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International trade and the income inequality gap between developed and developing countries.

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Abstract

The aim of this study is to identify what effects international trade, in the form of exports have on the income gap between the developed and developing countries. This paper analyses how the share of exports to developed countries in the form of total exports and exports of intermediate goods, are related to the country's Gross Domestic Product. The focus will be on analysing how trade will reduce the gap and will pay close attention to developing countries. Eventually this paper will show that international trade benefits all countries but it favours developed countries more, which in turn will cause the gap to increase.

JEL Classification: F10, F63, F62

Keywords: International trade, Income Inequality, Developed countries, Developing countries

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1. Introduction

Economic inequality¹ has become increasingly important since there has been more pressure on increasing human welfare. Not only do academics focus on this topic but also international organizations, non-governmental organizations (NGOs), and political activists. One main aspect of economic inequality is income inequality. In general, this refers to the income gap between the rich and the poor. When analyzing income inequality, there are two main categories which may seem similar but in reality have very different meanings. The first one is the income inequality within a country which is usually measured with the Gini Index. The second one is the income inequality between countries which is measured as the difference in National Income. In the paper written by Bourguignon and Morrisson (2002), they state that the inequality between countries is a key factor in explaining 'world' inequality². Therefore, this paper will only focus on between-country income inequality. Throughout this paper the sample countries will be split into two groups; developed and developing, and the income inequality is the gap in national income between these two groups. National Income will be measured in terms of Gross Domestic Product (GDP) or per capita GDP (GDPPC). The terms gap, inequality gap and income inequality gap will be used interchangeably, as they will all denote the same thing, which is the gap in GDP between developed and developing countries.

Many studies have found that international trade and its openness correlates positively with GDP and GDP Growth, for example the paper written by Edwards (1992). Since countries experience different growth rates and since international trade impacts the growth rate, it is interesting to analyze whether international trade impacts the income inequality gap. Therefore, this paper intends to do exactly that: identify what impact international trade has on the income gap between the developed and developing countries. To be more specific, this study will analyse country data in order to answer the following research question;

¹ Economic inequality: refers to financial disparity, meaning that societies or people have unequal amounts of financial and material resources (Dye, 2014).

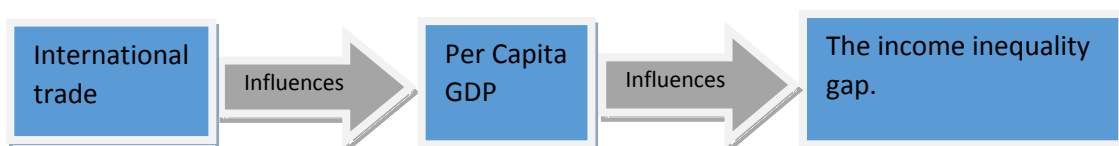
² World inequality: is a very broad term in academics which refers to the extent to which income and wealth is distributed in an uneven manner among the world's population.

“How does international trade impact the income inequality between developed and developing countries during the period 1990 to 2012?”

This paper will define the word ‘impact’ as either a reduction or an increase in the income gap. As stated earlier the gap will be measured as the difference in GDP or GDPPC between the collection of developed countries³ and collection of developing countries⁴. The decision to select this time period was so that the data would represent the most recent years. The years before 1990 were excluded due to the unavailability of data for many countries. Furthermore, the sample consists of almost all countries in the world allowing it to represent a more realistic overview of the current situation.

Although there has been a lot of interest in this topic and a large amount of literature already exists, this paper will still contribute to this subject in many ways. Firstly, it will shed light on the effects economic growth has on the gap. It will then take a closer look at how international trade is related to GDP. Once the relationship between international trade and GDP or GDPPC is established, this paper will focus on how developing countries can reduce the gap by exporting more towards developed countries. This paper is also unique as it will also take into consideration the increase in outsourcing of production. It will look at how outsourcing to developing countries may also be a factor that reduces the gap and is also considered a form of international trade. Figure 1 below represents the idea of how international trade will be linked to the income inequality gap.

Figure 1



To answer the research question this paper will conduct an Ordinary Least Square (OLS) regression and analyze trends and test statics. Three hypotheses will be formulated in aid to answer the research question. Eventually this paper will show that economic growth

³ Developed countries will sometimes be referred to as rich countries.

⁴ Developing countries will sometimes be referred to as poor countries.

may not be a strong factor that contributes to the widening of the gap and that there is not enough evidence for the idea of convergence. It will also show that there is indeed a relationship between trade openness and GDP. This paper will show that developed countries will benefit more from trade compared to developing countries, which in turn may be one factor that increases the income gap since developed countries will gain a higher GDP through trade than developing countries. This paper will also conclude the fact that there is not enough evidence that will suggest that an increase in exports to developed countries would reduce the gap; neither would the gap be reduced if they outsource more to developing countries.

The remainder of this paper consists of the following order: Section 2 reviews the existing literature and focuses on economic growth, imports, exports, and outsourcing. Section 3 consists of the theoretical framework, which will explain two main theories in detail. Section 4 describes the data and methodology, in this section an analysis of trends will also be conducted. The following section will then look at the statistic results, both with a descriptive and empirical analysis. The final section concludes and presents the limitations of this research and possible suggestions for further research.

2. Literature Review

This section will evaluate the existing literature, focusing on economic growth, trade and outsourcing. Section 2.1 presents the literature related to economic growth. Section 2.2 shows the relevant literature for trade openness, and finally section 2.3 looks at the literature regarding outsourcing.

2.1 Economic growth

It is widely believed that trade openness creates a competitive environment which results in quality products leading to the economic growth (Aradhyula, Rahman, & Seenivasan, 2007).

Ghose (2004) saw that some developing countries achieved significantly faster economic growth than the advanced countries, which showed that there was convergence. The second part of his paper showed that (i) trade liberalization had extremely varied effects on trade performance across countries, and (ii) the distribution of benefits and costs of trade liberalization across countries has been such as to reduce international inequality without affecting inter-country inequality.

Dollar and Kraay (2004) came up with a series of important findings; (1) the post-1980 globalizers are catching up to the rich countries while the rest of the developing world is falling further behind, (2) they find a strong positive effect of trade on growth, (3) increase in growth rate that accompanies expanded trade leads to proportionate increases in incomes of the poor, and concluded that globalization leads to faster growth and poverty reduction in poor countries.

A study done by Abramovitz (2004) found that the rate at which convergence happened varied from period to period and that it was usually accompanied by dramatic shifts in countries' productivity rankings. The paper explored the connections between convergence itself and the relative success of early leaders and latecomers.

In historical trend studies done by O'Rourke (2001) and Bourguignon and Morrisson (2002), it was concluded that globalization has been a force for between-country convergence among participating countries since the 1820s. Sala-i-Martin (2006) finds that overall global inequality has been falling since 1980, due to between-country convergence.

2.2 Export and Import

Zhang and Ondrich (2004) found that export and import have distinct effects on a country's income inequality. Their results showed that only exports had a positive correlation with income and concluded that higher export intensity countries, as opposed to high import intensity countries, have higher per capita income, *ceteris paribus*.

Roser and Cuaresma (2011) focused on developed countries while Meschi and Vivarelli (2007) focused on developing countries, both studies looked at the validity of the Stolper-Samuelson theorem concerning the effects of international trade on the income inequality among countries.

Aradhyula, Rahman and Seenivason (2007), used a balanced data panel that revealed that trade openness increases income and an unbalanced panel data set revealed that trade openness increases income inequality overall, but when this data set was split into two groups, they saw that trade increases inequality in developing countries but it reduces inequality in developed countries.

2.3 Outsourcing

The rising integration of world markets has brought with it a disintegration of the production process, in which manufacturing or service activities done abroad are combined with those performed at home. Companies are now finding it profitable to outsource production processes (Feenstra, 1998). In his paper, he compares several different measures of foreign outsourcing, and argues that they have all increased since the 1970's.

Lee and Sim (2012) found out that outsourcing to developed countries and less developed countries have opposite and significant effects on relative wage meaning that outsourcing to developed countries affected the wage of skilled labor and outsourcing to less developed countries reduced the wage of unskilled labor.

Feenstra and Hanson (1996) found out that outsourcing reduces the relative demand for unskilled labor in both developed countries and developing countries. This was due to the fact that the outsourced activities are unskilled labor-intensive relative to those done in the developed country but they are skilled labor-intensive relative to the less developed economy. Therefore moving the activity to another country raises the average skill-intensity

of production in both locations. Feenstra and Hanson (2001) also stated that trade in intermediate inputs can have an impact on wages and employment that is much greater than for trade in final consumer goods. They argue that the trade in intermediate inputs is a potentially important explanation for an increase in the wage gap.

3. Theoretical framework

3.1 Convergence theory – catch up effect

The convergence theory, also known as the catch-up effect, refers to the proposition that less developed economies or regions (poorer economies' per capita incomes) are expected to grow faster than developed economies. As a result, all economies are predicted to converge in terms of per capita income.⁵ Developing countries have three main arguments supporting this theory. The first argument states that late-comers can benefit from the already existing technology and knowledge that was developed by the pioneer economies and therefore the late-comers will not have to make the initial costs and effort but have the advantage of exploiting and adopting these production methods. The second argument is that of a standard statement in the growth theory itself. The idea that developing countries have a greater potential to grow at a faster rate than developed countries due to diminishing returns to factor inputs, meaning that capital productivity is higher in less developed economies in comparison to capital-rich economies. The third argument states that due to structural change in employment from workers in the primary sector (example agriculture) to secondary or the tertiary sector means that the developing country will have a source of labor productivity. But this statement will reduce its strength as the country develops further (Ghose, 2004).

Unfortunately, on the other hand none of these arguments are fully convincing. According to Abramovitz (2004) there is a need for 'social capabilities' to benefit from catch-up growth. Social capabilities refer to the ability for that country to absorb new technology, attract capital and participate in global markets. These prerequisites must already exist within the economy before catch-up growth can occur. In his paper he continues to say that

⁵ In relevant literature this is referred to as beta-convergence

due to the lack of social capabilities there is still divergence in today's world (Abramovitz, 1986). Another argument is that the theory assumes that technology is freely traded and available to those developing countries that want to catch-up, but this may not be the case in reality. There is always a possibility for the pioneer economy to always expand the technology frontier so that there always remains a technological gap between the economies. It can also be that due to 'learning by doing' there can be constant or may be even increasing returns to factor inputs (Ghose, 2004).

3.2 Heckscher–Ohlin model and the Stolper–Samuelson theorem

The Heckscher-Ohlin model (H-O model) was built on David Ricardo's theory of comparative advantage. The H-O model in general says that a country exports those products that use factors of production that are available in abundance in that economy. This means that developing countries that are labor-abundant will mostly export products that are labor-intensive in production and that they will import products that are more skill and capital-intensive in their production (Meschi & Vivarelli, 2007).

The Stolper-Samuelsom theorem is an immediate result of the H-O model and describes the relationship between relative prices of output and relative factor rewards. The theorem states that if there is a rise in the relative prices of the product then there will also be an increase in the return of the factor that was used most intensively in the production of that product and there will be a fall in the return to the other factors. This means that if high-skilled labor and low-skilled labor were considered as two separate factors of production then the distribution of income between these two factors will be altered by the intensification of international trade. This also means that if the prices of exported goods increase, then the wages in the export sector rise and conversely wages will fall in the import sector (Roser & Cuaresma, 2011).

The validity of the H-O model has been questioned mainly after the introduction of the Leontief paradox. Feenstra (2004) mentioned that the H-O model was hopelessly inadequate as an explanation for historical and modern trade patterns (Feenstra, 2004). The

model was also criticized of being a bad analysis for north-south⁶ trade as the assumptions of the model are too unrealistic (Stewart, 1989).

4. Hypotheses

After revising the existing literature and looking at the theory, three assumption can be made that will guide this paper towards answering the research question. Due to the fact that income inequality is considered to have negative effects on social welfare⁷, this paper mainly looks at the possibility of reducing the gap. It must also be stated that throughout this paper, the assumption that greater wealth, which is in this case measured by GDP, would mean better standard of living (Nye, 2002). Therefore, due to the fact that developing countries are lagging behind in GDP, the focus of this paper would be to analyze how trade mainly influences the GDP of developing countries and whether there is a reduction in the income inequality gap.

The convergence theory looked at the hypothesis that eventually all economies will converge in per capita income, if the economic growth rate of developing countries would be faster than the growth rate of the developed world. According to Dollar and Kraay (2004), there was a strong positive effect of trade and growth and that an increase in growth rate that accompanies expanded trade leads to a proportionate increase in income of the poor. Since economic growth and trade are assumed to be connected strongly this assumption will be able to focus on economic growth as a means to support a suitable answer to the research question. Hypothesis1 will look at the assumption that the convergence theory is true and that a faster economic growth rate in the developing countries would reduce the income inequality gap.

Ho: Faster economic growth in developing countries does not reduce the international income inequality gap.

Ha: Faster economic growth in developing countries reduces the international income inequality gap.

⁶ North-south trade is the trade between the developed and developing countries.

⁷ Negative effects of social welfare are gathered from articles written by (Wilkinson, 2011) and (Schnurer, 2014).

International trade has been accused of having an impact on the income gap. The following assumption that trade is related to income distribution was inspired by the H-O model. According to Zhang and Ondrich (2004), higher export intensive countries have a higher per capita income. Therefore the logic behind hypothesis2 is that more exportation from developing countries to developed countries should increase the wages in the developing countries and likewise reduce the wages in the developed countries which in turn will mean a smaller international income inequality gap.

Ho: More export from developing countries to developed countries will not reduce the international income inequality gap

Ha: More export from developing countries to developed countries will reduce the international income inequality gap.

It has become common for firms to start outsourcing more and more (Feenstra, 1998). This makes outsourcing an important decision for firms and therefore also an important perspective to look at in regards to how it relates to international trade and the income inequality gap. According to Feenstra and Hanson (2001) trade in intermediate goods can have an impact on wages that is much greater than for trade in final consumer goods. With that being said, the following assumption therefore considers the trade of intermediate goods to represent the movement of outsourcing. Lee and Sim (2012) found that outsourcing from developed and developing countries had opposite and significant effects on relative wage. Therefore the following prediction is made for hypothesis3, that outsourcing from developed to developing countries will indeed reduce the international income inequality gap.

Ho: An increase in outsourcing from a developed to a developing country will not reduce the international income inequality gap.

Ha: An increase in outsourcing from developed to developing countries will reduce the international income inequality gap.

5. Data and Methodology

5.1 Data

The data used in this paper was gathered from the World Bank database. The data consists of 221 countries measured over a time period from 1990 to 2012. The years before 1990 were excluded because there was relatively less data available for many countries especially for developing countries. This may causes some bias in the analysis regarding developing countries. The time period was also selected so that it would reveal recent data and since a lot of variables are gathered on a yearly basis, it was suitable to look at duration of 22 years.

It must be noted that the data is an unbalanced panel data set due to the fact that not all countries have recorded information for all the years or the information was not available. Each country was classified as developed or developing for each year according to the World Bank classification standards⁸. This paper classifies low-income economies and low-middle-income economies as developing countries and classifies upper-middle-income economies and high-income economies as developed countries.

During the selected time period, it could be seen that at one point or during the entire time, 117 countries were classified as developed and 135 countries as developing. This also revealed that in total 41 countries switched between country classifications⁹. The table 4 in the Appendix shows a list of all the countries and in which category they were classified.

When testing hypothesis 2, a new variable will be added to the data set about bilateral trade. However, this new variable was only available for the year 1992 to 2012. For the third hypothesis, data on bilateral trade of only intermediate goods is obtained from the World Integrated Trade Solution (WITS) database, and the data was only gathered between the years 2003 to 2007. This time period was selected so that the 2008 crisis would be omitted, and data before 2003 was very limited.

⁸ Each year the World Bank has different standards of GNI that specifies in which category the economy belongs to, the World Bank classification table 3 in the appendix shows the exact amounts.

⁹ There have been 41 countries that switched from being developing to developed or vice versa within the time period 1990 and 2012 in the dataset.

5.2 Trends

Analyses of trends show that over the years, it can be seen that GDP has been increasing for both the developed and developing economies. In 2008 there was a dip in the upward sloping trend due to the financial crisis, but in general GDP has been increasing in its absolute value. The GDP gap can be said to also be increasing as the gap in 1990 is a lot smaller than the gap in 2012 (the difference between the developed economies and the developing economies). Therefore when looking at the absolute value it seems to be that developed countries have a steeper slope than the developing countries, making it seem as if they grow at a faster rate. (Figure 2a) The same can be said for the GDP per capita with the only difference being that there are two peaks, one in 2008 and the second in 2011. (Figure 2b)

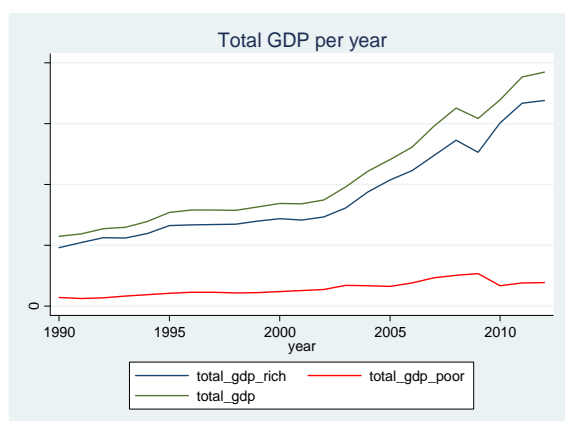


Figure2a

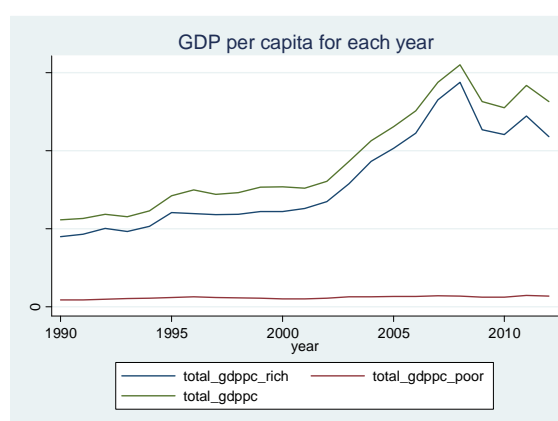


Figure 2b

On the other hand GDP Growth rate which is the change in GDP has continuously been moving up and down. It can be seen that in the beginning of the 1990's the GDP growth rate of the developing countries was lower than that of the developed economies but since roughly 2007 it has been the other way around, economic growth rate for the developing economies is higher than that of the developed economies. This brings the argument of convergence more interesting as it can be seen that economic growth is faster for developing countries than developed countries for the last few years. It can also be seen that due to the crisis there has been a large fall in economic growth for all the countries but it has affected the developed economies more than the developing. (Figure 3)

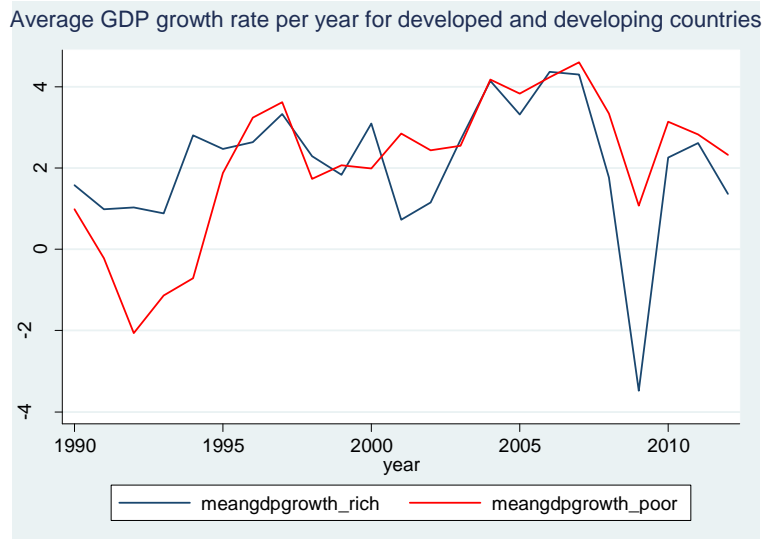


Figure 3

When considering trade openness it can be seen at the average trade openness for the world has been increasing, with a small dip in 2008 due to the crisis but that in general it has an upward slowing curve (*Figure 4 in appendix*), similar conclusions can be said about the trend in exports (*Figure 6a and Figure 6b in appendix*) . When analyzing total trade openness, it can be seen that there is an increasing trend until 2008. After the crisis there was a reduction, followed by a gradual recovery and then in 2011 again a fall. The most interesting observation is when total trade openness is analyzed separately for developed and developing countries. It can be seen that from 1990 till 2005 total trade openness for developing countries was at a higher rate than that of developed countries, and after 2005 they have been having a fall in trade openness. On the other hand total trade openness for developed countries has been in general increasing over the years and after 2005 they remain at a higher level than developing countries. (*Figure 5*)

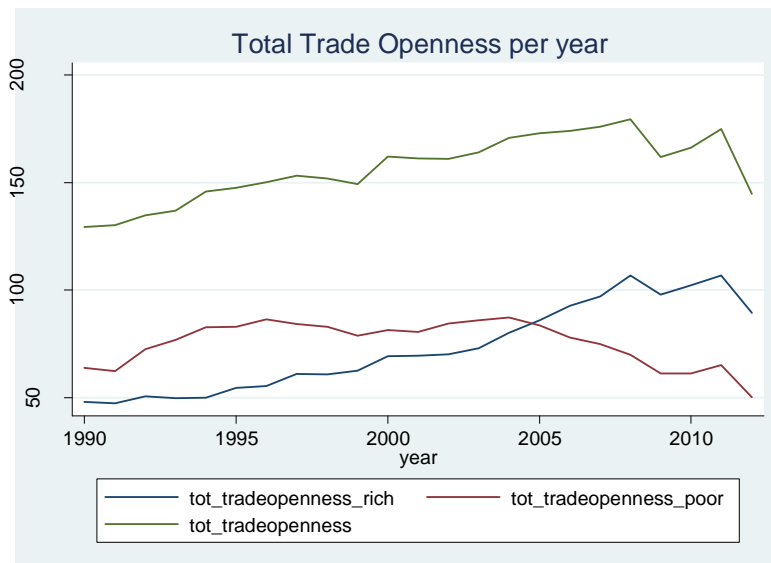


Figure 5

5.3 Methodology

First of all, the relevant variables used in the analysis will be defined. To measure the gap, changes in GDP per capita will be analyzed. The level of exports will be used to analyze international trade. This is done because a country that is more open to trade will export and import relatively more, and for simplicity this paper will only look at the volume of exports. Both hypothesis 2 and 3 focus on exports from developing countries as a factor that will reduce the gap, therefore variables that look at the share of exports and share of exports in intermediate goods will be used. The share of exports variable will calculate the proportion of exports that are sent to only developed countries and the share of exports in intermediate goods will calculate the proportion of exports in intermediate goods sent only to developed countries. The table 2 in the appendix lists the key variables and their description.

To find the solution to hypothesis 1 a two sample z-test statistic for comparing two means¹⁰ will be conducted. This will distinguish whether there is a higher GDP growth rate on average for developing countries and therefore prove that convergence may occur. In order to examine hypotheses 2 and 3, Ordinary Least Square (OLS) regressions will be used to regress GDP per capita (GDPPC) on the relevant variables for each hypothesis. All

¹⁰ Formula 1 in appendix shows the method used to calculate the z-test.

variables will be used in natural logarithm form except for the control variable inflation, this is due to the fact that many countries may also face deflation. The time-order criterion for causal relationship implies that the independent variables must take place before the dependent variable. For this reason, lagged independent variables will be used in the regression, so it can explain what happen in period t based on knowledge of what happened in period $t-1$.

For this paper to establish the impact trade has on the inequality gap it first has to establish the relationship trade has with GDP per capita. Models 1 will examine this relationship. Model 2 and 3 will do exactly the same as model 1 but will specify by only looking at developed countries first and then only look at developing countries.

$$\text{Ln}(\text{GDPPC})_{i,t} = \alpha + \beta_1 \text{Ln}(\text{Export})_{i,t-1} + \sum \delta_k X_{i,k,t-1} + \gamma_t + \eta_i + \varepsilon_{i,t} \quad (1)$$

Where i denotes countries and $i = 1, 2, 3, \dots, N$ and t denotes the years and $t = 1990, 1991, 1992, \dots, 2012$. The dependent variable $\text{Ln}(\text{GDPPC})_{i,t}$ is the natural logarithm of GDP per capita for country i in the year t . The summation, $\sum \delta_k X_{i,k,t-1}$ represents the control variable k for each country i in a time period of $t-1$. The list of control variables are explained in table 2 in the appendix. γ_t represents the year effect of year t , whereas η_i is the country effect of country i . The error term, $\varepsilon_{i,t}$, accounts for the part of the effects that cannot be explained by the model.

Once the relationship between international trade and GDP per capita have been established we can look at a more specific path of trade which might influence GDP. Hypothesis 2 will test whether exports from developing countries will increase the GDP and by doing so reduce the income gap. Model 4 will look at the relationship between GDP per capita and the share of exports to developed countries. Model 5 and 6 will specify the regression to developed countries and developing countries. These models will also incorporate the year and country fixed effects, plus the necessary error term. In addition to the control variables, the variable that represents trade in exports will also be included.

$$\text{Ln}(\text{GDPPC})_{i,t} = \alpha + \beta_2 (\text{Share_Export})_{i,t-1} + \sum \delta_k X_{i,k,t-1} + \gamma_t + \eta_i + \varepsilon_{i,t} \quad (4)$$

To understand international trade in another manner, hypothesis 3 focused on looking at outsourcing as a form on international trade. This was analyzed by looking at the trade in intermediate goods. Model 7 discovers the relationship between the share of export in intermediate goods to developed countries and the GDP per capita. This regression will only be conducted on developing countries during the years 2003 to 2007 due to the limited amount of data available. Model 7 will also include the trade variable plus the necessary control variables and fixed effects.

$$\text{Ln(GDPPC)}_{i,t} = \alpha + \beta_3(\text{Share_INT})_{i,t-1} + \sum \delta_k X_{i,k,t-1} + \gamma_t + \eta_i + \epsilon_{i,t} \quad (7)$$

To check for the consistence of the results and for robustness a few extra regressions will be made. One change will look at an alternative dependent variable, another on a different method for representing international trade, and another would be the addition of the control variable education. The first robustness check will replace the dependent variable into the natural logarithm of GDP and not GDP per capita. This is assumed to have a similar result as the previous regressions as GDP is assumed to be positively correlated to international trade. For the second robustness check, the international trade variable will instead be measured as the natural logarithm of imports. Since the previous regressions looked at the trade in exports, the robustness check should roughly produce the same results, since one countries exports is another countries imports. The final robustness check will add the control variable for education. This variable although has a limited amount of observations, it is considered very important in many existing studies, for example the paper done by Bob Sutcliffe (2004)¹¹. Education is considered to drive up the number of skilled workers and increase a country's potentials in the long run. This variable will also allow the regression to be checked for omitted-variable bias (OVB)¹². The addition of this variable will be used to check whether adding another important control variable may change the results of the regression.

¹¹ Bob Sutcliffe (2004), found that inequality continues to grow, but when adding other variables like life expectancy and education, then there is a reduction in inequality.

¹² OVB occurs when a model is created which is incorrectly leaves out one or more important causal factors. The 'bias' is then corrected by either underestimating or overestimating the effect on one of the other factors.

6. Statistical Results

6.1 Descriptive Analysis

Table 1 in the appendix, summarizes the descriptive statistics of three important variables with regard to developed and developing countries. The average GDPPC is much higher for developed countries, compared to developing countries. The large standard deviation of developed countries' GDPPC indicates that there is large difference within this group.

According to hypothesis 1, economic growth is higher for developing countries than for developed. When looking at the summary for this variable in Table 1, it can be seen that the mean for GDPPC growth is roughly the same, this means that both developed and developing countries have roughly been growing at the same rate. Using the information in table 1 we can generate the z-test statistic. After conducting the z-test on the null hypothesis of equal growth rate, it can be confirmed, as the z-test statistic is -0.00865, with a p-value of 0.49, and is therefore statistically insignificant even at 10%. Therefore, we can conclude that there is no difference between GDP growth of developed and developing countries. Therefore, GDPPC growth cannot be used as an explanation for the change in the inequality as proposed in hypothesis 1.

6.2 Empirical Analysis

The results related to the effects of international trade on GDPPC are exhibited in Model (1), (2), and (3) in Table 5. In general, $\ln(\text{export})$ has a positive effect on $\ln(\text{GDPPC})$, since the coefficient is positively significant at 1% level. This is consistent with the result of Zhang and Ondrich (2004), which found that higher export intensive countries have a higher per capita income. However, as exhibited in Model (2) and (3), the positive effect of trade is stronger for developed countries than for developing countries. This implies that developed countries benefit more from international trade than developing countries. Since the effect of trade on GDPPC is stronger for developed countries, this may cause the income inequality between developed and developing countries to enlarge further.

From the added control variables, the coefficients for $\ln(\text{population})$ are significantly negative, implying that GDPPC decreases as population increases. This is more severe in

developing countries, as the coefficient for this group is approximately three times larger than the coefficient for developed countries in absolute value. The effect of consumption expenditures is not significant for the total sample and for developing countries, but it is significantly positive at 5% level for developed countries. This may be due to the fact that developed countries are close to their steady state, where consumption is high, while developing countries have to save more in order to accumulate more capital to get closer to their steady state. Moreover, Gross Capital Formation is only significantly positive in developed countries, this is consistent with the amount of accumulated capital in advanced economies over time. Finally, the inflation is slightly but significantly negative for the total sample, this is consistent with the observed negative relationship between inflation and GDP in the literature.

When examining the effect of bilateral trade between developing and developed countries, the share of export to developed countries will be taken into account. The results for this is presented in Model (4) to (6) in Table 5. As observed, the coefficient of the share of export to developed countries, $\ln(\text{share of export})$, is negative for all three models. However, only the coefficient for the total sample is significant. This result in general is surprising, because the larger the share of export goes to developed countries, the more negative it influences the GDPPC. The negative effect might be due to the high transaction costs and trade barriers, which are usually imposed by developed countries. When looking at developing and developed countries, the coefficient of the share of export to developed countries is not significant for developing countries nor developed countries. The effects of control variables remain similar as in Models (1) to (3). The significantly positive effect of trade, measured by export, on GDPPC is still larger for developed countries than developing countries. Therefore, there is not enough evidence to conclude that more export from developing countries to developed countries will reduce international income inequality.

To examine the effect of outsourcing on the international income gap, this paper focuses on the share of intermediate goods that are exported from developing countries to developed countries. As presented in Model (7), the coefficient of the natural logarithm of the share of intermediate goods to developed countries is insignificant. This may be due to the fact that the export of intermediate goods, on average, is only a small fraction of a country's GDP. Its effect on GDPPC is therefore marginal (too small), compared to other

control variables in the regression. Except $\ln(\text{export})$, other control variables are not significant. This may be due to a statistical issue: the number of observations reduces significantly compared to previous models, as less data is available. The effect of trade is not only significantly positive at 1% level, but also is an increase compared to Model (3) and (6). To sum up, there is not enough evidence to conclude that an increase in outsourcing, in terms of the share of intermediate goods exporting from developing countries to developed countries, will reduce the international income inequality, as its effect on GDPPC is too small. On the other hand due to the rise in $\ln(\text{export})=0.44$ compared to model 3 and 6, it can be indirectly assumed that export of intermediate goods to developed countries will help trade in general and through that increase GDP.

Each of the previous models will be tested in three ways for robustness. The results of the robustness test are presented in Table 6 (related to Model (1) to (3)), table 7 (related to Model (4) to (6)), and table 8 (related to Model (7))

Firstly, when replacing the dependent variable $\ln(\text{GDPPC})$ by the variable $\ln(\text{GDP})$, the significance and the magnitude of the variables remain the same as the original models. Secondly, international trade will be measured by $\ln(\text{import})$ instead. Even though more control variables have become significant, it comes to the same conclusions as in the case when using $\ln(\text{export})$. Finally, when adding $\ln(\text{education})$ to the control variables, as it is an important variable used in many literature, and to see whether the model is subjected to the 'omitted' variable bias, it does not show any significance in any model. Also, it does not alter the results in this paper. Therefore, omitting the education variable is not a problem. This has proven that the methodology used in this paper is coherent and the results are robust/reliable.

7. Conclusion

The object of this paper was to shed light on the relationship between international trade and the inequality gap. The research question required that this paper look at the last few years and identify whether the inequality gap can be explained by international trade and whether the development of the economy matters. This paper defined the inequality gap as the difference in GDP per capita between countries that were classified as developed and developing.

Hypothesis 1, assumed that economic growth in developing countries would be faster than developed countries and that therefore the gap would reduce. After analyzing the data it could be seen that GDP and the gap, both were increasing over time. But the GDP Growth was highly volatile to fluctuations for both the developed and developing countries. Even though it looked as if GDP Growth was faster in developing countries for a few years, it could be confirmed that GDP Growth cannot be said with significance that it was higher than for developed countries. Due to the fact that it was not significant, I cannot conclude that GDP growth is faster in developing countries, and therefore the null hypothesis 1 cannot be rejected.

Hypothesis 2, assumed that if developing countries export more to developed countries then the inequality gap will reduce. The results showed that trade in exports did have a positive influence on the GDPPC. When looking at only developing countries I found that the share of exports to developed countries was negatively significant and that the total exports were positively significant. This allows me to conclude that there is not enough evidence for hypothesis 2 and therefore the null hypothesis 2 cannot be rejected.

Hypothesis 3, assumed that since outsourcing has become more important to countries, if developed countries outsourced more to developing countries then the gap would reduce. It can be concluded that there is not enough evidence to reject the null hypothesis 3, and that outsourcing from developed countries may not help reduce the gap. On the other hand, it could be assumed that outsourcing does have an effect of trade on GDP indirectly and therefore may benefit the country. The argument that Feenstra and Hanson (1996) made can suggest that the inequality gap may not reduce as a result of outsourcing but that instead it raises the average skill-intensity of production in both

locations. Either way because the share of intermediate goods is relatively a small part of total trade its effects may be insignificant to the inequality gap.

Overall, this paper can conclude that there are many dimensions that have to be considered with regard to factors that influence the income gap. Due to the fact that exports benefited the developed country more than it did for developing countries, and in line with similar results found by Aradhyula, Rahman and Seenivason (2007), it can be said that when testing an unbalanced panel data set, trade openness increases income inequality overall. Therefore the impact that international trade would have on the income gap according to this study would suggest that there is an increase in the gap since developed countries are still benefiting more from trade than developing countries.

8. Limitation and suggestion

This paper is limited in several ways. First of all, the problem of confounding between the dependent and independent factors was not considered. This means this paper did not look at any possible extraneous variables that might be directly or indirectly correlated to the dependent and independent variable. Another limitation that was encountered was the fact that the data set was unbalanced, and due to the lack of information available for each year and country the results and the data itself may be subjected to some degree of biasness.

For further research, various aspects of this paper can be improved in order to obtain a more robust and broader view. One suggestion that can be made is to include variables that show the effects of the country's geographical barriers, history (colonization) and perhaps trade policies (trade barriers). These are also factors that may have a significant influence on the gap. It might also be interesting to look at different ways to measure the income gap, for example by wage levels, consumption, consumer price index etc. To have a more solid conclusion about the causality of the gap with trade, a closer look at how north-south trade and south-south trade influence the gap. Another suggestion would be to include outsourcing in the form of services, this would then give a more accurate view of the proportion of trade that is being outsourced. For example, many developing countries such as India have call centers and other services that are outsourced from firms in developed countries. It is also advised to may be analyze a longer period of time for outsourcing.

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Appendix

Formula 1 – the z-test

$$z = \frac{\bar{x}_1 - \bar{x}_2 - \Delta}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

Here \bar{x}_1 and \bar{x}_2 are the means of the two samples, Δ is the hypothesized difference between the population means (in this case it is equal to 0 if testing for equal means), σ_1 and σ_2 are the standard deviations of the two populations, and n_1 and n_2 are the sizes of the two samples.

Table 1

Variable	Detail	Total	Developed	Developing
GDP_PC	No. Of observations	4433	1850	2310
	Mean	9760.344	19981.05	1186.096
	Std. Dev.	16814.29	20130.36	964.128
	Min	64.81015	1621.332	91.70108
	Max	193892.3	193892.3	5192.769
GDP_PC growth	No. Of observations	4369	1849	2309
	Mean	2.016644	2.095081	2.096567
	Std. Dev.	6.083057	4.082246	6.876959
	Min	-50.23583	-16.58917	-49.76177
	Max	91.67289	33.89373	91.67289
Trade Openness	No. Of observations	4137	1698	2253
	Mean	.8695893	.9891565	.7707151
	Std. Dev.	.4994494	.6194417	.3647066
	Min	.1094877	.1375305	.1094877
	Max	5.620622	5.620622	2.803611

Figure 4

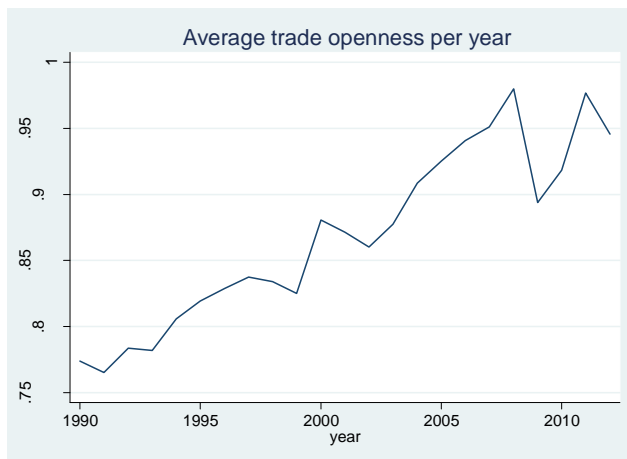


Figure 6a

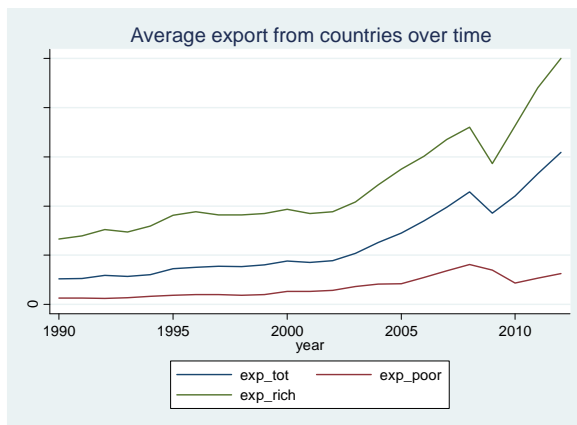


Figure 6b

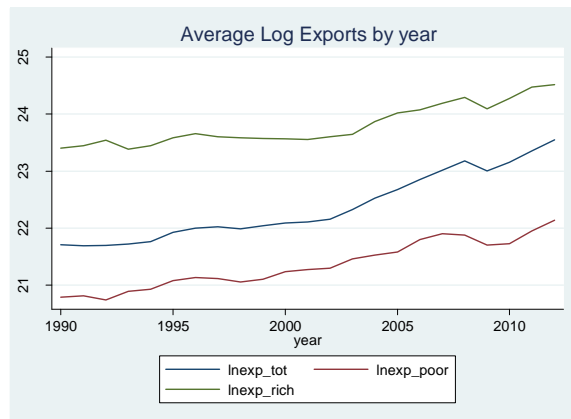


Table 2 - Key Variables

Variable Type	Model	Variable	Description
Dependent	1-7, 11-16, 20-26, 28	LnGDPPC	Natural Logarithm Gross Domestic Product per capita
	8-10, 17-19, 26	LnGDP	Natural Logarithm Gross Domestic Product
Independent	1-10, 14-19, 23-26, 28	LnExp	Natural Logarithm of exports: total exports of goods and services measured in current US\$
	11-13, 20-22,	LnImp	Natural Logarithm of imports: total imports of goods and services measured in current US\$

	27		
	4-6, 17-25	Share_Export	Share of exports to developed countries as percentage of total exports
	7, 26-28	Share_INT	Share of exports in intermediate goods to developed countries as a percentage of total exports in intermediate goods
Control (X)	1-28	LnFDI	Natural Logarithm Foreign Direct Investment: net inflows of FDI measured as a percentage of GDP
	1-28	LnGCF	Natural Logarithm Gross Capital Formation: calculated as a percentage of GDP
	1-28	Lnpop	Natural Logarithm of Population: Total Population
	1-28	LnLE	Natural Logarithm Life Expectancy: life expectancy at birth measured in total years
	1-28	LnConsumption	Natural Logarithm Consumption Expenditure: Final Consumption expenditure measured as a percentage of GDP
	1-28	Inf	Inflation: Annual percentage change of consumer prices
	14-16, 23-25, 28	LnEdu	Natural Logarithm Education: Percentage of population that enrolled in secondary school education

Table 3 - World Bank classification

<i>Data for calendar year</i> :	<i>Low income</i> (L)	<i>Lower middle income</i> (LM)	<i>Upper middle income</i> (UM)	<i>High income</i> (H)
1990	≤ 610	611-2,465	2,466-7,620	> 7,620
1991	≤ 635	636-2,555	2,556-7,910	> 7,910
1992	≤ 675	676-2,695	2,696-8,355	> 8,355
1993	≤ 695	696-2,785	2,786-8,625	> 8,625
1994	≤ 725	726-2,895	2,896-8,955	> 8,955
1995	≤ 765	766-3,035	3,036-9,385	> 9,385
1996	≤ 785	786-3,115	3,116-9,645	> 9,645
1997	≤ 785	786-3,125	3,126- 9,655	> 9,655
1998	≤ 760	761-3,030	3,031-9,360	> 9,360
1999	≤ 755	756-2,995	2,996-9,265	> 9,265
2000	≤ 755	756-2,995	2,996-9,265	> 9,265
2001	≤ 745	746-2,975	2,976-9,205	> 9,205
2002	≤ 735	736-2,935	2,936-9,075	> 9,075
2003	≤ 765	766-3,035	3,036-9,385	> 9,385

2004	≤ 825	826-3,255	3,256-10,065	> 10,065
2005	≤ 875	876-3,465	3,466-10,725	> 10,725
2006	≤ 905	906-3,595	3,596-11,115	> 11,115
2007	≤ 935	936-3,705	3,706-11,455	> 11,455
2008	≤ 975	976-3,855	3,856-11,905	> 11,905
2009	≤ 995	996-3,945	3,946-12,195	> 12,195
2010	≤ 1,005	1,006-3,975	3,976-12,275	> 12,275
2011	≤ 1,025	1,026-4,035	4,036-12,475	> 12,475
2012	≤ 1,035	1,036-4,085	4,086-12,615	> 12,615
2013	≤ 1,045	1,046-4,125	4,126-12,745	> 12,745

Table 4 - List of countries

(The countries that have a * mean that they have changed country classification somewhere within the period 1990-2012)

<i>Developing Countries</i>	<i>Developed Countries</i>
Albania*	Albania*
Algeria*	Algeria*
Andorra	Angola*
Angola*	Arab World*
Antigua and Barbuda	Armenia
Arab World*	Azerbaijan*
Argentina	Bangladesh
Australia	Belarus*
Austria	Belize*
Azerbaijan*	Benin
Bahamas, The	Bhutan
Bahrain	Bolivia
Barbados	Bosnia and Herzegovina*
Belarus*	Botswana*
Belgium	Brazil*
Belize*	Bulgaria*
Bermuda	Burkina Faso
Bosnia and Herzegovina*	Burundi
Botswana*	Cabo Verde
Brazil*	Cambodia
Brunei Darussalam	Cameroon
Bulgaria*	Central African Republic
Canada	Chad
Chile*	Chile*
China*	China*
Colombia*	Colombia*
Costa Rica*	Comoros

Croatia	Congo, Dem. Rep.
Cuba*	Congo, Rep.
Cyprus	Costa Rica*
Czech Republic	Cote d'Ivoire
Denmark	Cuba*
Dominica*	Djibouti
Dominican Republic*	Dominica*
Ecuador*	Dominican Republic*
Equatorial Guinea*	Ecuador*
Estonia	Egypt, Arab Rep.
Fiji*	El Salvador
Finland	Equatorial Guinea*
France	Eritrea
Gabon	Ethiopia
Germany	Fiji*
Greece	Gambia, The
Greenland	Georgia
Grenada*	Ghana
Hong Kong SAR, China	Grenada*
Hungary	Guatemala
Iceland	Guinea
Iran, Islamic Rep.*	Guinea-Bissau
Iraq*	Guyana
Ireland	Haiti
Isle of Man	Honduras
Israel	India
Italy	Indonesia
Jamaica*	Iran, Islamic Rep.*
Japan	Iraq*
Jordan*	Jamaica*
Kazakhstan*	Jordan*
Korea, Rep.	Kazakhstan*
Kuwait	Kenya
Latvia	Kiribati
Lebanon*	Kosovo
Libya	Kyrgyz Republic
Liechtenstein	Lao PDR
Lithuania*	Latvia
Luxembourg	Lebanon*
Macao SAR, China	Lesotho
Macedonia, FYR*	Liberia
Malaysia*	Lithuania*
Maldives*	Macedonia, FYR*
Malta	Madagascar
Marshall Islands*	Malawi

Mauritius*	Malaysia*
Mexico	Maldives*
Monaco	Mali
Montenegro*	Marshall Islands*
Namibia*	Mauritania
Netherlands	Mauritius*
New Caledonia	Moldova
New Zealand	Mongolia
Norway	Montenegro*
Oman	Morocco
Palau	Mozambique
Panama*	Namibia*
Peru*	Nepal
Poland	Nicaragua
Portugal	Niger
Puerto Rico	Nigeria
Qatar	Pakistan
Romania*	Panama*
Russian Federation*	Papua New Guinea
San Marino	Paraguay
Saudi Arabia	Peru*
Serbia*	Philippines
Seychelles	Poland
Singapore	Romania*
Slovak Republic*	Russian Federation*
Slovenia	Rwanda
South Africa*	Samoa
Spain	Sao Tome and Principe
St. Kitts and Nevis	Senegal
St. Lucia	Serbia*
Vincent and the Grenadines*	Sierra Leone
Suriname*	Slovak Republic*
Sweden	Solomon Islands
Switzerland	Somalia
Thailand*	South Africa*
Tonga*	South Asia
Trinidad and Tobago	South Sudan
Tunisia*	Sri Lanka
Turkey*	Vincent and the Grenadines*
Turkmenistan*	Sudan
Tuvalu*	Suriname*
United Arab Emirates	Swaziland
United Kingdom	Syrian Arab Republic
United States	Tajikistan
Uruguay	Tanzania

Venezuela, RB*	Thailand*
	Timor-Leste
	Togo
	Tonga*
	Tunisia*
	Turkey*
	Turkmenistan*
	Tuvalu*
	Uganda
	Ukraine
	Uzbekistan
	Vanuatu
	Venezuela, RB*
	Vietnam
	West Bank and Gaza
	Yemen, Rep.
	Zambia
	Zimbabwe

Table 5 - Main Regression Results

DEPENDENT VARIABLES	(1) LN(GDPPC) _{Total}	(2) LN(GDPPC) _{Rich}	(3) LN(GDPPC) _{Poor}	(4) LN(GDPPC) _{Total}	(5) LN(GDPPC) _{Rich}	(6) LN(GDPPC) _{Poor}	(7) LN(GDPPC) _{Poor}
<i>Ln(export)</i> _{t-1}	0.472*** (0.0358)	0.581*** (0.0507)	0.381*** (0.0453)	0.454*** (0.0398)	0.580*** (0.0537)	0.356*** (0.0501)	0.444*** (0.0968)
<i>Ln(FDI)</i> _{t-1}	-0.00635 (0.00489)	0.00123 (0.00856)	-0.00746 (0.00565)	-0.00522 (0.00555)	0.00187 (0.00751)	-0.00624 (0.00686)	0.0207* (0.0112)
<i>Ln(GCF)</i> _{t-1}	0.0364 (0.0340)	0.165*** (0.0357)	0.0259 (0.0328)	0.0446 (0.0342)	0.156*** (0.0355)	0.0317 (0.0345)	0.0312 (0.0411)
<i>Ln(life expectancy)</i> _{t-1}	0.134 (0.257)	-0.136 (0.444)	0.322 (0.320)	0.159 (0.208)	-0.178 (0.543)	0.281 (0.248)	-1.256 (1.320)
<i>Ln(population)</i> _{t-1}	-0.883*** (0.131)	-0.380** (0.177)	-1.236*** (0.205)	-0.734*** (0.135)	-0.444** (0.174)	-0.979*** (0.222)	-1.549 (1.099)
<i>Ln(Consumption exp)</i> _{t-1}	-0.120 (0.144)	0.430*** (0.133)	-0.0850 (0.137)	-0.115 (0.136)	0.405*** (0.127)	-0.109 (0.136)	0.224 (0.294)
<i>Ln(inflation)</i> _{t-1}	-0.0117* (0.00658)	0.0120** (0.00517)	-0.0202** (0.00901)	-0.0144** (0.00698)	0.0101 (0.00647)	-0.0228** (0.00926)	-0.00216 (0.00892)
<i>Ln(share of export)</i> _{t-1}				-0.222*** (0.0761)	-0.155 (0.145)	-0.140* (0.0812)	
<i>Ln(share of intermediate goods)</i> _{t-1}							-0.139 (0.0911)
Constant	10.87*** (2.370)	-0.554 (4.038)	17.04*** (3.435)	8.805*** (2.385)	0.780 (4.340)	13.82*** (3.728)	26.42 (17.13)
Fixed effects: year and country effects for all regressions							
Observations	3,042	1,262	1,736	2,757	1,157	1,563	237
R-squared	0.863	0.891	0.837	0.868	0.890	0.842	0.846
Number of countries	181	102	123	173	99	116	58

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6 - Regression for Robust check 1

	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DEPENDENT VARIABLES	LN(GDP) _{Total}	LN(GDP) _{Rich}	LN(GDP) _{Poor}	LN(GDPPC) _{Total}	LN(GDPPC) _{Rich}	LN(GDPPC) _{Poor}	LN(GDPPC) _{Total}	LN(GDPPC) _{Rich}	LN(GDPPC) _{Poor}
Ln(export)_{t-1}	0.489*** (0.0334)	0.580*** (0.0513)	0.401*** (0.0441)				0.495*** (0.0440)	0.629*** (0.0500)	0.378*** (0.0518)
Ln(FDI)_{t-1}	-0.00749 (0.00497)	-0.00304 (0.00770)	-0.00770 (0.00600)	-0.00800* (0.00446)	-0.00754 (0.00632)	-0.00712 (0.00530)	-0.00349 (0.00561)	6.64e-05 (0.00697)	-0.00397 (0.00667)
Ln(GCF)_{t-1}	0.0425 (0.0323)	0.174*** (0.0364)	0.0257 (0.0325)	-0.162*** (0.0303)	-0.0732** (0.0346)	-0.154*** (0.0335)	0.0892** (0.0420)	0.204*** (0.0500)	0.0484 (0.0467)
Ln(life expectancy)_{t-1}	0.234 (0.245)	-0.200 (0.434)	0.448 (0.306)	0.243* (0.140)	-0.104 (0.472)	0.394** (0.185)	0.0818 (0.348)	-0.335 (0.424)	0.270 (0.461)
Ln(population)_{t-1}	0.128 (0.129)	0.587*** (0.188)	-0.270 (0.208)	-0.826*** (0.118)	-0.437** (0.190)	-1.141*** (0.197)	-0.844*** (0.153)	-0.185 (0.125)	-1.269*** (0.254)
Ln(Consumption exp)_{t-1}	-0.117 (0.136)	0.298** (0.132)	-0.108 (0.146)	-0.676*** (0.0562)	-0.422*** (0.109)	-0.659*** (0.0793)	-0.00877 (0.130)	0.406** (0.160)	-0.177 (0.155)
Ln(inflation)_{t-1}	-0.00506* (0.00278)	-0.00191 (0.00634)	-0.00370 (0.00287)	-0.00389 (0.00285)	0.00342 (0.00976)	-0.00335 (0.00269)	-0.00487 (0.00310)	2.64e-05 (0.0231)	-0.00305 (0.00275)
Ln(import)_{t-1}				0.643*** (0.0286)	0.595*** (0.0508)	0.574*** (0.0367)			
Ln(education)_{t-1}							-0.00739 (0.0603)	0.0378 (0.0785)	-0.0597 (0.0812)
Constant	9.838*** (2.430)	0.854 (4.213)	16.70*** (3.691)	8.674*** (2.098)	4.327 (4.235)	14.09*** (3.308)	9.456*** (3.006)	-4.003 (3.431)	18.51*** (4.443)
<i>Fixed effects: year and country effects for all regressions</i>									
Observations	3,298	1,394	1,854	3,298	1,394	1,854	2,396	1,142	1,215
R-squared	0.895	0.912	0.883	0.887	0.886	0.864	0.864	0.893	0.838
Number of countries	182	103	123	182	103	123	173	96	116

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7 - Regressions for Robust check 2

	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
DEPENDENT VARIABLES	LN(GDP)_{Total}	LN(GDP)_{Rich}	LN(GDP)_{Poor}	LN(GDPPC)_{Total}	LN(GDPPC)_{Rich}	LN(GDPPC)_{Poor}	LN(GDPPC)_{Total}	LN(GDPPC)_{Rich}	LN(GDPPC)_{Poor}
<i>Ln(export)_{t-1}</i>	0.475*** (0.0369)	0.587*** (0.0532)	0.380*** (0.0481)				0.481*** (0.0521)	0.670*** (0.0536)	0.342*** (0.0620)
<i>Ln(FDI)_{t-1}</i>	-0.00721 (0.00568)	-0.00231 (0.00676)	-0.00714 (0.00747)	-0.0112** (0.00452)	-0.00694 (0.00533)	-0.0108* (0.00590)	-0.00556 (0.00597)	-0.000937 (0.00556)	-0.00430 (0.00869)
<i>Ln(GCF)_{t-1}</i>	0.0556 (0.0342)	0.174*** (0.0366)	0.0338 (0.0364)	-0.149*** (0.0326)	-0.0792** (0.0344)	-0.139*** (0.0374)	0.108** (0.0443)	0.217*** (0.0525)	0.0640 (0.0507)
<i>Ln(life expectancy)_{t-1}</i>	0.240 (0.205)	-0.225 (0.531)	0.372 (0.243)	0.342*** (0.124)	-0.113 (0.516)	0.429*** (0.140)	0.193 (0.316)	-0.383 (0.606)	0.368 (0.387)
<i>Ln(population)_{t-1}</i>	0.281** (0.134)	0.518*** (0.187)	0.0111 (0.227)	-0.727*** (0.120)	-0.505*** (0.191)	-0.954*** (0.206)	-0.669*** (0.146)	-0.226 (0.137)	-0.998*** (0.290)
<i>Ln(Consumption exp)_{t-1}</i>	-0.0949 (0.121)	0.288** (0.127)	-0.114 (0.131)	-0.652*** (0.0542)	-0.454*** (0.0991)	-0.640*** (0.0815)	-0.0187 (0.135)	0.428*** (0.152)	-0.221 (0.165)
<i>Ln(inflation)_{t-1}</i>	-0.0111*** (0.00396)	-0.00777 (0.0117)	-0.00779* (0.00447)	-0.0109*** (0.00410)	-0.00754 (0.0151)	-0.00830** (0.00401)	-0.0127** (0.00608)	-0.0505*** (0.00682)	-0.00339 (0.00598)
<i>Ln(import)_{t-1}</i>				0.641*** (0.0324)	0.621*** (0.0579)	0.562*** (0.0428)			
<i>Ln(education)_{t-1}</i>							0.00954 (0.0647)	0.0138 (0.0866)	-0.0729 (0.0927)
<i>Ln(share of export)_{t-1}</i>	-0.199** (0.0787)	-0.115 (0.143)	-0.120 (0.0875)	-0.161*** (0.0616)	-0.163 (0.121)	-0.0998 (0.0673)	-0.266*** (0.0913)	-0.0494 (0.134)	-0.199* (0.101)
Constant	7.654*** (2.390)	1.888 (4.449)	13.07*** (3.868)	6.606*** (2.080)	4.968 (4.395)	11.12*** (3.396)	6.501** (2.864)	-4.193 (4.327)	14.80*** (4.827)
Fixed effects: year and country effects for all regressions									
Observations	2,989	1,285	1,664	2,989	1,285	1,664	2,169	1,050	1,087
R-squared	0.897	0.907	0.885	0.890	0.887	0.867	0.873	0.897	0.848
Number of countries	173	99	116	173	99	116	166	93	108

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8 - Regression for Robust check 3

	(26)	(27)	(28)
DEPENDENT VARIABLES	LN(GDP) _{Poor}	LN(GDPPC) _{Poor}	LN(GDPPC) _{Poor}
<i>Ln(export)_{t-1}</i>	0.445*** (0.0948)		0.335*** (0.0995)
<i>Ln(FDI)_{t-1}</i>	0.0181 (0.0109)	0.0132 (0.0111)	0.0225* (0.0131)
<i>Ln(GCF)_{t-1}</i>	0.0272 (0.0388)	-0.123*** (0.0349)	0.0952 (0.0693)
<i>Ln(life expectancy)_{t-1}</i>	-1.037 (1.350)	-0.645 (1.173)	-0.391 (0.968)
<i>Ln(population)_{t-1}</i>	-0.611 (1.052)	-1.461 (0.912)	-1.954* (1.013)
<i>Ln(Consumption exp)_{t-1}</i>	0.240 (0.295)	-0.583** (0.265)	0.244 (0.254)
<i>Ln(inflation)_{t-1}</i>	0.0802 (0.0578)	0.0665 (0.0582)	0.0992* (0.0518)
<i>Ln(importt)_{t-1}</i>		0.526*** (0.111)	
<i>Ln(education)_{t-1}</i>			0.0462 (0.148)
<i>Ln(share of intermediate goods)_{t-1}</i>	-0.109 (0.0805)	-0.123 (0.0972)	-0.130 (0.113)
Constant	26.43 (16.55)	24.62* (13.81)	31.64* (16.37)
Fixed effects: year and country effects for all regressions			
Observations	246	246	175
R-squared	0.875	0.858	0.859
Number of countries	58	58	47

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1