

THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF FINANCE

IMPACT OF REMITTANCES IN DEVELOPING ECONOMIES:
EFFECTS ON PRODUCTIVITY

LIANG WEN CHEN
SPRING 2016

A thesis
submitted in partial fulfillment
of the requirements
for a baccalaureate degree
in Finance
with honors in Finance

Reviewed and approved* by the following:

Alessandro DAVIS
Assistant Professor of Economics
Thesis Supervisor

Brian Davis
Clinical Associate Professor of Finance
Honors Adviser

* Signatures are on file in the Schreyer Honors College.

ABSTRACT

Remittances are important to developing economies. With the number of remittances and migrants increasing every year, the impact of remittances has still yet to be pinpointed. Prior research has shown that increases in remittances are less impactful than losses in remittances for developing countries for GDP. They provide increased investment and consumption thresholds for families. In this thesis, we used a regression analysis to determine how remittances impact productivity of developing countries. Then the countries were analyzed based on standard of living, infrastructure and labor force. These countries were selected based on their reliance on remittances which is based on percent of GDP. Results indicate that this relationship differs from country to country and overall standard of living. Countries with a lower remittance to GDP ratio and standard of living are found to be more reliant on remittances than countries with a higher remittance to GDP ratio.

Results indicate that even though developing economies are heavily reliant on remittances, the relationship between productivity and remittances is nonexistent due to households spending most of their remittance on present consumption. In order for countries to increase productivity households have to allocate some of their remittances to be invested back into the economy (i.e. starting a business). This was found to be true throughout the developing economies.

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ACKNOWLEDGEMENTS

I would like to thank Professor Brian Davis for helping me through this process of selecting a thesis topic and Professor DAVIS for reading and developing the regression.

Professor Brian Davis has been instrumental in guiding me through the thesis process and making sure that he was always available to help. Professor DAVIS also helped me throughout this process as well through countless emails and I am indebted to him for that.

I finally want to thank my family and friends for believing in me throughout my years at Penn State. Their support was important in keeping me motivated and truly encouraged me to continue to research and write my thesis. Thank you.

Chapter 1

Introduction

Remittances are a form of income that households rely on for consumption. In 2012, migrants sent \$401 billion remittances to their home countries which acts as a tool to reducing the “scale and severity of poverty in the developing world.” Developing economies require remittances and they are especially important in helping developing economies grow. The World Bank estimates that remittances to developing countries totaled \$436 billion in 2014 and will continue to increase by 4.6% from 2015-2016. In 2014, global remittances increased to \$583 billion. [7].

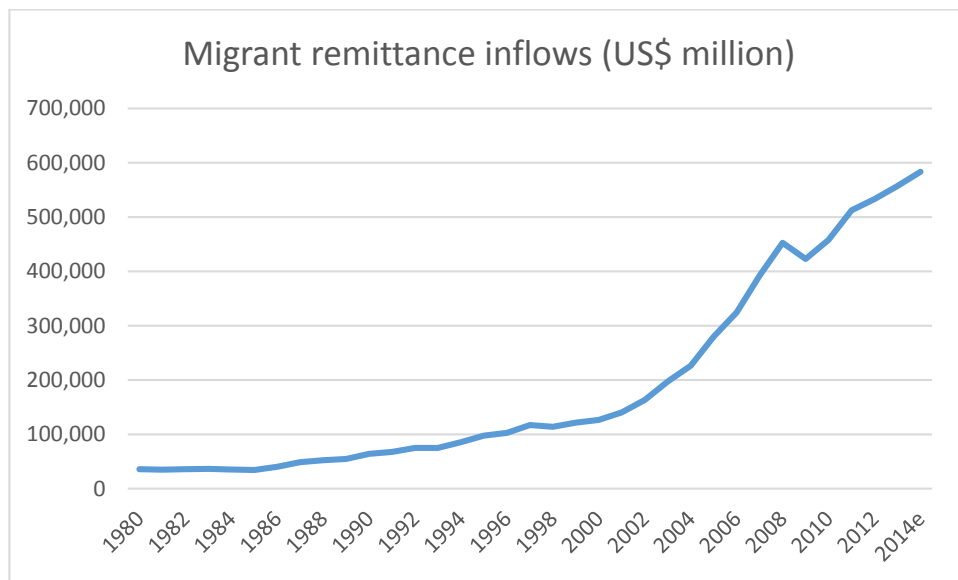


Figure 1-1: Total world remittance amounts from 1980 – 2014 (World Bank)

What exactly classifies as a remittance? A remittance is a payment that is sent from one country where a migrant worker works to his or her household in their home country. This money

can then be used either for consumption (purchasing food or consumable goods) or investment (paying money for equipment or product to sell for revenue).

The purpose of this thesis is to find out whether or not remittances have any effect on productivity in developing countries. For countries reliant on remittances, this is important because if countries can increase their productivity, they will be able to create more output using less resources and the country as a whole can benefit from that. This is relevant to the Balassa Samuelson Effect which states that countries with high productivity growth can experience high wage growth, leading to higher real exchange rates.

Productivity will be covered in the next section and how we define output over input. This thesis will then cover why remittances are important to developing economies. The regression analysis is run for a selection of countries and the importance of this is to examine the relationship between remittances and productivity. Because remittances are a private investment, each country will be analyzed for how households spend these remittances. Finally, Chapter 6 will cover future of research in remittances and the weaknesses of this research methodology.

Productivity

Productivity is a measure of output to input. In this paper we seek to find the relationship between remittances to productivity in developing economies. Remittances are a private form of funding to households and can either be used for consumption or investment. What this thesis seeks to research is how this money is spent and whether or not it does affect productivity. This is contingent on household spending and how households allocate remittance money.

Productivity is complicated, especially for measuring countries with different currencies,

education systems and work hours. For output, there is debate on whether or not using GDP is a significant measure of output – however in most cases, it is the only standardized measure that is useful. In this thesis we used GDP in USD as the output of all countries.

Dividing output by input is how productivity is calculated. For input, we used the number of people in the labor force as opposed to labor hours. Labor hours was difficult to obtain and due to a lot of countries not having this information we resulted to using number of laborers as the input.

Productivity to any country is extremely important. For companies, this means resources have been used efficiently. For countries, this means using technology and the labor force to create output (in this case, GDP in dollar values). One thing that remains difficult to manage is the role of workers and how to most effectively use those workers so the country can grow. For developing economies such as Tajikistan, productivity has been increasing significantly since 2000 – 2015 but reliance on remittances have also increased as well. As shown in Figure 1-4, remittance inflows in Tajikistan make up 41.70% of their GDP and according to the World Bank, are forecasted to sharply decline due to international tension in Russia [10].

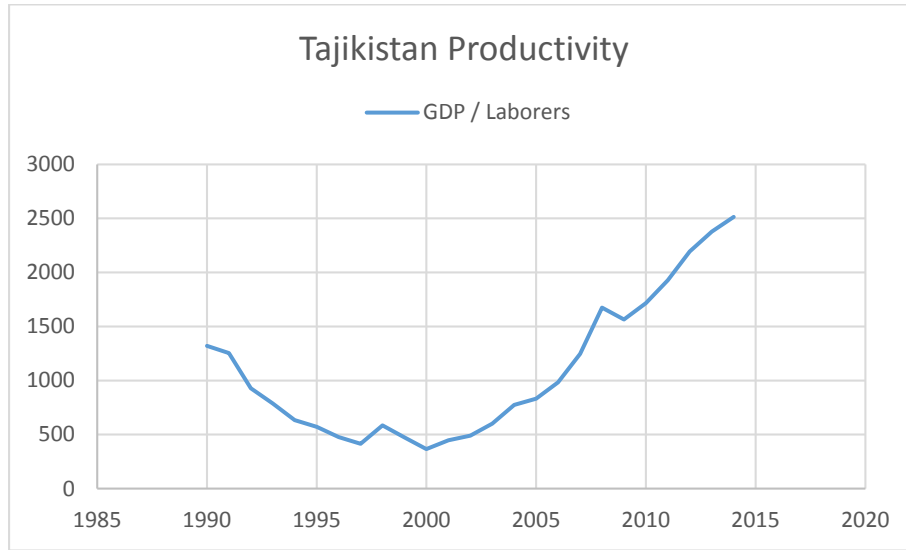


Figure 1-2: Tajikistan Productivity from 1990 – 2014 (World Bank)

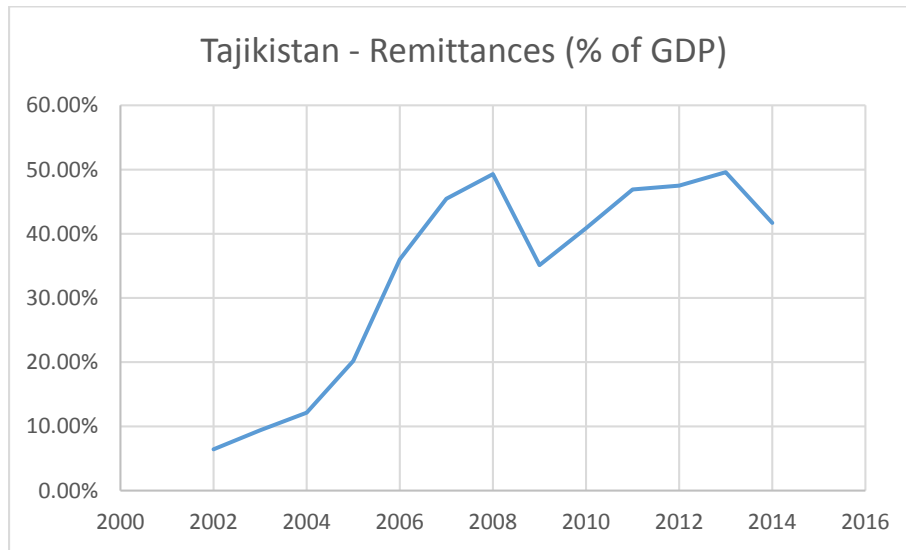


Figure 1-3: Tajikistan Remittances (% of GDP) from 2002 - 2014 (World Bank)

Impact of Remittances

Remittances are an important part of emerging economies because of the impact of these extra cashflows to consumers. First, they allow consumers to have a safety net and increases the wealth of families in home countries. Remittances are a form of “insurance” to receiving families and allow them to consume above their own personal income. The positive effects of remittances were recognized in 2009 by the World Bank: countries with higher remittance inflows may borrow more than countries with lower remittance inflows.

Even though remittances have little impact on developed countries, for developing countries, remittances increase a country’s creditworthiness. One downside to remittances is the transaction costs. However, these costs have steadily declined over time.

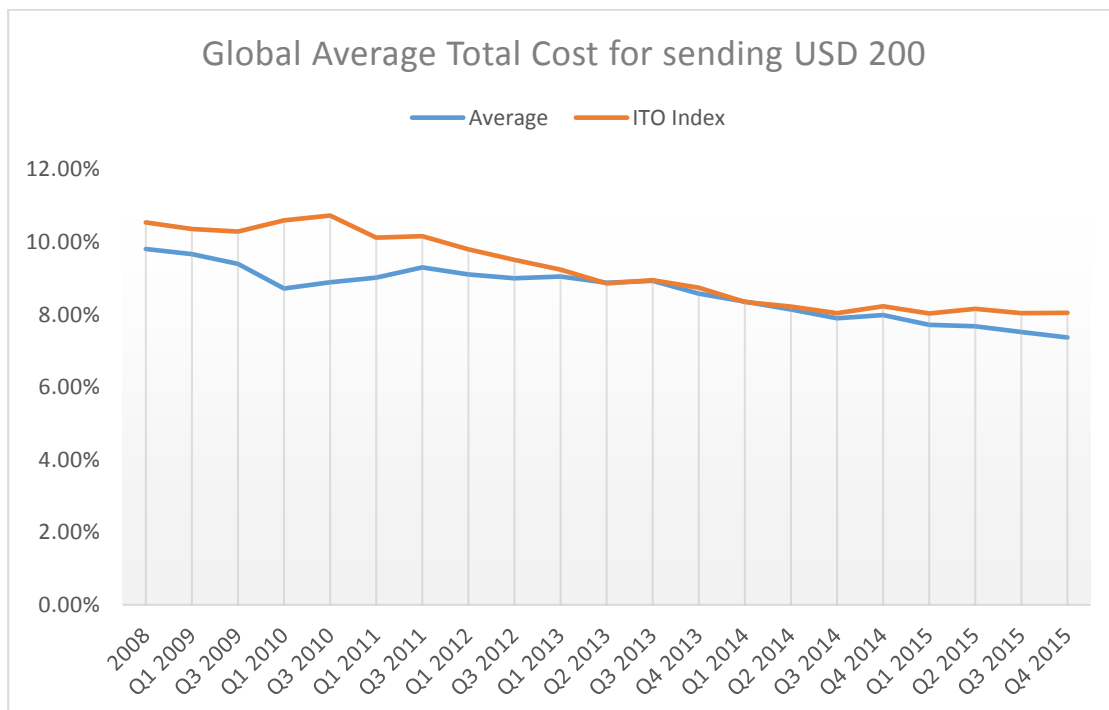


Figure 1-4: Global Average Total Cost for sending USD 200

Looking at Figure 1-3, the total average remittance cost in 2008 was recorded at 9.81% and the International MTO Index at 10.54%. Those numbers have since dropped to 7.37% and 8.05%. These numbers continue to decline due to increased efficiency in transfers and the accessibility of online transfers. [14].

Remittances have proven to increase a country's creditworthiness and "significantly corresponds with positive health outcomes, especially for children." This was measured by the birth weights of children: Mexico and Sri Lanka's babies had higher birth weights which correlated with higher remittance inflows. According to the Migration Policy Institute, a cross-country study of 71 developing countries found that a "10 percent increase in per capita official international remittances would produce a 3.5 percent decline" of people living in poverty. [9].

The impact of remittances is even more than official development assistance: in 2010, migrants sent more than "\$325 billion to their countries of origin." The impact of remittances on growth of a country happens in three ways: Capital accumulation, labor force growth, and total factor productivity growth. Remittances lower the cost of capital in the home country. Households use remittances and this increases their leisure time at home. Total factor productivity growth is affected by remittances because not all remittances are used for investment and investment decisions by recipients of the money may not be as efficient so this means that remittances "may result in greater financial development." [7].

In the data portion of this thesis, whether or not remittances are used for investment or consumption will be looked at. What we expect is that households in developing economies spend most of their remittances on consumption and some on investment. This allocation of money will allow households to increase their standard of living and increase their income in the long run.

Migrants

According to the International Labor Organization, there are about 232 million migrants in the world in 2013. Of those 232 million migrants, there are only 207 million that are age 15+ and 150 million migrants who are actually workers: meaning people who are employed or are currently seeking employment in their country of residence. The distribution of migrant workers is also important because it showcases what industries the migrant population are participating in: 11.1% in agriculture, 7.7% domestic workers, 17.8% in industries such as manufacturing and construction and 63.4% in other services.

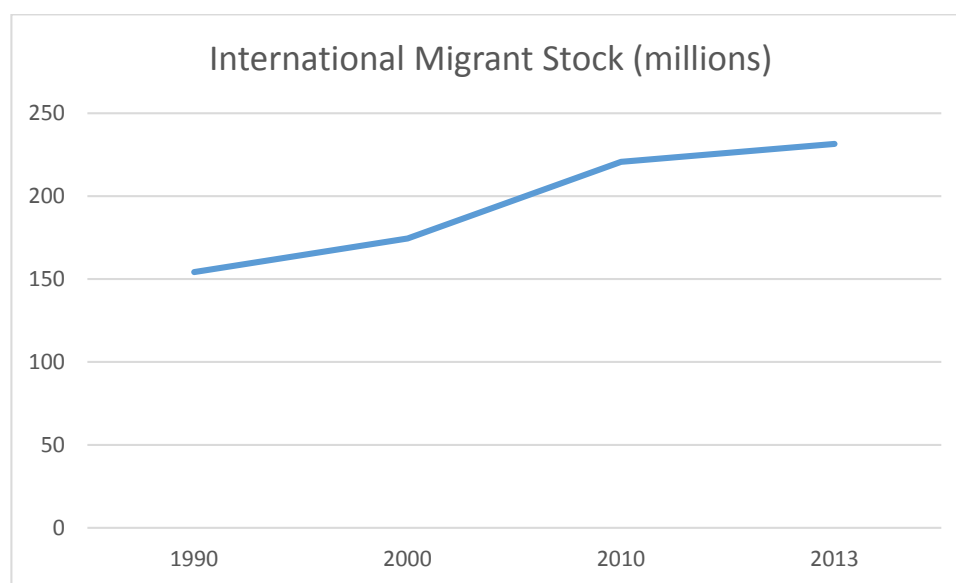


Figure 1-5: Growth of international migrants from 1990 – 2013 (United Nations)

One statistic that was surprising about migrant workers was the distribution of sex: 73.4% of migrant workers are females while 26.6% of workers were males. Also, half of the world's male migrant domestic workers are in the Arab States. Taking into account that information with 150 million migrants, there are 39.9 million males are migrant workers and about 20 million of them are in the Arab States while there are 110.1 million female migrant workers in the world.

The number of migrants also will increase every year: in 2013, the number of migrants totaled 232 million and the global remittances were \$557 billion. Because the number of migrants and remittances have been increasing every year, one question arises: How does that affect productivity of these countries?

When the number of international migrants are steadily increasing every year, the impact of remittances on their home countries continues to increase. Since some countries do not have the necessary capital or investment to create jobs and provide their workers with a salary, these laborers are "exported" to other countries to work. This is better known as "labor exporting." These workers then send money back to their home country's household which is then used in either consumption or investment. [6].

Chapter 2

Literature Review

Past studies have focused on the effects of remittances on the real exchange rate and GDP. Two papers by Glytsos and Li have focused on remittances' effects on different regions: the Mediterranean and small agricultural systems in China.

Glytsos' research uses an econometric model for investigating the impact of remittances on "consumption, investment, imports and output." Using five countries (Egypt, Greece, Jordan, Morocco and Portugal) Glytsos' model analyzes the annual change over time of different macroeconomic variables on remittances. What he found was that growth is dependent on the size of remittances and annual changes over time. Remittances were also found to affect output in four different directions: two positive (boosting growth, moderating recession) and two negative (restraining growth, intensifying recession). [4].

Li's research covers labor exporting and its effects on remittances and agricultural productivity. Labor exporting has been shown to decrease labor force participation and in turn decreasing agricultural productivity in the short term. However, in the long term, because migrants are sending remittances, this immediate loss in productivity is offset by an increase in earnings caused by remittances. These earnings are then reinvested on higher-return crops. [8].

One paper by Katsushi Imai from the International Fund for Agricultural Development investigates the direct impact of remittances on poverty and effects on economic growth. Imai's research found that even though remittances reduce poverty and may increase economic growth in a country, sudden inflows of remittances can "prove to be a source of output shocks." Another

thing to note is that because remittances are essentially “private money” they cannot replace public aid. This means that households who receive this money are in control of how they allocate it. [7].

It seems that all of the research associated with remittances has concluded that remittances do in fact assist with reducing poverty and increasing economic growth. Another paper by Dilip Ratha from the Migration Policy Institute dives deeper into the impact of remittances in these areas. First, since remittances are private funds they help increase household incomes and are a “powerful anti-poverty force in developing countries.” Another point to note is that remittances are counter cyclical financial flows and are greater in times of crisis. Remittances have also been found to allow households to “engage in high-risk, more profitable activities.” [9].

One thing that has yet to be researched is the effect of remittances on productivity. Velucchi’s research on the Italian economy uses a regression model to understand the “poor performance” of labor productivity growth from 1998 – 2004. This paper focuses on three industries in Italy (food, textiles and mechanical machinery). Results indicate that productivity is based on labor and firm level characteristics and therefore are not the same for every firm. Each firm is dependent on human capital, exporting and importing and internationalization. [13].

The idea for this research topic came about when examining the Balassa-Samuelson Effect on developing economies. The BSE states that countries with high productivity growth also experience high wage growth. Choudhri and Khan’s paper concluded that they found the “labor productivity differential exerts a significant effect on the real exchange rate.” When researching information about developing countries, we found that these countries are heavily reliant on remittances. Because these inflows make up a large amount of GDP, we questioned whether or not these funds were a driving factor behind growth in these countries. This led to an area that had

very little research: productivity and remittances. Since remittances can be used as consumption or investment, we theorized that remittances would have a positive impact on productivity. [1].

Data analysis on the BSE and productivity used regressions in the long and short run. We developed a simple regression to see if there was a relationship between remittances and productivity. We applied this regression to a few countries that are heavily reliant on remittances based on percent of GDP. Education was also an area of concern: productivity has been found to positively correlate with higher amounts of schooling. Using data from Barro-Lee, we included this in the regression to account for this variable. Household spending is the main point of the data analysis and will be covered in Chapter 3 and 4.

Chapter 3

Methodology

Overview

In order to analyze how remittances affect productivity, I have hand-selected countries based on remittances as percent of GDP. According to the Migration and Remittances Factbook, countries most reliant on remittances are countries where remittances have a large percentage of GDP. Countries such as Tajikistan have remittances making up 42 – 50% of their GDP. To examine this specifically, I used the Migration and Remittances Factbook 2016’s list of “Top Remittance-Receiving Countries, percent of GDP” rankings (see Appendix B).

In order to investigate these countries, I will use a regression to find the relationship between remittances and productivity. Each country will be analyzed based on standard of living, spending of remittances and migration statistics. Migration is important because countries like Tajikistan have a large number of migrants in Russia and events in Russia will affect Tajikistan’s productivity directly. Results that were obtained differ from country to country but mostly are dependent on household spending.

This chapter is broken down into “Data Summary,” which explains the analysis portion of the paper. The analysis portion consists of a regression analysis and empirical analysis on each country selected. The inputs section of this chapter covers the regression and the explanatory variables and output.

Hypothesis Test

For data available, a regression with remittances, education and productivity will be run for each country selected. After the regression for each country is run, information specific to each country is examined and will be analyzed in conjunction with regression analysis to explain the relationship between remittances and productivity. The regression will be analyzed for statistical significance using p-values:

$$H_0: p \geq 0.05$$

$$H_1: p < 0.05$$

H_0 is the null hypothesis that there is no relationship between productivity and remittances based on a 95% confidence interval. This is a statistical basis on when to accept or reject the null. If H_0 is rejected, then we accept H_1 in which states that there is a relationship between productivity and remittances. Using education as an explanatory variable, we can then analyze how strong this relationship is.

One thing that was of concern when running the test was the amount of data available for each country. Different countries had more data than others creating a difference in sample sizes. In this situation we assumed that given the data available and that all variables had at least ten or more observations that there was enough information to run a regression and be statistically significant.

Once regressions were run on all countries selected, further analysis was required to support the regression. If the null hypothesis was rejected and there was a relationship between remittances and productivity, further analysis was required to examine how strong this relationship was. Using data such as household spending and surveys and migration statistics, we were able to

explain why some countries accepted the null hypothesis and why some countries rejected it. This information will be covered in Chapter 4 while the next section discusses the regression inputs.

Inputs

This regression analysis looks at the relevance of remittances related to productivity of countries. The amount of annual data for remittances varies for each country. Controls such as education and gender of workers are taken into account. Using a significance level of $\alpha = .05$ p-values lower than .05 are determined to be statistically significant.

$$\frac{Y}{L} = B_0 + B_1 \left(\frac{Remittances}{GDP} \right) + B_2 (Education) + Error$$

Productivity: Productivity denoted as Y/L . Y is output which is represented by GDP in dollar amounts. L is labor force is represented by the number of people in the working force and is the input of productivity.

Remittances: Remittances are the amount of cash inflows from migrants abroad. This amount is divided by GDP to give a percent of GDP.

Education: Data is taken from the Barro-Lee Data set. Education is assumed to average number of years attended in school. For the purposes of this thesis school systems are assumed to have no difference. Education is assumed to be the average years of total schooling. Education is a control variable to account for education of laborers.

Highly educated workers are assumed to have a faster learning curve and are more efficient workers which would lead to a higher productivity. Using education as a control will help further explain the relationship between remittances and productivity. This will be a starting point to determine how remittances correlate with productivity and then we will use additional data from sources such as the World Bank to further analyze why there is either a relationship or no relationship.

Chapter 4

Results

This section covers the analysis portion of the thesis. First, every country selected will have a brief overview of the country and their reliance of remittances. Then the regression will be covered and how it pertains to the hypothesis testing. The final portion of each country will be empirical analysis based on remittance changes, household surveys and spending, and how this evidence relates to productivity.

Tajikistan

Tajikistan's remittances would seem to have the largest impact on productivity based on their reliance on remittances.

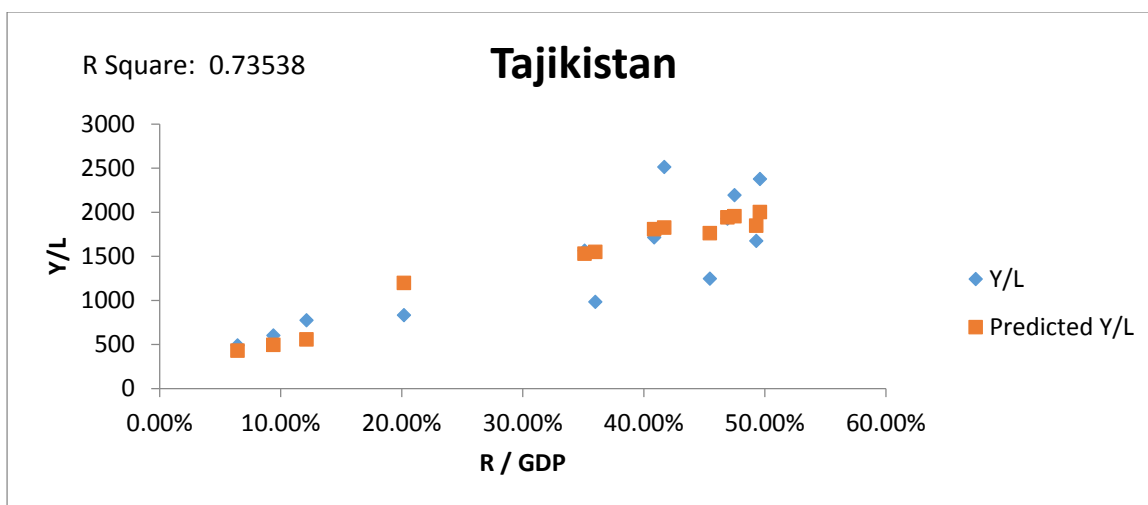


Figure 4-1: Regression of Tajikistan's Remittances to Productivity

Taking a look at figure 3-1, we can see that there is a relationship between remittances and productivity in Tajikistan's case. Tajikistan's reliance on remittances has increased from 6.43%

of GDP (2002) to 41.70% (2014). But based on the data that was available, the p-values of remittances and education were 0.192 and 0.364 which means that it is not statistically significant.

There are a few explanations for such a discrepancy. First, a large change in remittances over time. From 2002 to 2007, remittances as a percent of GDP increased from 6.43% to 45.46%. Also examining Tajikistan's infrastructure, the government has been very limited in reforming the private sector.

According to the World Bank, 1 million Tajik citizens, a third of men aged 20-39 work in Russia and send remittances back home. Since a majority of Tajikistan's workforce are overseas and not at home, remittances has a large impact on GDP but not as much of an impact on productivity, as evidenced by the regression. Because Tajikistan's labor force is not as influential as migrants, the relationship between remittances and productivity is not as strong as expected. [10].

Haiti

Haiti does not depend as much on remittances as Tajikistan. Remittances are only 22.7% of Haiti's GDP. However, Haiti still has a strong relationship between remittances and productivity.

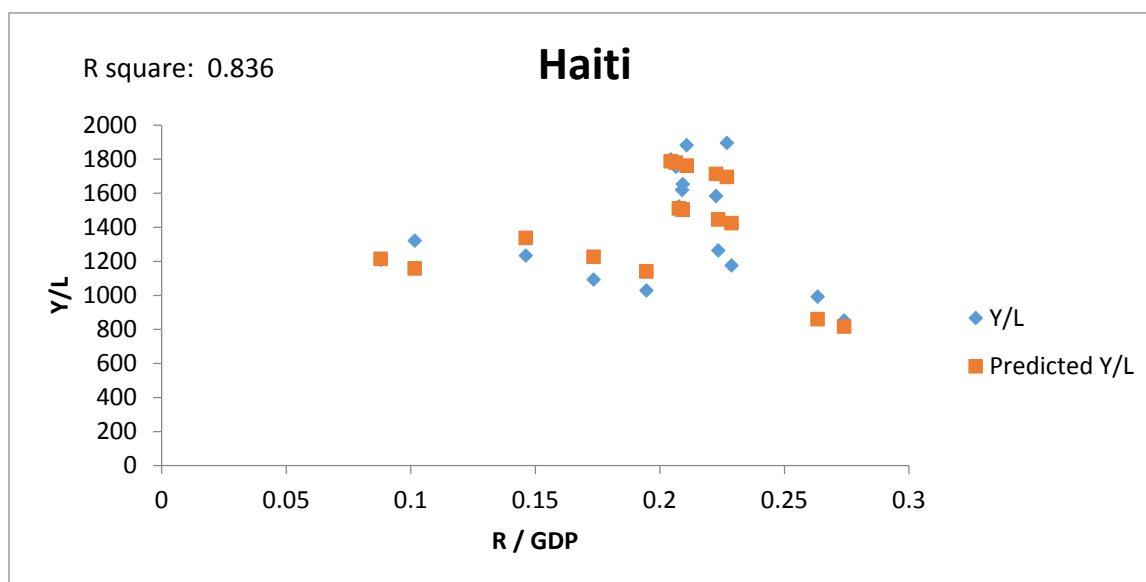


Figure 4-2: Regression between Remittances and Productivity, Haiti

Haiti's regression line does not seem as strong as Tajikistan's. This is due to Haiti's remittances staying fairly stagnant over the time period. Haiti's remittances do not increase as significantly and rise from 8.79% to 22.69% (1998 – 2014). However, Haiti's p-values for remittances and education are 0.0004 and 7.114E-07 meaning they are statistically significant with a 95% confidence interval.

According to the World Bank, Haiti is undergoing an internal migration from rural to urban as well as emigration overseas. Despite many going overseas to work, Haiti's standard of living is the reason why the regression is stronger than Tajikistan's: their standard of living is much lower. The World Bank estimates that only an increase in their economy of two to three times is

able to reduce their extreme poverty level to 3 percent by 2030. Also, Haiti had a natural disaster in 2010 and that has made them more reliant on remittances and foreign aid than before.

Change over time	Aid / Remittances	Foreign Aid	Remittances
2005	43%	43%	6%
2006	55%	37%	8%
2007	57%	21%	15%
2008	67%	30%	12%
2009	81%	23%	0%
2010	208%	174%	7%
2011	110%	-44%	5%
2012	79%	-25%	4%
2013	66%	-8%	10%

Figure 4-3: Percent Change Over Time of Haiti's Remittances and Foreign Aid

Looking at Figure 3-3, foreign aid increased significantly during the natural disaster in 2010 however it decreased the years following while remittances continued to slowly increase. In that timeframe from 2010 – 2013, aid only surpassed remittances in 2010 – 2011 and after 2011, the ratio of foreign aid to remittances dropped to pre-disaster levels. Although Haiti is received \$1.1B of foreign aid in 2013, it received over \$1.7B in remittances the same year.

In comparison to other developing economies, Haiti is also heavily reliant on a “low-performing agricultural sector.” The agricultural sector of Haiti provides low and unreliable returns. This information is consistent with a country’s overreliance on remittances and households’ inability to generate significant income for their family.

Information regarding household surveys and spending was unknown. However, assuming that their standard of living is low and employment opportunities in Haiti are weak (40.6% unemployment rate), we assumed that Haiti’s households are using most if not all of their remittance funds for consumption. [5].

Nepal

Nepal is in South Asia and located in the Himalaya mountains. According to the World Bank, growth was projected to be 3.7% in Fall 2016, however due to earthquakes, this has delayed the economy from fully recovering. Two things crucial to continued growth of a developing economy like Nepal are “quantity of public investment” and infrastructure.

Nepal migrants journey to the Gulf Co-operation Countries to work and is a “key source of remittances for the country.”

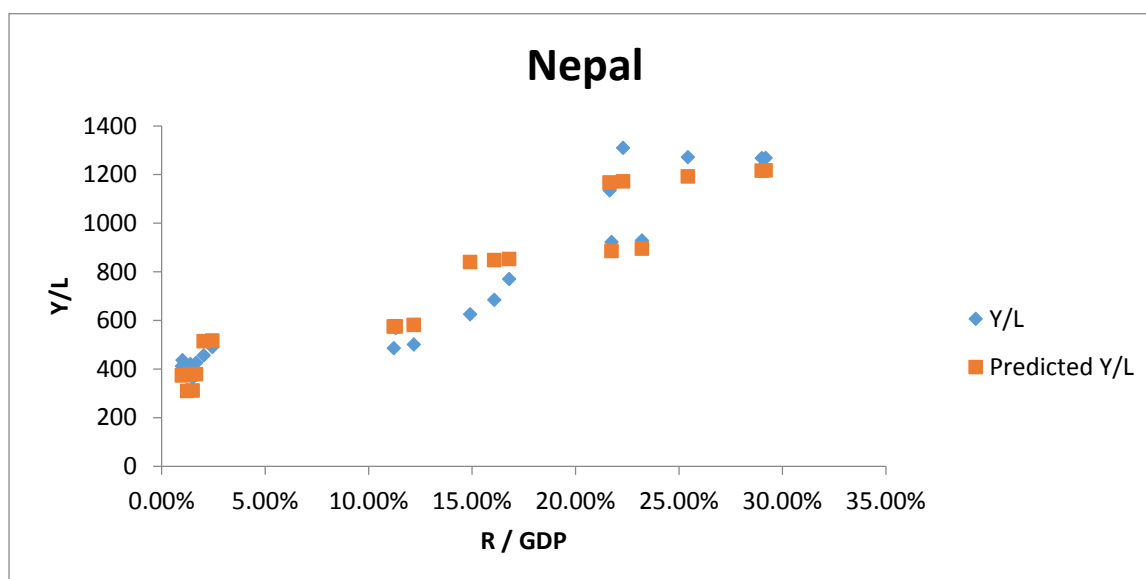


Figure 4-4: Regression between Remittances and Productivity, Nepal

Remittance inflows are 29.2% of Nepal’s GDP. Looking at Figure 3-4, the regression suggests that there is indeed a positive relationship between remittances and productivity. However, the p-value of remittance is 0.253 and not statistically significant.

The impact of remittances on productivity is still prominent. Prior research by Gaudel on Nepal shows that remittances not only has increased personal income but also has “uplifted their social economic standard” and “social prestige.” Nepal has also become increasing reliant on

remittances instead of foreign direct investment from other countries. In 2013, remittances were 25.5% of GDP but official developmental assistance and foreign direct investment were only 4.2% and 0.5%.

But research by Tuladhar has shown that high remittance inflows actually have a negative effect on Nepal due to a sharp rise of inflows of foreign currency (Dutch disease effects). Policy makers in Nepal have less incentive to invest because of reliance on remittances and reform the economy. This also translates to households not spending much on investments but rather consumption.

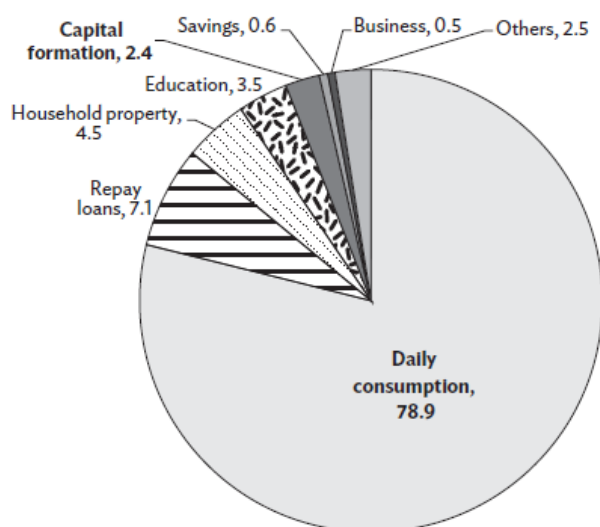


Figure 4-5: Household use of Remittances in Nepal, 2013

Looking at Figure 3-5, we can easily see that the Nepalese spent 78.9% of their remittances on daily consumption in 2013 and only 2.4% and 0.5% on capital formation and business. This information confirms that households are spending a majority of their remittances on consumption and not investing it back into the economy.

Agriculture is one industry that is negatively affected by migration and remittances: labor exporting is causing a shortage of labor in the short run. However, this is offset by positive effects

in the long-run by enabling households to purchase “new agriculture technology, which helps to boost agriculture productivity.” This is an ideology that was found to be ineffective because households were not spending their money on new technology but rather consumption. [3, 10, 11].

Moldova

Moldova is one of the poorest countries in its region. Synonymous with other countries in this study, Moldova is also very reliant on remittances. Remittances made up 26.2% of Moldova's GDP in 2014. Moldova's regression between remittances and productivity, Figure 3-6, has a p-value of 0.92, which means that we accept H_0 that there is no relationship between productivity and remittances.

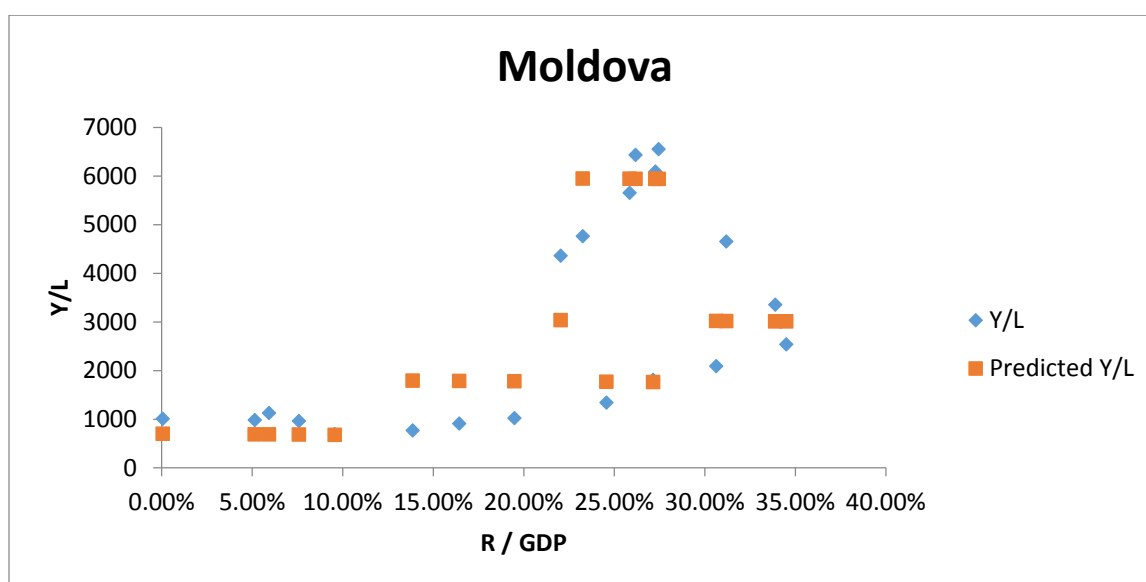


Figure 4-6: Regression between Remittances and Productivity, Moldova

Examining Moldova's migrants and remittances, the average remittance sent is estimated at \$543. According to Cuc's research, there is a positive correlation between contribution of remittances and standard of living of the receiving family. Remittances cover on average 65% of income for 41% of families with a migrant and 35-65% for 25% of families with a migrant. Household surveys also indicate that recipients in Moldova focused on fulfilling basic needs rather than using the remittance funds to invest or pursue income generating activities.

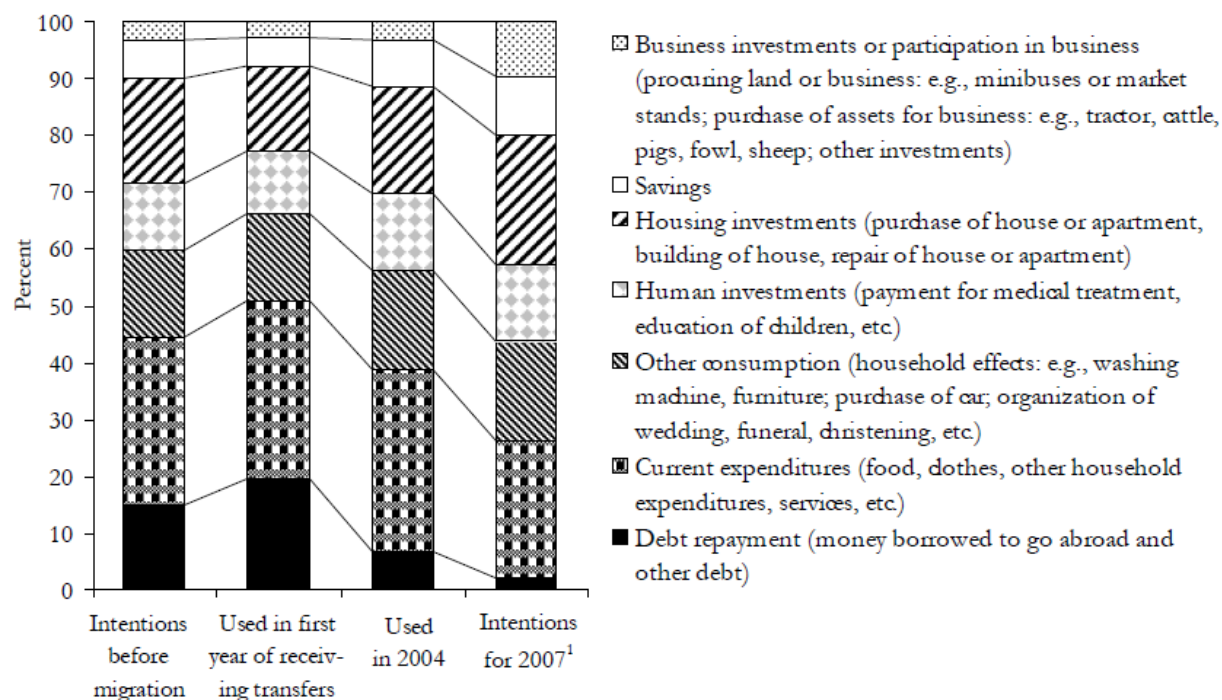


Figure 4-7: Use of Remittances by Year, Moldova

Figure 3-7 shows how the Moldovans use their remittances. In 2004 recipients used less than 5% of the remittances they received for investing or value generating activities. This number rose close to 10% in 2007 however it shows that Moldavans focused most of their remittances on consumption and not investment. This is the main reason why remittances do not affect Moldova as heavily as other countries.

Moldavans migrate to other countries for reasons other than business investment. In 2005, only 17% of migrants believed that they can save enough in the years following to build their own business. Moldovans also believed that there was high risk in investing in Moldova “citing bureaucracy, corruption, and poor business environment” and rather invest in housing. This shows why housing investments did not fluctuate as much and stayed around 20% of remittances. [2, 12].

Additional Comments and Data Flaws

Developing economies with remittances making up a high percent of GDP are heavily reliant on remittances. While some countries have better infrastructure than others, there is one thing for certain: all countries that are reliant have poor private investment due to remittances being spent on consumption rather than long-term sustainability. Even countries with better infrastructure than other countries have trouble increasing the productivity of the private sector simply because households aren't reinvesting their remittances into the private sector or starting their own businesses. This means that in the short run, labor exporting causes a decrease in productivity and in the long run, there is no positive increase in productivity. This is due to developing economies failing to adhere to macroeconomic principles. In order for developing economies to increase their productivity, household spending has to change. It has been shown in our selected countries that although the relationship between remittances and productivity is nonexistent, this is due to household spending their remittances on consumption now instead of investing later.

Data was one thing that was problematic with this study. First, labor hours were intended to be used instead of laborers because it is more accurate than using number of laborers for productivity (Y/L). The number of labor hours is a better estimate of input to output while the number of workers or laborers is not. This was one data point that could be improved upon but given the data available we were unable collect this information.

Another is the annual remittance data. Some countries only had about ten observations while other countries had a larger sample size of twenty. Also, the labor force data was

constraining our results because we only had data starting from 1990 until 2014. This meant that any remittance data or education data prior to 1990 could not be used in the regression.

When researching about the topic of productivity and remittances, household spending was another area that could be improved upon. Household spending data was dependent upon household surveys. Some countries had household survey data while others did not. Even for countries with survey data, this was limited to certain years because surveys only were conducted for that year alone and it was difficult to find more information on household spending without these surveys.

Chapter 5

Conclusion

Using a regression and data analysis, this thesis was developed to try to explain the relationship between remittances and productivity. The regressions for each country show that productivity is not necessarily related to remittances. Even though remittance inflows are a large percentage of developing countries' GDP, these funds are used for consumption and not for investment. This is significant because it shows that the infrastructure of these developing countries are not presenting opportunities to households to invest and spend their money to benefit the country.

There is still a lot to be researched about remittances and their benefit to developing economies. In relation to productivity, remittances have little or no influence on the productivity of these countries. We expect that like Li's paper on agriculture in China, if remittances were spent on investment opportunities instead of consumption, then productivity would increase in the long run while labor exporting would cause productivity to decrease in the short run. However, this was not the case in these developing countries. What we found was different than expected: households' consumption increased however investment did not. In order for developing economies to make use of these remittances, countries have to increase their standard of living for households. There is no simple solution – some countries have very poor business environments which cause poor employment opportunities. In order for remittances to be influential in these countries' economy, there has to be a change in infrastructure.

Chapter 6

Future Research

This thesis only has researched so much about remittances. First, productivity in developing countries are not dependent upon remittances. The data analysis in the study could definitely be more accurate if data prior to 1990 for laborers was available. Also, using labor hours is a more accurate representation of productivity than using laborers. The regression should be more complex as productivity has more variables than just remittances and education. Other variables could be considered and instead of examining the economy of a few countries, a new study could be conducted on the industries within a country. The regression also had some flaws: it did not account for any economic shocks. Some of these countries experienced natural disasters and this was not accounted for in the regression and could have skewed the results.

Some important data that was missing were household surveys. Household surveys were limited to the country conducting the survey and this limited our results. At first it made sense that countries would track this information because it is extremely important to know how money is being spent in these countries. However, that was not the case: this information was either nonexistent or limited to certain time periods. Having a standard survey for every country would benefit humanity's understanding of remittances and allow country's to build better infrastructure for its people.

Appendix A

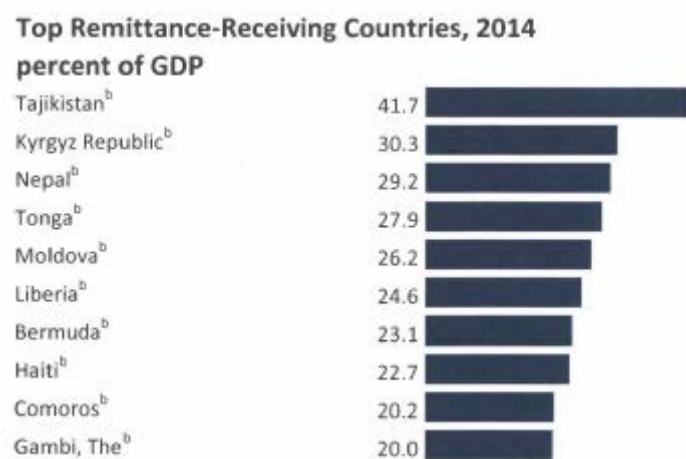
International Migrant Stock

International Migrant Stock (millions)	1990	2000	2010	2013
World	154.2	174.5	220.7	231.5
Developed region	82.3	103.4	129.7	135.6
Developing regions	71.9	71.1	91	95.9
Africa	15.6	15.6	17.1	18.6
Asia	49.9	50.4	67.8	70.8
Europe	49	56.2	69.2	72.4
Latin America and the Caribbean	7.1	6.5	8.1	8.5
Northern America	27.8	40.4	51.2	53.1
Oceania	4.7	5.4	7.3	7.9

Source: United Nations (2013), Trends in International Migrant Stock: The 2013 Revision

Appendix B

Top Remittance-Receiving Countries by Percent of GDP, 2014



Appendix C

List of Selected Countries and Statistics

Country	Time Period	T-stat		P-Value	
		Remittances	Education	Remittances	Education
Tajikistan	2002 - 2014	1.396	-0.951	0.193	0.364
Haiti	1998 - 2014	-4.610	8.459	0.000	0.000
Nepal	1993 - 2014	1.179	4.591	0.253	0.000
Moldova	1995 - 2014	-0.096	8.445	0.925	0.000

Appendix D

Average Years of Total Schooling

Year	Tajikistan	Nepal	Moldova	Haiti
1950	4.13	0.11	3.28	0.59
1955	4.58	0.11	3.68	0.67
1960	5.25	0.13	4.27	0.80
1965	5.78	0.27	4.80	0.95
1970	6.67	0.50	5.63	1.18
1975	7.68	0.72	6.52	1.50
1980	8.70	0.99	7.27	1.99
1985	9.44	1.76	7.92	2.94
1990	9.92	2.49	8.47	3.43
1995	10.47	2.65	8.89	3.92
2000	10.63	2.97	9.21	4.33
2005	10.38	3.55	9.57	4.81
2010	10.30	4.23	10.40	5.11

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ACADEMIC VITA

Academic Vita of Liang Wen Chen

Liangwchen8@gmail.com

10 Vairo Boulevard, Apt 21B, State College, PA 16801

Education

The Pennsylvania State University

Major(s) and Minor(s): Finance

Honors: Finance

Thesis Title: Effect of Remittances on Productivity

Thesis Supervisor: Alessandro Dovis

Work Experience

- Access Billing Intern for CenturyLink. (5/2015 – 8/2015)
- Sub Shop Customer Service Member for Wegman's. (3/2013 – 2/2015)
- Finance Intern for Latexx Partners Berhad (Malaysia). (6/2013 – 8/2013)
- Moderator for www.quizzet.com. (2010 – 2012)

Awards:

- Dean's List: Fall 2012 – Spring 2014, Spring 2015 – Fall 2015
- Donald E. Allen Memorial Scholarship –2013

Community Service Involvement:

- Big Brothers Big Sisters – Volunteer (July 2015)
- Lehigh Valley Health Network (Cedar Crest) – Volunteer (2008 – 2011)

Language Proficiency:

- Fluent in English, Conversant in Mandarin