,1568)	-0,4155 (0,2833)
Import as % GDP	-0,0939 (0,4822)	-1,1658 (0,9887)	2,8292* (1,0202)	0,3703 (2,4009)
Export as % GDP	-0,0072 (0,5618)	0,9140 (0,8945)	-0,9904 (0,7462)	1,0594 (1,8591)
Exchange rate	-0,0246 (0,0292)	0,1944 (0,2439)	0,4323** (0,1284)	0,3718 (0,3738)
Life expectancy	1,9870 (2,3415)	-4,1382 (4,9035)	-0,5965 (3,6258)	-4,5441 (7,0516)
Poverty	0,1419 (0,1120)	0,3788* (0,1490)	0,4409** (0,1366)	0,7137* (0,2684)
Unempl. rate	-0,2328* (0,0919)	-0,3572 (0,2049)	-0,2719 (0,1342)	-0,1685 (0,2701)
<b>Constant term</b>	-8,2394 (8,5903)	14,3702 (18,0468)	-13,7223 (12,4072)	6,4715 (27,7173)
<b>Country fixed effects</b>	No	Yes	No	Yes
<b>Time fixed effects</b>	No	No	Yes	Yes
Observations	47	47	47	47
R-squared	0,4538	0,6071	0,8610	0,8983
Adj. R-squared	0,3020	0,3975	0,5432	0,4153

\* p < 0,05; \*\* p < 0,01; \*\*\* p < 0,001. Standard errors in parenthesis.

The positive results of remittance for the OLS regressions in Table 5.1 and Table 5.2, 0,0129 and 0,2299 respectively, include only country fixed effects and can be supported by findings by Corray in 2012. Corray (2012) consider the impact of remittances on economic growth in South Asia (Bangladesh, India, Nepal, Maldives, Pakistan and Sri Lanka), and estimates the impact to be between 0,012 and 0,119, depending on which control variables included in the regression. Corray (2012) finds a strong and positive impact of remittances on economic

growth, and that increasing remittances as percentage of GDP increase the impact on economic growth. This correlation between larger share of remittances and the impact on GDP growth can change the estimation results in my regression, since the Philippines receive a larger share of remittances than the other countries in the dataset. Therefore, after testing for endogeneity problems, I will exclude the data from the Philippines from the regression to test whether this can change the OLS estimates. Even though, it can be argued from the OLS regressions in Table 5.1 and Table 5.2 that migrant remittances play a role in the economy.

#### **5.4.2 IV regression and endogeneity problems**

Ordinary Least Squares estimates are likely to be biased when any right side variable is endogenous. Moreover, it is possible to argue that the relationship between economic growth and remittances is unlikely to be unidirectional. As in the paper by Gupta et al. (2007), this issue is possible to tackle with a system estimation technique that allows for both economic growth and remittances to be determined simultaneously. The advantage with the two-stage least squares system is that both variables are determined endogenously.

Whether the estimation has endogeneity problems or not, will determine if the estimation are better with OLS or with IV regression. It is necessary to look at the two-stage least squares estimation before determining whether the estimations have an endogeneity problem or not. Table 5.3 shows the Instrumental Variable two-stage least squares estimations (IV 2sls).

Before estimating the IV 2sls regression, it is necessary to determine the relevance of the instrument, using a F-test on the instrument of interest, remittances as percentage of GDP. Here I use the “Rule of Thumb” to conclude, saying that the F-test value has to be greater than 10 for the instrument not to be weak or irrelevant. The calculation in STATA indicates  $F(1,13)=12,13$ , which is greater than 10. I assume from the F-test, that the instrument is relevant,  $Cov(Z_i, R_i) \neq 0$ , and I have already assumed that instrument is not correlated to unobserved variation,  $Cov(Z_i, \varepsilon_i) = 0$ .

In Table 5.3, estimation (1) include only control variables for both the first and second stage of the regression, while estimation (2) include country fixed effects in the second stage of the

regression. Estimation (3) and (4) include control variables and time fixed effects, but only regression (4) includes both time- and country fixed effects.

**Table 5.3:** IV 2sls regression with GDP growth as dependent variable and remittances as instrument

	(1) GDP growth	(2) GDP growth	(3) GDP growth	(4) GDP growth
<b>Instrument:</b>				
<b>Remittance as percentage of GDP</b>	-0,0223 (0,0424)	0,0346 (0,0819)	-0,0342 (0,0460)	0,1519 (0,0953)
<b>Control variables:</b>				
Income per capita	-0,1158 (0,0765)	-0,0786 (0,1540)	-0,0889 (0,0741)	0,6053 (0,4989)
Domestic investments	0,6800*** (0,1855)	0,8525*** (0,2541)	0,5510*** (0,1662)	0,4742 (0,3677)
Population growth	-0,0527 (0,0884)	0,0500 (0,1447)	-0,0911 (0,0877)	-0,2449 (0,1540)
<b>Constant term</b>	0,1609 (0,5984)	-0,3274 (0,7911)	0,6921 (0,5325)	-3,2027 (2,6027)
<b>Country fixed effects</b>	No	Yes	No	Yes
<b>Time fixed effects</b>	No	No	Yes	Yes
Observations	47	47	47	47
R-squared	0,2839	0,4487	0,6182	0,7521
Adj. R-squared	0,2148	0,2956	0,1218	0,1853

\* p < 0,05; \*\* p < 0,01; \*\*\* p < 0,001. Standard errors in parenthesis.

Instrumented: Remittances

Instruments: Income per capita, domestic capital, population growth, import and export as percentage of GDP, exchange rate, life expectancy, poverty rate and unemployment rate.

The same pattern as under the OLS method appears. The impact of remittances on economic growth is estimated to be insignificant. The domestic investment rate is the only control variable that has a positive significant impact on economic growth.

When country and time fixed effects are included in the estimation, the impact of remittances on economic growth are positive, implying that an one percent increase in remittances give an increase in GDP growth of 0,15 percent. Again the problem of few observations arises. The R<sup>2</sup> states that the estimation explains 75% of the variation. Therefore I assume validity

and that, as in the OLS method, the estimates give indications that remittances have an effect on economic growth.

After estimating the impact using both OLS and IV regression, the problem of endogeneity can be tested using several tests, including the Hausman test and the Durbin-Wu-Hausman test. Since the same estimation patterns appears in both the OLS method and the IV method, one can expect no endogeneity problems in the variable for remittances, and that the OLS gives unbiased and consistent estimates.

If the estimations have an endogeneity problem, we need to be able to reject the null hypothesis, in other words that the estimated p-values must be smaller than the significant level,  $p < 0,05$ .

**Table 5.4:** Hausman test for endogeneity problems

<b>Regressions:</b>	<b>chi-squared</b>	<b>prob &gt; chi-squared</b>
Regressions including control variables only	chi2(4) = 4,54	0,3384
Regressions including control variables and country fixed effects	chi2(10) = 7,04	0,7219
Regressions including control variables and time fixed effects	chi2(25) = 24,96	0,4648
Regressions including control variables, country- and time fixed effects	chi2(31) = 10,49	0,9998

**Table 5.5:** Durbin-Wu-Hausman tests for endogeneity

<b>Regressions:</b>	<b>Durbin chi2(1)</b>	<b>Wu-Hausman</b>
Regressions including control variables only	0,0363 p = 0,8490	F(1,41) = 0,0317 p = 0,8596
Regressions including control variables and country fixed effects	1,8380 p = 0,1752	F(1,35) = 1,4244 p = 0,2407
Regressions including control variables and time fixed effects	0,4857 p = 0,4858	F(1,19) = 0,1984 p = 0,6610
Regressions including control variables, country- and time fixed effects	1,6128 p = 0,2041	F(1,13) = 0,4619 p = 0,5086

H<sub>0</sub>: variables are exogenous

Table 5.4 and Table 5.5 indicate that we cannot reject the null hypothesis. Therefore, one can assume that there do not exist any endogeneity problems, and there is no causal relation between the economic growth and remittances as percentage of GDP. In other words, the

OLS method gives an unbiased and consistent estimate and these results can be used to conclude on the impact of remittances on economic growth.

As a brief summary before excluding the data from the Philippines, by adopting the empirical method by Gupta et al. (2007), I found that remittances as percentage of GDP has a positive impact on economic growth only when using control variables and country fixed effect. The  $R^2$  indicates that 60% of the variation in the dependent variable is explained by the estimation. From this, I presume that the estimate including control variables and country fixed effects are likely to be reliable and that remittances can have an impact on the economic growth in these ASEAN countries. The estimation is not statistically significant, and this might be of two reasons. The first is that with lack of observations can the OLS regression give too much attention to large outliers such as the size of the inflow of remittances into the Philippines. And the second is the possibility that inflow of remittances into the ASEAN countries do not have an effect on the economic growth in the region, except for the Philippines where Ang (2007) among others have found there to be a statistically significant effect of remittances on economic growth. Because of few observations, I have to be rather skeptical to the results.

By using both Ordinary Least Squares (OLS) method and Instrumental Variable (IV) method, I can control for endogeneity problems including causality. The Hausman test predicts no endogeneity problems, and from which it is possible to conclude that there is no causal relationship between economic growth and remittances in this case, and that the OLS method give valid results.

### 5.4.3 Estimation without the Philippines

Since the inflow of remittances into the Philippines are so much larger than into the rest of the ASEAN countries, I have concerns that the impact of remittances on economic growth relates more to the Philippines than the other countries.

Since the Philippines alone receive half of the remittances into ASEAN, it is necessary to see the effect of remittance on economic growth in the individual countries included in the OLS estimation. The regression does not include any control variables in the estimation, but I include a dummy for the country of interest to see the effect of remittances on the individual countries economy. If D1=1 then only Cambodia is included and if D2=1 then only Indonesia is included, and so on.<sup>20</sup>

$$\log(GDP\ growth_{it}) = \beta_0 + \beta_1 \log(rem_{it}) + D1_t + D2_t + D3_t + D4_t + D5_t + D6_t + D7_t$$

**Table 5.6:** Effect of remittances on GDP growth in the individual ASEAN countries (OLS regression)<sup>21</sup>

GDP growth in country:	Cambodia	Indonesia	Lao PDR	Malaysia	Philippines	Thailand	Vietnam
<b>Remittances as % of GDP</b>	0,3077* (0,1081)	-0,0471 (0,0599)	-0,0494 (0,0592)	-0,2615* (0,1195)	0,5108* (0,2089)	0,2023 (1,8378)	-0,0352 (0,1542)
<b>Constant term</b>	1,5459*** (0,1057)	1,4111*** (0,0982)	1,2852*** (0,1136)	1,2906*** (0,1399)	-0,2347 (0,4133)	5,2652* (2,3699)	6,7879*** (0,8790)
Observations	18	28	26	23	25	33	12
R-squared	0,3362	0,0232	0,0282	0,1858	0,2063	0,0004	0,0052

\* p < 0,05; \*\* p < 0,01; \*\*\* p < 0,001. Standard errors in parenthesis.

Table 5.6 shows that the inflow of remittances has a positive and significant effect on the Philippine economy and the Cambodian economy, and the estimates also show a positive effect of remittances on economic growth in Thailand. That remittances have a negative and statistically significant impact on economic growth in Malaysia, relate to the large outflow of remittances from the Malaysian economy. Vietnam received the second largest amount of remittances during the 2000s. That the effect in Vietnam is found to be weakly negative

<sup>20</sup> See Appendix 1 for the list of countries

<sup>21</sup> From own STATA calculations, see examples in Appendix 4



could relate to the lack of available data on the inflow of remittances to Vietnam before 2000 and the estimation show that in the case of Vietnam is only 0,5% of the variation explained. Because of few observations for each country are the estimations not necessarily valid, but we can expect that remittances have the greatest effect on the economic growth in the Philippines since the inflow is so much larger.

Further in this section, I will exclude the data from the Philippines in the regressions and therefore I need to check for endogeneity problems again. The results from the Hausman test is stated in Table 5.7 and claims that there is no endogeneity problems when regression without data from the Philippines. Hence, OLS method is sufficient and unbiased.

**Table 5.7:** Hausman test for endogeneity problems in regression without data from the Philippines

<b>Regressions:</b>	<b>chi-squared</b>	<b>prob &gt; chi-squared</b>
Regressions including control variables only	chi2(4) = 2,22	0,6960
Regressions including control variables and country fixed effects	chi2(9) = 6,05	0,7351
Regressions including control variables and time fixed effects	chi2(24) = 13,57	0,9559
Regressions including control variables, country- and time fixed effects	chi2(29) = 5,96	1,0000

To estimate the effect of remittances of economic growth in the ASEAN countries excluding the Philippines, I include the same control variables as in the Ordinary Least Squares estimation before. In other words, include controls for income per capita, domestic investments, population growth, trade openness, exchange rate, life expectancy, poverty, and unemployment rate. Regression (1) in Table 5.8 includes only the control variables, while (2) includes country fixed effects. In (3) and (4) time fixed effects are incorporated.

Excluding the data from the Philippines make a difference, but not of the magnitude as expected. The estimations are still not statistically significant. Without the Philippines statistics regression (4) including both time and country-fixed effects, shows a positive impact of remittances on economic growth, but the estimation is insignificant. At the same time predicts the  $R^2$  that 92% of the variation in the dependent variable, is explained by the model, which implies strong and reliable results.

**Table 5.8:** Impact of remittances on GDP growth excluding data from the Philippines (OLS regression)

	(1) GDP growth	(2) GDP growth	(3) GDP growth	(4) GDP growth
<b>Remittances as percentage of GDP</b>	0,0500 (0,0657)	0,2105 (0,1287)	-0,0386 (0,0844)	0,0756 (0,2801)
<b>Control variables:</b>				
Income per capita	0,2220 (0,1785)	-0,1631 (0,2802)	1,5938 (1,3012)	-0,3090 (2,9311)
Domestic investments	0,4510 (0,2832)	1,0448* (0,4540)	-0,6946 (1,0954)	0,1615 (1,9940)
Population growth	-0,0886 (0,1273)	-0,3073 (0,2349)	-0,4182* (0,1752)	-0,3163 (0,3693)
Import as % of GDP	0,0514 (0,4540)	-0,2549 (1,0356)	2,0129 (1,6595)	-1,6375 (5,6269)
Export as % of GDP	0,2804 (0,5275)	0,4251 (0,9196)	-0,0187 (1,0019)	3,0420 (4,1133)
Exchange rate	-0,0741* (0,0318)	0,1030 (0,2586)	0,1580 (0,3068)	0,3510 (0,5390)
Life expectancy	-0,3011 (2,2549)	-1,7388 (5,2686)	-4,7513 (5,1364)	-7,3742 (10,8655)
Poverty	0,3459* (0,1300)	0,2941 (0,1784)	0,6575** (0,1874)	0,8716 (0,5210)
Unemployment rate	-0,1564 (0,0849)	-0,2425 (0,2199)	-0,1265 (0,2445)	-0,0714 (0,3969)
<b>Constant term</b>	-1,545 (8,1163)	4,7460 (19,0671)	4,1198 (15,1743)	22,2756 (47,6246)
<b>Country fixed effects</b>	No	Yes	No	Yes
<b>Time fixed effects</b>	No	No	Yes	Yes
Observations	40	40	40	40
R-squared	0,5031	0,5975	0,8922	0,9273
Adj. R-squared	0,3317	0,3459	0,4743	0,0548

\* p < 0,05; \*\* p < 0,01; \*\*\* p < 0,001. Standard errors in parenthesis.

A problem related to excluding the Philippines, is the lack of necessary observations. The number of observations decreases to 40, and this might not give the right picture in the ASEAN countries. Vietnam receives the second most remittances among the countries, but have few observations. With possibility of accessing these missing observations, the results in Table 5.8 might not have been dependent on the Philippines.

The small number of observations gives reasons to doubt the lack of significant results. Studies have found a positive relation between remittances and economic growth, also in some of the ASEAN countries, and this makes a greater reason to suspect that a larger set of available observations could have made estimation (4) in Table 5.8, statistically significant. Ying-Yin and Chee-Keong (2013) found a statistically significant influence of remittances on economic growth in Malaysia using autoregressive distributed lag (ARDL) model and Granger Causality test in the time period between 1975 and 2009. Pfau and Giang (2009) found a positive impact of remittances on economic inequality, which they implies that with new development policies can have further positive effects. The findings in Table 5.8 that are positive but insignificant, and with a larger dataset the results could have been stronger and consistent to these other studies.

## 6 Conclusion

This thesis extends the existing literature by identifying the contribution of migrant remittances on economic growth in ASEAN. The main purpose of this thesis is to find the impact in seven of the countries in the Association of Southeast Asian Nations, using panel data for the time period from 1980 to 2012, including a set of control variables. Statistics from the United Nations show that there are about 214 million international migrants, which constitutes roughly 3 % of the world's population (IOM, 2013), and these migrants remit an enormously amount of money back home. The flows of remittances in the world have rapidly increased in the last couple of decades. In 1990 the amount was estimated to be US\$ 67,8 billion. This number was doubled during in the next ten years, amounting to US\$ 135,5 billions in 2000.

The first part of the empirical analysis focus on the seven ASEAN countries in the dataset, to find the impact of remittances as percentage of GDP on GDP growth. The results are relatively weak due to lack of observations, but since the findings are similar to other studies, I assume them to be valid and that remittances can have an effect on economic growth. The findings in this thesis are confirmed by other studies on the same topic. Salahuddin (2013) find a long-run positive relationship confirming that remittance spurs economic growth, with evidence from Bangladesh, India, Pakistan and the Philippines, while Jongwanich (2007) find strong evidence that remittances have a significant effect on poverty reduction in South Asia, but only a marginal impact on economic growth. These mixed results, confirms the mixed results found in this thesis and that the large differences in ASEAN could affect the estimation. The flow of remittances into the region vary largely, as the Philippines rank as the third largest receiver globally in 2012, followed by Vietnam (number 13, in 2011), Indonesia (number 15), Thailand (number 25), Malaysia (number 62), Cambodia (number 112) and Lao PDR (number 130). The insignificant estimation results can be because of the large differences, or just because the inflow of remittances do not have the same impact on the economic growth in all the ASEAN countries.

The second part of the empirical analysis exclude the raw data from the Philippines because of the large differences between the amounts of remittances the Philippines receive and the amount the other countries receive. Remittances have been a pillar in the Philippine

economy, and for many families and household it is the main income source. Remittances from Overseas Filipino workers (OFWs) have had a huge impact on the economy in the Philippines. Without the Philippines the estimation are still mixed, but insignificant. Studies like the Ying-Yin and Chee-Keong (2013) found a positive and significant impact in Malaysia, and it is therefore possible to assume that the estimations in this thesis are insignificant due to few observations, and that an expansion of the dataset would make the results significant.

For further studies on this topic it would be natural to access raw data on all the ASEAN countries for the entire time period. To find available data over several decades have been a huge challenge for me, and extending the dataset could give a better and more robust analysis. Another possibility is to include more economic control variables that could have an effect economic growth, such as civil war or armed conflicts, inflation rate and more control variables describing human capital and migration. This could give a better basis for why some migrants choose to remit and others not remit, and how this affects the ASEAN countries differently.

# Bibliography

Abinales, P. N. and D. J. Amoroso (2005):

*State and society in the Philippines*, Oxford (UK): Rowman & Littlefield Publishers, Inc.

Acemoglu, D. (2011):

“14.452 Economic growth: Lectures 2 and 3: The Solow Growth Model”, MIT, accessed 01.05.15, <http://economics.mit.edu/files/7181>

Adelman, I. and J. E. Taylor (1990):

“Is structural adjustment with a human face possible? The case of Mexico”, *Journal of Development Studies*, 26 (3), 387-407

Ang, A. P. (2007):

“Workers’ remittances and economic growth in the Philippines”, accessed 13.05.15, [http://degit.sam.sdu.dk/papers/degit\\_12/C012\\_029.pdf](http://degit.sam.sdu.dk/papers/degit_12/C012_029.pdf)

Antonides, A., G. Seshan, R. Weber and R. Zubrickas (2013):

“On altruism and remittances”, University of Zurich Departments of Economics, Working Paper No. 131.

ASEAN (2014a):

“History”, accessed 25.04.15, <http://www.asean.org/asean/about-asean/history>

ASEAN (2014b):

“ASEAN Statistics”, accessed 25.04.15, <http://www.asean.org/resources/category/asean-statistics>

Bangasao, I. F. (2005):

Chapter 6 Migration and Development: the Philippine experience, In S. M. Maimbo and D. Ratha (eds.), *Remittances – Development impacts and future prospects*, Washington D. C.: The World Bank.

Bangko Sentral ng Pilipinas (2015):

“Key statistics: overseas Filipinos (OF) remittances”, accessed 04.03.15, <http://www.bsp.gov.ph/statistics/keystat/ofw.htm>

Bangko Sentral ng Pilipinas (2012):

“Consumer Expectancy Survey, Fourth quarter 2012”, accessed 14.03.15, [http://www.bsp.gov.ph/downloads/Publications/2012/CES\\_4qtr2012.pdf](http://www.bsp.gov.ph/downloads/Publications/2012/CES_4qtr2012.pdf)

- Barajas, A., R. Chami, C. Fullenkamp, M. Gapen and P. Montiel (2009):  
“Do workers’ remittances promote economic growth?” IMF Working Paper, Middle Eastern and Central Asia Department, 09/153.
- Barguelligil, A., M. H. Zaiem and M. Zmami (2013):  
Remittances, education and economic growth: a panel data analysis, *Journal of Business Studies Quarterly*, 4 (3), 129-139.
- Carling, J. (2008):  
The determinants of migrant remittances, *Oxford Review of Economic Policy*, 24 (3), 582-599.
- Castles, S., H. de Haas, M. J. Miller (2014):  
*The age of migration: international population movements in the modern world*, fifth edition, London: Palgrave Macmillan.
- Catrinescu, N., M. Leon-Ledesma, M. Piracha and B. Quillin (2006):  
Remittances, institutions and economic growth, *IZA Discussion Paper*, No. 2139.
- Cooray, A. (2012):  
The impact of migrant remittances on economic growth: evidence from south Asia, *Review of International Economics*, 20 (5), 985-998.
- Dahal, P. (2014):  
The impact of remittances on economic growth in Nepal: an analysis of an significant basis of development, *Asia Pacific Journal of Public Administration*, 36 (4), 261-282.
- Dang, G. and L. Sui Pheng (2015):  
*Infrastructure investments in development economies*, Singapore: Springer-Verlag Singapur.
- the Economist (2010):  
“Remittances: Transfer fees”, accessed 30.04.2015,  
<http://www.economist.com/blogs/dailychart/2010/12/remittances>
- the Economist (2007):  
“Ten years on: how Asia shrugged off its economic crisis”, accessed 03.05.14,  
<http://www.economist.com/node/9432495>
- Eversole, R. (2005):  
“Direct to the poor” Revisited: Migrant remittances and development assistance, In L. Trager (ed.) *Migration and economy: global and local dynamics*, Oxford (England): AltaMira Press.
- Frontline:

- “The crash – timeline of the panic”, accessed 23.02.15,  
<http://www.pbs.org/wgbh/pages/frontline/shows/crash/etc/cron.html>
- Gammeltoft, P. (2002):  
 Remittances and other financial flows, *International Migration*, 40 (5), 181-211.
- Giuliano, P. and M. Ruiz-Arranz (2005):  
 Remittances, financial development and growth, *IMF Working Paper*, 05/234.
- Glytsos, N. P. (2002):  
 Dynamic effects of migrant remittances of growth: an econometric model with an application to Mediterranean countries, *Center of Planning and Economic Research (KEPE)*, Discussion Paper No.74.
- Gupta, S., C. Pattillo and S. Wagh (2007):  
 Impact of remittances on poverty and financial development in Sub-Saharan Africa, *IMF Working Paper*, WP/07/38.
- de Haas, H. (2008):  
 “Migration and development: a theoretical perspective”, International Migration Institute, Working Paper No. 9, University of Oxford.
- Hansakul, S. (2013):  
*ASEAN economic community (AEC): a potential game changer for ASEAN countries*, Frankfurt am Main (Germany): Deutsche Bank AG.
- Hill, C. W. L.:  
 “The Asian Financial Crisis”, accessed 23.02.15,  
<http://www.wright.edu/~tdung/asiancrisis-hill.htm>
- Hill, R. C., W. Griffiths and G. Judge (2001):  
*Undergraduate econometrics*. New York: John Wiley & Sons Inc.
- Hsieh, P. L. (2013):  
 “Does free trade matter for poverty reduction? The case of ASEAN”, accessed 26.04.15,  
<http://workspace.unpan.org/sites/Internet/Documents/S30012%20Does%20Free%20Trade%20Matter.pdf>
- Hægeland, T. (2000):  
 ””Ny” vekstteori: Et nytt forskningsprogram eller naturlig progresjon?: Utvikling innenfor økonomisk vekstteori vurdert i forhold til Imre Lakatos’ vitenskapsfilosofi (In Norwegian: ”New” growth theory: A new research or natural progression?: Development in economic growth theory considered in relation to Imre Lakatos’



- philosophy of science)", Statistisk Sentralbyrå, Forskningsavdelingen/Seksjon for mikroøkonometri, 2000/56.
- International Fund for Agricultural Development (IFAD)(2014):  
 "Sending money home to Asia: trends and opportunities in the world's largest remittances marketplace", accessed 03.05.15,  
[http://www.ifad.org/remittances/pub/money\\_asia.pdf](http://www.ifad.org/remittances/pub/money_asia.pdf)
- International Monetary Fund (IMF)(2011):  
 "Lowering the cost of sending money home", accessed 30.04.2015,  
<http://www.imf.org/external/pubs/ft/fandd/2011/06/pdf/picture.pdf>
- International Organization of Migration (IOM) (2015):  
 "Key migration terms", accessed 26.01.15,  
<http://www.iom.int/cms/en/sites/iom/home/about-migration/key-migration-terms-1.html#Migrant>
- International Organization of Migration (IOM) (2013):  
*Country migration report*, Makai City/Quezon City (Philippines): International Organization of Migration/ Scalabrini Migration Center.
- Johnson, G. E. and W. E. Whitelaw (1974):  
 Urban-Rural income transfers in Kenya: an estimated-remittances function, *Econ Development and Cultural Change*, 22, 473-479.
- Jongwanich, J. (2007):  
 Workers' remittances, economic growth and poverty in developing Asia and the Pacific countries, *UNESCAP Working Paper*, WP/07/01.
- Konica, N. and R. K. Filer (2005):  
 "Albanian emigration: causes and consequences", CERGE-EI Working Paper, Prauge, accessed 01.04.15,  
[http://www.iza.org/conference\\_files/amm2006/filer\\_r1648.pdf](http://www.iza.org/conference_files/amm2006/filer_r1648.pdf)
- Koser, K. (2007):  
*International migration, a very short introduction*. New York: Oxford University Press.
- Krugman, P. (2008):  
*The return of depression economics and the crisis of 2008*, London: Penguin Books.
- Lamvik, G. (2012):  
 The Filipino seafarer: a life between sacrifice and shopping, *Anthropology in Action*, 19 (1), 22-31.

- Lowell, B. L. and R. O. de la Garza (2000):  
 “The developmental role of remittances in U.S. Latino communities and in Latin American countries”, *Inter-American Dialogue and the Tomás Rivera Policy Institute*, accessed 06.04.15, <http://www.thedialogue.org/PublicationFiles/Final%20report.pdf>
- Lucas, R. E. B. and O. Stark (1985):  
 Motivations to remit: evidence from Botswana, *Journal of Political Economy*, 93 (5), 901-918.
- Maimbo, S. M. and D. Ratha (2005):  
*Remittances – Development impact and future prospects*, Washington D.C.: The World Bank.
- Massey, D. S., et al. (1993):  
 Theories of international migration: a review and appraisal, *Population and Development Review*, 19 (3), 431-466.
- Orbeta, A. (2008):  
 Economic impact of international migration and remittances on Philippine household: what we thought we knew, what we need to now, In Asis, M. M. B. and F. Baggio (eds.) *Moving out, back and up: International migration and development prospects in the Philippines*. Quezon City (Philippines): Scalabrini Migration Center.
- Orrenius, P. M. et al. (2009):  
 Do remittances boost economic development? Evidence from Mexican states, *Research Department Federal Reserves Bank of Dallas*, Working Paper 1007.
- Posel, D. (2001):  
 How do household work? Migration, the household and remittance behaviour in South Africa, *Social Dynamics*, 27 (1), 165-189.
- Pfau, W. D. and L. T. Giang (2009):  
 Determinants and impact of international remittances on household welfare in Vietnam, *International Social Science Journal*, 60 (197-198), 431-443.
- Ratha, D. (2013):  
*The impact of remittances on economic growth and poverty reduction*, Washington D.C.: Migration Policy Institute.
- Ratha, D. (2005):  
 Chapter 1 Workers’ remittances: an important and stable source of external development finance, In S. M. Maimbo and D. Ratha (eds.) *Remittances – Development impact and future prospects*, Washington D. C.: The World Bank.

Ray, D. (1998):

*Development economics*, Princeton, New Jersey: Princeton University Press.

Reichstein, T. (2011):

“Econometrics – Endogeneity”, presentation at the Copenhagen Business School, accessed 08.05.15,

[http://www.soc.aau.dk/fileadmin/user\\_upload/kbm/VoF/Kurser/2011/kvantitative-metoder/Slides/TR-Endogeneity.pdf](http://www.soc.aau.dk/fileadmin/user_upload/kbm/VoF/Kurser/2011/kvantitative-metoder/Slides/TR-Endogeneity.pdf)

Salahuddin, M. (2013):

Empirical link between growth and remittances: evidence from panel data, *Journal of Applied Business and Economics*, 14 (5), 19-29.

Siddique, A., E. A. Selvanathan and S. Selvanathan (2012):

Remittances and economic growth: empirical evidence from Bangladesh, India and Sri Lanka, *Journal of Development Studies*, 48 (8), 1045-1062.

Smukkestad, O. (2008):

*Utvikling eller avvikling? En innføring i økonomisk og politisk utviklingsteori* (In Norwegian: *Development or liquidation? An introduction to economical and political development theory*), Oslo: Gyldendal Akademiske / Gyldendal Norsk Forlag.

Stock, J. H. and M. M. Watson (2012):

*Introduction to econometrics*, third edition. Essex (England): Pearson Education Limited.

Strubhaar, T. and F. P. Vādean (2006):

International migrant remittances and their role in development, In OECD, *Migration, remittances and development*, OECD Publishing.

Szczepanski, K. (2015):

“Ferdinand Marcos”, accessed 29.03.15,

<http://asianhistory.about.com/od/profilesofasianleaders/p/fmarcosbio.htm>

Taylor, J. E. and P. L. Martin (2001):

Human capital: migration and rural population change, In B. L. Gardner and G. C. Rausser (eds.) *Handbook for agricultural economics*. New York: Elsevier Science.

Tchantchane, A., G. Rodrigues and P. C. Fortes (2013):

An empirical study of the impact of remittance, educational expenditure and investment on growth in the Philippines, *Applied Econometrics and International Development*, 13 (1), 173-186.

Yaseen, H. S. (2012):

The positive and negative impact of remittances on economic growth in MENA countries, *The Journal of International Management Studies*, 7 (1), 7-14.

Ying-Yin, K. and Choong Chee-Keong (2013):

The nexus between worker remittances and economic growth in Malaysia, *Prosiding Persidangan Kebangsaan Ekonomi Malaysia Ke*, 8 (1), 507-515.

World Bank (2015):

“Remittance Prices Worldwide”, accessed 01.04.15,

<http://remittanceprices.worldbank.org/en/countrycorridors>

### **Raw data retrieved from**

CEIC database:

“Database”, accessed 01.01-15.05.15

<http://webcdm.ceicdata.com/cdmWeb/dataManager.html?languageCode=en>

The World Bank:

“Databank”, accessed 01.01-15.05-15, <http://data.worldbank.org>

# Appendix

## Appendix 1: Country descriptions

**Table A1:** List of countries in dataset

Country	Country number
Cambodia	1
Indonesia	2
Lao PDR	3
Malaysia	4
Philippines	5
Thailand	6
Vietnam	7

## Appendix 2: Data descriptions

**Table A2:** Data descriptions of dataset

Variable	Obs	Mean	Std. Dev.	Min	Max
Country	231	4	2.004343	1	7
Year	231	1996	9.542582	1980	2012
GDPgrowth	207	3.730521	3.652382	-14.38515	11.4946
Percapitai~e	203	1292.501	1349.375	78.13811	7979.857
GCFGDP	199	25.17461	7.684175	6.178862	43.6401
REMGDP	184	2.337469	3.094393	0	13.32405
Population~h	231	1.934777	.7321536	-1.13512	3.967099
IMPGDP	208	47.42012	21.33401	6.341464	100.5974
EXPGDP	208	45.53205	25.56698	2.764228	121.3118
Inflationr~e	191	8.530471	13.52617	-1.71	128.42
Lifeexpect~y	231	66.06862	7.297584	29.61354	75.60668
Poverty	62	22.20613	19.23864	0	68.16
Unemployment	151	4.369139	2.989162	.1	11.9
Cambodia	231	.1428571	.350687	0	1
Indonesia	231	.1428571	.350687	0	1
Lao	231	.1428571	.350687	0	1
Malaysia	231	.1428571	.350687	0	1
Philippines	231	.1428571	.350687	0	1
Thailand	231	.1428571	.350687	0	1
Vietnam	231	.1428571	.350687	0	1

### Appendix 3: Cost of remitting to the Philippines

**Table A3:** Cost of remitting money in common corridors to the Philippines

<b>Cost of sending about USD 200 to the Philippines (2014 estimates)</b>					
From Country	Operator	Amount	Transfer fee	Total cost (with exchange rate margin)	Percentage cost of sent amount
<b>Qatar</b>	Xpress Money	USD 200	USD 4,12	USD 4,95	2,47%
	Arabian Exchange Company	USD 200	USD 6,32	USD 9,63	4,82%
	Commercial Bank	USD 200	USD 6,87	USD 14,78	7,39%
	Western Union	USD 200	USD 4,95	USD 16,15	8,01%
<b>United States</b>	Citibank	USD 200	USD 0	USD 0	0%
	Remitly	USD 200	USD 4,99	USD 5	2,50%
	Western Union	USD 200	USD 0	USD 5,24	2,62%
	PNB (Philippines National Bank)	USD 200	USD 11,14	USD 11,14	5,57%
<b>Australia</b>	Aussi Forex and Finance	USD 158	USD 3,95	USD 4,66	2,95%
	Expeed Global	USD 158	USD 4,74	USD 5,09	3,22%
	mHITs Remit	USD 158	USD 5,49	USD 5,53	3,5%
	Western Union	USD 158	USD 3,95	USD 6,84	4,33%
<b>Canada</b>	Metro Remittance	USD 165	USD 5,78	USD 5,76	3,49%
	Reliable Peso Remit	USD 165	USD 6,6	USD 6,59	3,99%
	Western Union	USD 165	USD 6,6	USD 7,61	4,61%
	Royal Bank of Canada	USD 165	USD 37	USD 41,9	25,39%
<b>Japan</b>	Forex Japan	USD 141	USD 8,1	USD 7,79	5,52%
	SBI remit	USD 141	USD 6	USD 7,87	5,58%
	PNB (Philippines National Bank)	USD 141	USD 16	USD 19,37	13,74%
	Japan Post Bank	USD 141	USD 21	USD 22	15,60%

Source: Remittance Prices Worldwide, The World Bank  
<http://remittanceprices.worldbank.org/en>

## Appendix 4: Individual country regression of remittances on GDP growth

**Table A4: STATA regression on individual countries effect of remittances on GDP growth**

```
. reg loggrowth logrem if Philippines==1
```

Source	SS	df	MS	Number of obs =	25
Model	2.5669251	1	2.5669251	F( 1, 23) =	5.98
Residual	9.87784996	23	.429471737	Prob > F =	0.0226
				R-squared =	0.2063
				Adj R-squared =	0.1718
Total	12.4447751	24	.518532294	Root MSE =	.65534

loggrowth	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
logrem	.5107523	.2089157	2.44	0.023	.0785773 .9429274
_cons	-.2346681	.4132596	-0.57	0.576	-1.089561 .6202245

```
. reg loggrowth logrem if Thailand==1
```

Source	SS	df	MS	Number of obs =	29
Model	.125763653	1	.125763653	F( 1, 27) =	0.44
Residual	7.73948518	27	.286647599	Prob > F =	0.5133
				R-squared =	0.0160
				Adj R-squared =	-0.0205
Total	7.86524884	28	.280901744	Root MSE =	.53539

loggrowth	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
logrem	-.1692623	.2555388	-0.66	0.513	-.6935846 .35506
_cons	1.609344	.1045964	15.39	0.000	1.394729 1.823958