Erasmus University Rotterdam

Department of Economics

Bachelor Thesis

Supervisor: Julian Emami Namini

A Detailed Analysis of International Trade and Income Inequality in Developed Countries

Rotterdam, July 2014

Gustav Fredriksson

Student number: 357467

Table of Contents

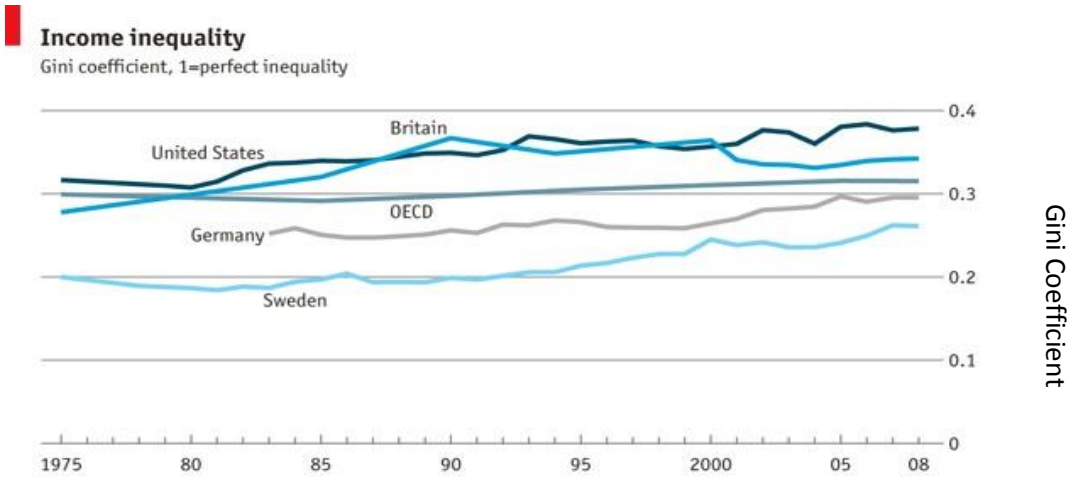
Abstract

This thesis analyzes the impact of trade on income inequality in 34 OECD countries between 2000 and 2010. The combined trade with other developed countries and least developed countries (LDCs) is found to have no effect. The analysis furthermore fails to corroborate the view that the separate trade with developed countries and LDCs impact inequality. However, imports from LDCs exhibit a small positive effect while exports to LDCs are found to reduce inequality. The limited impact of trade implies that other factors may explain the recent rise in inequality in developed countries. Indeed, the analysis suggests that greater technological progress and inflation may increase income disparities. Conversely, a larger share of employment in industry is found to reduce inequality.

1.0 Introduction

The recent rise in income inequality in many developed countries is receiving growing attention (Demir et al., 2012). Between 1975 and 2008, the Gini coefficient – a common measure of inequality that varies between zero (corresponding to perfect income equality) and one (perfect inequality) – increased by nearly 10 percent from 0.29 to 0.32 in the OECD countries (Figure 1) (OECD, 2011). Moreover, in 2011, the mean income of the richest 10 percent in the OECD countries was almost nine times higher than that of the poorest 10 percent (OECD, 2011). Too much inequality may result in harmful economic, social and political consequences for a country (Jaumotte et al., 2008). It has been argued that a more unequal distribution of national income may restrict a country's growth potential since a share of the population might be unable to take advantage of economic opportunities (Alesina and Rodrik, 1994 and Galor and Moav, 2004). In addition, increased inequality might render individuals more vulnerable to poverty especially during recessionary periods (Jaumotte et al., 2008). An excessively high level of inequality may also jeopardize a country's political stability if a growing share of the population becomes discontent with their economic situation. This might make it difficult to reach political agreement across higher and lower income segments, thereby circumscribing a country's broader development prospects (Soubbotina, 2004). Understanding the causes for the rise in income inequality in developed countries is therefore essential in order to design policies which improve the allocation of income across the population.

Figure 1. Change in the Gini coefficient in selected OECD countries between 1975 and 2008



Source: *OECD*, cited in *The Economist*

International trade is one factor that has been blamed for the increase in income inequality (Jaumotte et al., 2008). In recent decades, the rise in income inequality in developed countries has been paralleled with an expansion of international trade (Jaumotte et al., 2008). Most research that has examined the impact of trade on inequality has focused on the trade flows between developed and developing countries (i.e. North-South trade) (Epifani and Gancia, 2008a). However, as highlighted by Epifani and Gancia (2008a), the possible income distributional effects in developed countries of trade with other developed countries (i.e. North-North trade) have been largely ignored. This thesis aims to fill this gap by empirically examining the effects of trade with other developed countries and those developing countries classified as "least developed" on income inequality in developed countries. In addition, the impact of the combined trade with both these categories of countries will be investigated.

This thesis makes a number of additional contributions. To the best of my knowledge, no previous study has investigated the separate impacts of exports and imports from developing and developed countries on income inequality in developed countries. These subcomponents of trade could be expected to impact inequality differently. Moreover, in contrast to many previous studies, this thesis will only use those developing countries which are classified as "least developed"[1], which have not caught up economically with developed countries as much as the other developing countries in recent decades (Milanovic, 2005b). As this thesis aims to investigate whether trade with rich and poor countries have had different effects on income inequality, focusing on the least developed countries (LDCs) provides a larger contrast between the two groups of countries. Finally, this thesis employs a recent dataset (2000-2010) and carries out a number of robustness tests (including an instrumental variable approach) to verify the validity of the results.

The findings essentially suggest that the impact of trade on income inequality in developed countries should not be exaggerated. On the contrary, combined trade with both categories of countries has no significant effect on inequality. Similarly, neither trade with other developed countries nor with LDCs has a significant impact. However, imports from LDCs were found to increase income inequality in developed countries. The analysis also suggests that exports to LDCs may reduce income inequality. Moreover, increased technological

[1] For a full list of these countries, please see Table C in the appendix

progress and inflation were generally found to increase inequality, whereas a large share of the population employed in the industrial sector has the opposite effect. But overall, the results do not lend support to concerns that globalization (measured in terms of trade intensity) has widened income inequality in developed countries.

The remainder of the thesis is structured as follows. Section 2 presents the theoretical framework and outlines the hypotheses regarding the effects of trade on income inequality. The data, along with the methodology and the various robustness tests, are described in Section 3. Section 4 presents the results, while Section 5 reports the outcome of the sensitivity analysis. Section 6 concludes.

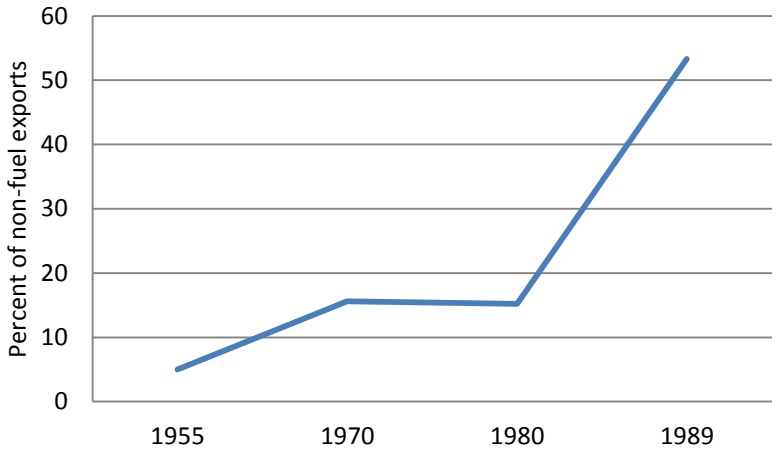
2.0 Theory

2.1 North-South Trade and Income Inequality

The most prominent models describing the impact of trade between developed and developing countries (i.e. North-South trade) on income inequality are the Heckscher-Ohlin and the Stolper-Samuelson theorems (Ohlin, 1933, Stolper and Samuelson, 1941 and Cassette et al., 2012). The Heckscher-Ohlin model predicts that trade is driven by differences in relative factor endowments between countries. Specifically, a country is expected to export goods which use intensively the factors of production with which the country is relatively abundantly endowed, and import goods which are produced intensively using the relatively scarce factors in the country (Epifani and Gancia, 2008b). Developed countries are regarded as relatively abundantly endowed with skilled labor and developing countries with unskilled labor (Wood, 1994). Thus, the Heckscher-Ohlin model predicts that developed countries will export skilled-labor intensive goods and import unskilled-labor intensive ones. The Stolper-Samuelson theorem, on the other hand, holds that an increase in the relative price of a good will raise the return to the factor which is used intensively in the production of the good, and lower the return to the other factor (Cassette et al., 2012). As trade is likely to increase the demand and price for skilled vis-à-vis unskilled labor in developed countries, the wage gap between these two factors is expected to increase in developed countries. Thus, these theories contend that North-South trade leads to increased income inequality in developed countries.

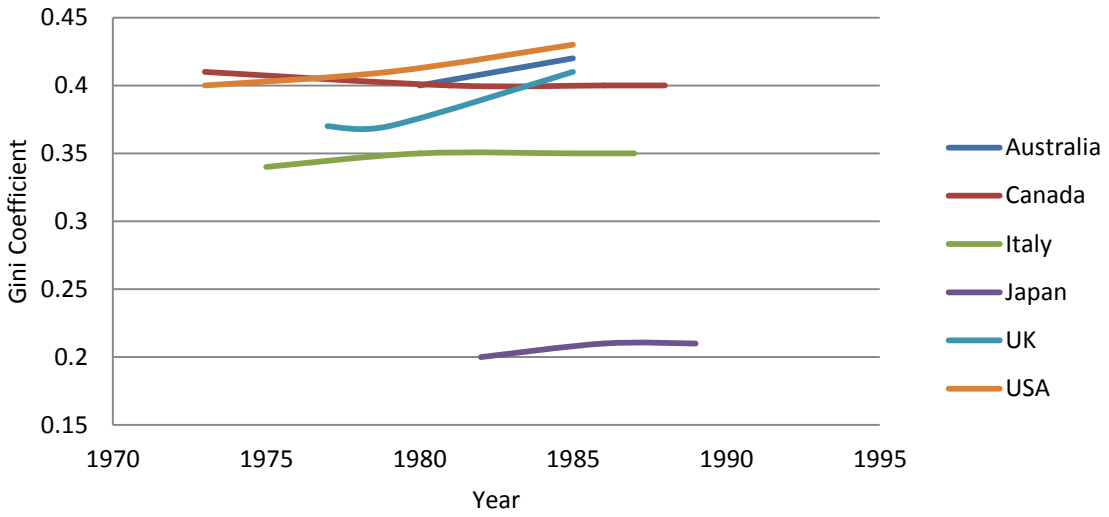
In contrast to the unequivocal theoretical predictions, the empirical evidence for the impact of North-South trade on income inequality is less clear-cut (De Melo et al., 2006). De Melo et al. (2006) do find that factor endowment differences between countries explain the rise in income inequality in developed countries. Wood (1994 and 1995), Batra (1993) and Slaughter and Swagel (1997) likewise lend support to the view that North-South trade has increased the skill premium (i.e. the wage difference between skilled and unskilled labor) in developed countries, contributing to increased income inequality. Wood (1994) furthermore illustrates how increased exports of manufactured goods, in particular, from developing to developed countries have depressed the low-skilled wage in developed countries. This, he argues, has in turn contributed to growing income disparities. Figures 2-4 replicate some of the results of Wood (1994). As shown in Figure 2, manufacturing exports from developing to developed countries increased drastically between 1980 and 1989. Wood (1994) contends that this contributed to the rise in income inequality which occurred across many developed countries during this period (Figures 3 and 4).

Figure 2. Manufacturing exports to developed countries from developing countries as a percentage of developing countries' total non-fuel exports, 1955-1989



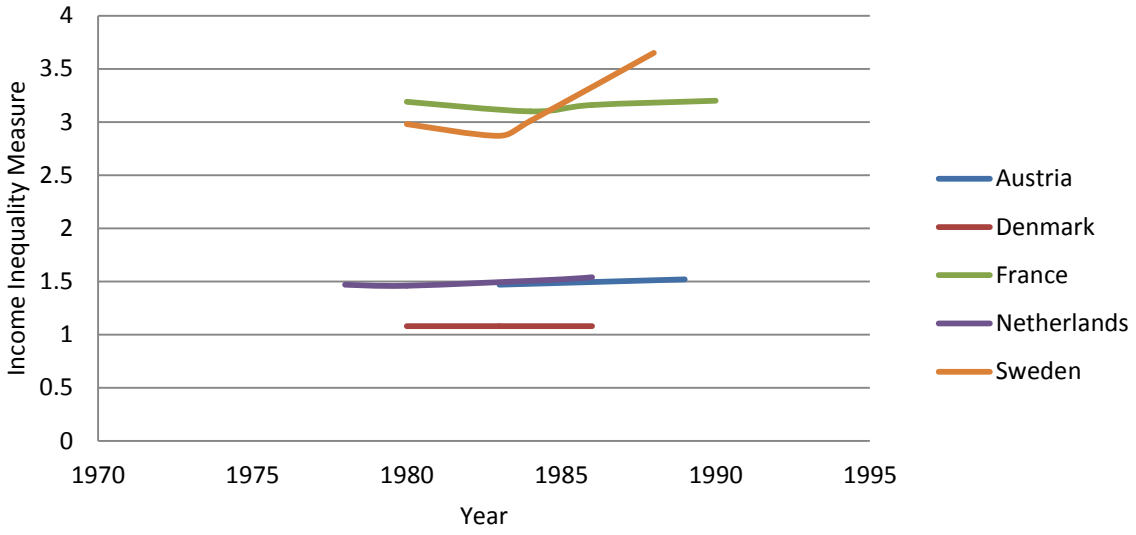
Source of Data : Wood (1994)

Figure 3. [2] Change in income inequality in selected developed countries for various time periods



Source of Data : Wood (1994)

Figure 4.[3] Change in income inequality in selected developed countries for various time periods



Source of Data : Wood (1994)

[2] Note: Income inequality in Figure 3 is measured by the Gini coefficient

[3] Note: Income inequality in Figure 4 is measured by the top/bottom quintile group mean income index for Sweden; by the ratio of 90th to 10th income percentile for France; and by the ratio of 75th to 25th income percentile for Austria, Denmark and the Netherlands.

A number of other authors argue, however, that trade does not impact income inequality. Lawrence and Slaughter (1993) find no empirical support for the claim that a Stolper-Samuelsson process has caused the rise in income inequality in the U.S. and belittle the role of trade in explaining the increased income disparity. Similarly, Krugman and Lawrence (1993) and Edwards (1997) find no significant effect of North-South trade on income inequality. Recent studies have also expressed skepticism regarding this relationship, since trade based on relative factor endowment differences is only a small fraction of total trade (Epifani and Gancia, 2008b). The effect of trade with developing countries on income inequality in developed countries is therefore uncertain from an empirical standpoint.

2.2 North-North Trade and Income Inequality

The so-called new trade theory is the dominant paradigm in explaining the impact of trade between developed countries (i.e. North-North trade) on income inequality. Developed by Krugman (1979) and Lancaster (1980), this theory postulates that similar countries trade in goods produced with similar factor proportions in order to exploit increasing returns to scale and to enjoy diversity. It was initially thought that such intra-industry trade has no impact on countries' income distributions since relative factor demand and prices should not be affected (Epifani and Gancia, 2008a). However, this view has come under increased criticism by recent research. Neary (2002) and Thoenig and Verdier (2003) demonstrate how intra-industry trade may induce firms to shift to more skill-intensive technologies in order to prevent the entry of new firms. This will in turn increase the demand for skilled labor as well as this labor's productivity. The skill premium is therefore expected to rise as a result, which increases income disparities between unskilled and skilled labor. Antweiler and Trefler (2002) as well as Lindert and Williamson (2001) furthermore illustrate that increased national output in developed countries leads to higher relative demand for skilled workers, as output scale effects tend to be skill-biased. Since trade results in specialization and higher output, trade may increase income inequality (Antwelier and Trefler, 2000). Using trade data for 35 countries and the years 1980 and 1990, Epifani and Gancia (2008a) find that increased trade openness can induce skill-biased technical change and thus greater demand for skilled labor. In addition, the authors argue that increased trade will raise output disproportionately

in skilled labor industries compared to unskilled ones, because the former are more likely to benefit from economies of scale. Epifani and Gancia (2008a) thus also adhere to the view that North-North trade leads to increased income inequality in developed countries.

2.3 Hypotheses

Based on the above theoretical discussion, a set of hypotheses regarding the impact of trade on income inequality in developed countries can be formulated. The Heckscher-Ohlin model predicts that North-South trade increases income inequality in developed countries. In addition, the empirical literature provides partial support for a positive relationship between trade between developing and developed countries, and income inequality. As this paper focuses on the developing countries classified as least developed to make a clearer distinction between rich and poor countries, the first hypothesis is therefore as follows:

Hypothesis 1: Trade between least developed countries and developed countries increases income inequality in developed countries

As discussed above, most empirical and theoretical studies which have examined the impact of trade between developed countries on income inequality point towards a positive relationship. Thus, a second hypothesis can be formulated:

Hypothesis 2: Trade between developed countries increases income inequality in developed countries

Finally, this thesis investigates the effect of total trade on income inequality. The empirical evidence for this relationship is mixed. A number of authors have failed to find a significant relationship between these two variables (e.g. Dollar and Kraay, 2002 and Higgins and Williamson, 1999). However, Bergh and Nilsson (2010) and Cassette et al. (2012) contend that trade with both developed and developing countries has increased income inequality in developed countries. Moreover, this thesis has already hypothesized that both trade between LDCs and developed countries and between developed countries increase income inequality. It may therefore be logical to predict a positive relationship between total trade and income inequality. Thus, the third hypothesis is as follows:

Hypothesis 3: Total trade increases income inequality in developed countries

3.0 Data and Methodology

3.1 Data

This section outlines the variables used in this thesis. Table A in the appendix presents summary statistics of all variables. This thesis investigates the effect of trade on the within-country variation in income inequality in all of the 34 OECD countries between the years 2000 and 2010. Table B in the appendix lists these OECD countries as of 2010. The data consist of an unbalanced panel of annual observations.

The Dependent Variable

Inequality – the dependent variable – is operationalized by the Gini coefficient, which is the most commonly used measure of income inequality (Jakobsson, 2006). The Gini coefficient takes a value of 0 for complete equality and a value of 1 for complete inequality. It should be noted that the Gini data of this paper are reported as the Gini coefficient multiplied by 100. As a result, a value of 100 would indicate complete inequality. Data on Gini coefficients based on household disposable (i.e. post-tax and post-transfer) income were obtained for each country and year from the *Standardized World Income Inequality Database* (SWIID). This recently developed database provides extensive coverage across countries and time, as well as a high degree of comparability across observations (Pop et al., 2013). These data should be considered reliable. 11 observations of Gini coefficient were obtained for each country, thus totaling 374 observations.

The Independent Variables of Interest

In accordance with previous studies (e.g. Jaumotte et al., 2008, Cassette et al., 2012 and Jakobsson, 2006), a country's trade volume is measured by the sum of its exports and imports as a percentage of its GDP. In order to test the hypotheses, this thesis uses three variables of main interest: *Total Trade* (i.e. trade with both LDCs and developed countries), *North Trade* (i.e. trade with developed countries) and *South Trade* (i.e. trade with LDCs). Tables B and C in the appendix list the developed countries and LDCs respectively used in

this investigation. The LDCs are those classified by the United Nations (UNCTAD, 2013). Data on exports and imports were obtained for each country and year from the *United Nations Commodity Trade Statistics Database* (UN Comtrade). These data consist of the aggregated exports and imports of all commodities for each developed country with LDCs and developed countries. The data do not incorporate trade in services which is unfortunate considering services are a growing share of international trade (Cassette et al., 2012). All data on exports and imports are expressed in percentages of a country's GDP. The GDP data were obtained from the *World Development Indicators* database.

Control Variables

Data on eight variables which have been identified by previous studies as potentially affecting income inequality were also obtained. These are briefly described below:

Education. Data on the gross enrollment rate of secondary education for both sexes, independent of age, as a percentage of the population of official secondary education age, were collected to account for the impact of education on income inequality. The data were obtained from *OECD Statistics* and *Econstats.com*. *Education* is expected to decrease *Inequality* since an increase in education implies greater skills in the economy. This may in turn decrease the wage difference of skilled and unskilled labor, resulting in lower income inequality (Cassette et al., 2012, Demir et al., 2012 and Jaumotte et al., 2008).

FDI. This variable represents inward foreign direct investment flows. It is measured in US Dollars at current prices and current exchange rates as a percentage of GDP. Data on FDI were obtained from *UNCTAD Statistics* whereas data on GDP were obtained from the *World Development Indicators* database. FDI inflows are likely to increase income inequality since they are expected to raise the relative demand for skilled labor and thereby increase the skill premium (Demir et al., 2012).

M2. The quantity of money and quasi-money (M2) in an economy, depicted as a percentage of GDP, is used as a proxy for the degree of development of the domestic financial market. Data on M2 were collected from the *World Development Indicators* database. A negative sign for this variable is hypothesized since growth of the financial market may relax the

credit constraint for poorer segments of the population, allowing them to increase their investment and facilitate access to education (Demir et al., 2012 and Milanovic, 2005a).

Employment in Industry. This variable is operationalized by the employment in mining, manufacturing, construction and public utilities (consisting of electricity, water and gas) as a percentage of total employment, and is used to account for the structure of the economy. These data were primarily obtained from the *World Development Indicators* database. Complementary statistics for Canada (2009 and 2010) were taken from *Statistics Canada*, for New Zealand (2010) from *Statistics New Zealand*, and for Israel (2010) from *the Central Bureau of Statistics of Israel*. Income inequality is expected to decrease as the share of the industrial employment increases. As employment shifts from the agricultural to the industrial sector (where the average wage is higher), a greater share of low-skilled labor benefit from higher incomes. The average wage in the industrial sector is also higher and characterized by a lower standard deviation compared to the service sector. This may suggest that income inequality should decrease as employment in industry increases (Bergh and Nilsson, 2010 and Alderson and Nielsen, 2002).

Trade Union Density. Trade union density is measured by the share of all salary and wage earners who are members of a union. Data on this variable for all countries except Israel were acquired from *OECD Statistics*. Data for Israel came from *the Central Bureau of Statistics of Israel*. An inverse relationship between this variable and income inequality is expected, since a stronger role of trade unions can be expected to increase the bargaining power of low-skilled labor in wage negotiations (Cassette et al., 2012).

Technological Progress. The number of fixed broadband internet subscriptions per 100 people is used as a proxy for this variable. Statistics on broadband subscriptions were collected from the *World Development Indicators* database. Technological progress is regarded as skill-biased, as it enhances the productivity of primarily skilled labor. Thus, this variable is predicted to increase income inequality (Jaumotte et al., 2008).

Inflation. In order to control for the macroeconomic environment, the inflation rate was included. This variable is measured by the GDP deflator in annual percent. Inflation data were acquired from the *World Development Indicators* database. Higher inflation is hypothesized to increase income inequality since high income earners can better shield

themselves against the erosion of their real income caused by inflation (Cassette et al., 2012 and Sarel, 1997).

Government Expenditure. Government final consumption expenditure is expressed as a percentage of GDP. Statistics were obtained from the *World Development Indicators* database. As poorer individuals are likely to benefit more from increased government spending on income transfers and areas such as education and healthcare, a negative relationship is expected with income inequality (Demir et al., 2012 and Sarel, 1997).

Once all control variables are included in the model and data availability is taking into account, 337 observations for each variable are available.

3.2 Methodology

The three hypotheses were first tested using OLS regression. As this paper aims to examine the effect of trade on the within-country variation in income inequality, country dummies were included in the regression models to control for country-specific heterogeneity. As suggested by Jaumotte et al. (2008), unobservable confounding variables which differ across time may exist. A set of year dummy variables was therefore incorporated to account for time-specific heterogeneity. Thus, the regression analysis uses both country and time fixed effects. It should be noted that the residuals of all regression models in this paper satisfy the homoscedasticity and normal distribution criteria.

Model 1 was used to investigate the third hypothesis, whereas the remaining two hypotheses were tested using Model 2 (see below):

$$\boldsymbol{Inequality_{i,t} = \alpha + \beta_1 * Total\ Trade_{i,t} + \beta_2 * X_{i,t} + v_t + u_i + \varepsilon}$$

(Model 1)

$$\boldsymbol{Inequality_{i,t} = \alpha + \beta_1 * South\ Trade_{i,t} + \beta_2 * North\ Trade_{i,t} + \beta_3 * X_{i,t} + v_t + u_i + \varepsilon}$$

(Model 2)

Where i =1, …, 34 and t = 2000, …, 2010 denote the country and year indices respectively, $X_{i,t}$ is a set of control variables, v_t is a set of time dummy variables to account for common aggregate shocks, u_i is a set of country dummy variables to control for country-specific heterogeneity, and ε is the error term.

A number of robustness tests were thereafter carried out to verify the validity of the results. Firstly, trade was separated into exports and imports in order to examine whether a specific component of trade affects income inequality. In theory, imports may have an ambiguous effect on the domestic goods market. Indeed, increased imports may result in fewer or more domestically produced goods, depending on whether the imported goods are substitutes or compliments to the goods produced at home. On the other hand, a proliferation of exports directly increases domestic production. The effects of imports and exports on the domestic goods market are likely to impact the demand for skilled and unskilled labor (Borjas, 2013). This may in turn affect the skill premium. It is therefore relevant to investigate whether these effects on the goods market influence income inequality. Model 3 was constructed to test the relationship between *Total Exports* (i.e. exports to both LDCs and developed countries) and *Total Imports* and *Inequality*. Model 4, meanwhile, investigates the separate effects of exports and imports with LDCs and developed countries on *Inequality*. Thus, *South Exports* and *North Exports* correspond to the exports to LDCs and developed countries respectively. Correspondingly, *South Imports* and *North Imports* refer to the imports from LDCs and developed countries respectively. The two models are shown below:

$$\boldsymbol{Inequality_{i,t} = \alpha + \beta_1 * Total\ Exports_{i,t} + \beta_2 * Total\ Imports_{i,t} + \beta_3 * X_{i,t} + v_t + u_i + \varepsilon}$$

(Model 3)

$$\boldsymbol{Inequality_{i,t} = \alpha + \beta_1 * South\ Exports_{i,t} + \beta_2 * North\ Exports_{i,t} + \beta_3 * South\ Imports_{i,t} + \beta_4 * North\ Imports_{i,t} + \beta_5 * X_{i,t} + v_t + u_i + \varepsilon}$$

(Model 4)

Secondly, the natural logarithm of all variables was used to examine the elasticity of income inequality with respect to the independent variables. Using a logarithmic scale helps to

normalize the error term, which improves the robustness of the ordinary least square estimation (Osborne, 2002). Thirdly, a number of studies suggest that reverse causality may exist (Demir et al., 2012). Indeed, it is theoretically possible that income inequality may affect a country's trade volume. This would be the case if, for example, income inequality was reduced because a country's endowment of skilled labor increased (due to, for instance, more workers becoming educated). This would raise a country's proportion of skilled relative to unskilled labor which would, in turn, improve a (developed) country's comparative advantage in producing skilled labor intensive goods. The greater comparative advantage may enable a country to increase its exports of skilled labor intensive goods, thus increasing its trade. An endogeneity problem may also exist for the other independent variables (Bergh and Nilsson, 2010, Berggren, 1999 and Demir et al., 2012). An instrumental variable (IV) approach was therefore used to estimate the effects of trade on income inequality. A number of previous studies have recommended the use of the lag of the independent variables as the instrumental variables. This is because lagged trade may have little impact on current income inequality and is correlated with current trade (e.g. Bergh and Nilsson, 2010, Jaumotte et al., 2008 and Demir et al., 2012). Indeed, the correlation coefficient between current and lagged total trade is 0.975 and statistically significant. Thus, this paper will use this approach to conduct the IV regressions.

Fourthly, the country fixed effect was removed from the models. This was done because this fixed effect alone explains a large proportion of the variation in income inequality. Indeed, the adjusted R squared equaled 97.3 percent when *Inequality* was regressed only on *Total Trade* and the country fixed effect. Moreover, since this paper uses a relatively short time frame (eleven years), the within-country variations in income inequality and in the independent variables are likely limited. It may therefore be difficult to detect significant effects using a fixed country effect, due to the lack of within-country variation in the variables. However, the regression models fail to account for possible heterogeneity in income inequality occurring due to unobservable country differences if the country fixed effect were removed. In order to take this criticism into account, regressions were performed using regional dummies in order to capture some of the region-specific hetereogeneity. This technique has been used in previous research (e.g. Jakobsson, 2006). Table C in the appendix lists the regions used and reports in which region each developed

country is classified. Chile was used as the reference regional dummy in the regression incoporating the regional fixed effect.

4.0 Results

Table 1 shows the results when *Inequality* was regressed on *Total Trade* and the control variables. The regression was run for nine models, beginning with the baseline model consisting only of *Total Trade* and then adding the control variables one by one. A small positive effect was found for *Total Trade* in eight models. However, the effect was never significant. This suggests that the combined trade with LDCs and developed countries has no effect on the income inequality in developed countries. Thus, the third hypothesis, that increased total trade leads to higher inequality, is rejected. The insignificant effect of *Total Trade* is in line with the findings of Dollar and Kraay (2002) and Higgins and Williamson (1999). All models in Table 1 had R squared values greater than 97 percent. Strong conclusions cannot be drawn from this result, however, since the country fixed effect likely inflates the R squared values (see also the sensitivity analysis section below).

Turning to the control variables, significant effects were found at the one percent level for *Employment in Industry, Trade Union Density, Technological Progress,* and *Inflation* when all control variables were included in the regression model, with the expected sign of the coefficients. Thus, an increase in *Employment in Industry* and *Trade Union Density* decreased *Inequality*. These results are consistent with those of Jaumotte et al. (2008), Alderson and Nielsen (2002) as well as Cassette et al. (2012). Moreover, similar to Jaumotte et al. (2008) and Cassette et al. (2012), greater *Technological Progress* and *Inflation* increased *Inequality*.

Though the four aforementioned variables were statistically significant, the magnitude of their effects was small. An increase in *Employment in Industry* by one percent, for instance, reduced the Gini coefficient by only 0.00224 units. A similar increase in *Trade Union Density* decreased the Gini coefficient by 0.00116 units. Moreover, if *Technological Progress* increases by one unit, the Gini coefficient is raised by 0.00091 units. The latter variable would similarly increase by a mere 0.00057 if *Inflation* rose by one percent.

The remaining four control variables - *Education, FDI,* and *M2* and *Government Expenditure* - on the other hand, were insignificant in the full model. Though *M2* was hypothesized to have a negative effect on *Inequality*, the finding of an insignificant relationship is consistent with the results of Demir et al. (2012). This finding suggests that expanding the domestic financial market may do little to improve income inequality in a developed country. Moreover, the absence of a signficiant effect of *FDI* confirms the results of Milanovic (2005a) and Demir et al. (2012). The hypothesis of a negative impact of *Education* on *Inequality* was also rejected, thereby contradicting some earlier studies (e.g. Demir et al., 2012, Jakobsson, 2006 and Edwards, 1997). It is interesting to note that *Education* was significant until *Technological Progress* was added to the regression, implying that the latter variable captures some of the effect of *Education* on *Inequality.* Finally, no significant effect for *Government Expenditure* was observed. While this may indicate limited possibilities for governments to improve the distribution of income through fiscal policy, Sarel (1997) notes that it may also imply that reductions in government spending do not worsen income inequality in a developed country.

Table 1. Income inequality OLS regression results

(Dependent variable: *Inequality*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Constant	32.083***	35.881***	35.870***	35.488***	42.645***	45.710***	42.036***	40.654***	40.815***
	(.389)	(1.242)	(1.245)	(1.271)	(1.603)	(1.774)	(1.759)	(1.750)	(2.179)
Total Trade	.004	-.001	.001	.003	.007	.007	.011	.008	.008
	(.008)	(.008)	(.008)	(.009)	(.008)	(.009)	(.008)	(.008)	(.008)
Education		-.026***	-.026***	-.027***	-.026***	-.025***	-.008	-.007	-.007
		(.008)	(.008)	(.008)	(.008)	(.008)	(.008)	(.007)	(.008)
FDI			-.002	.001	-.005	-.005	-.004	-.003	-.003
			(.008)	(.008)	(.008)	(.008)	(.007)	(.007)	(.007)
M2				.007*	.002	.002	-.003	-.002	-.002
				(.004)	(.003)	(.004)	(.004)	(.003)	(.004)
Employment in Industry					-.306***	-.336***	-.258***	-.222***	-.224***
					(.046)	(.046)	(.045)	(.045)	(.046)
Trade Union Density						-.109***	-.118***	-.117***	-.116***
						(.029)	(.027)	(.027)	(.028)
Technological Progress							.106***	.091***	.091***
							(.016)	(.016)	(.016)
Inflation								.057***	.057***
								(.014)	(.015)
Government Expenditure									-.009
									(.073)
N	374	368	366	362	362	340	337	337	337
R Squared	.976	.976	.976	.977	.979	.981	.983	.984	.984
Adjusted R Squared	.973	.973	.973	.973	.976	.977	.980	.981	.981
P-Value (of full model)	.000	.000	.000	.000	.000	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

As discussed above, the combined trade with developed countries and LDCs appears to have an insignificant effect on income inequality. The separate impacts of trade with developed countries and LDCs on inequality were examined next. The results are shown in Table 2. *North Trade* (i.e. trade with other developed countries) had a positive impact on *Inequality* in all models. However, the effect was never signficiant. Thus, insufficient support exists for the second hypothesis that increased trade between developed countries leads to higher income inequality. *South Trade* (i.e. trade with LDCs) was also insignificant in all models. The regression analysis therefore fails to corroborate the first hypothesis that increased trade between developed countries and LDCs has a positive impact on income inequality.

Table 2 also illustrates that the effects of the control variables were almost identical to the ones observed in Table 1. Once again, *Education, FDI, M2* and *Government Expenditure* were insignificant while *Employment in Industry* and *Trade Union Density* were signficiant and exhibited a small negative effect on *Inequality*. *Technological Progress* and *Inflation* showed significant and positive effects on the dependent variable. The size of the coefficients of all control variables except for *Government Expenditure* were very similar in the two tables. The negative effect of *Government Expenditure* on *Inequality* was twice as big when *Total Trade* was segregated into *South Trade* and *North Trade* compared to when only *Total Trade* was used in the regression.

The regression analysis presented above suggests that *Total Trade*, *South Trade* and *North Trade* all had no statitsically significant effects on *Inequality* in developed countries during the period 2000-2010. It is important to interpret the findings with caution, however, as the analysis may suffer from several weaknesses. These are discussed in the next section where the robustness of the results are evaluated.

Table 2. Income inequality OLS regression results

(Dependent variable: *Inequality*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	32.203***	32.115***	35.840***	35.828***	35.446***	42.612***	45.732***	42.084***	40.690***	41.007***
	(.535)	(.391)	(1.245)	(1.248)	(1.274)	(1.605)	(1.772)	(1.759)	(1.748)	(2.182)
South Trade	-.406	-.419	-.299	-.300	-.306	-.368	-.593	-.453	-.545	-.535
	(.501)	(.502)	(.501)	(.503)	(.505)	(.473)	(.468)	(.437)	(.429)	(.426)
North Trade		.004	.000	.001	.004	.008	.008	.012	.009	.009
		(.008)	(.008)	(.008)	(.009)	(.008)	(.009)	(.008)	(.008)	(.008)
Education			-.026***	-.025***	-.026***	-.026***	-.024***	-.008	-.006	-.006
			(.008)	(.008)	(.008)	(.008)	(.008)	(.008)	(.007)	(.008)
FDI				-.002	.002	-.005	-.004	-.004	-.003	-.003
				(.008)	(.008)	(.008)	(.008)	(.007)	(.007)	(.007)
M2					.007*	.002	.002	-.003	-.002	-.002
					(.004)	(.003)	(.004)	(.004)	(.004)	(.003)
Employment in Industry						-.307***	-.337***	-.260***	-.224***	-.226***
						(.046)	(.046)	(.045)	(.044)	(.046)
Trade Union Density							-.113***	-.121***	-.118***	-.120***
							(.029)	(.027)	(.028)	(.027)
Technological Progress								.106***	.090***	.090***
								(.016)	(.016)	(.016)
Inflation									.057***	.058***
									(.015)	(.014)
Government Expenditure										-.018
										(.073)
N	374	374	368	366	362	362	340	337	337	337
R Squared	.976	.976	.976	.976	.977	.980	.981	.983	.984	.984
Adjusted R squared	.973	.973	.973	.973	.973	.976	.977	.980	.981	.981
P-Value (of full model)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

5.0 Sensitivity Analysis

This section presents four sensitivity tests to examine the robustness of the results. These are illustrated below.

5.1. Estimating the Impact of Exports and Imports on Income Inequality

Given that *Total Trade, North Trade* and *South Trade* had no significant effects on *Inequality*, it may be interesting to examine whether a specific component of these variables impacts *Inequality*. The trade variables were therefore segregated into exports and imports. Table 3 in the appendix shows the results when *Inequality* was regressed on *Total Exports* and *Total Imports*. As shown, both independent variables had positive but insignificant effects on *Inequality*. Thus, the distinction between imports and exports did not change the overall results obtained in the preceding section.

Is it possible that exports and imports with developed countries impact income inequality differently from those with LDCs? To explore this, *Inequality* was also regressed on the separate imports and exports with LDCs and developed countries. The results are depicted in Table 4 in the appendix. In this case, *South Exports* indeed had a significant negative effect on *Inequality* when all control variables were included in the model. The result suggests that increased exports to LDCs reduce income inequality in developed countries. This result is surprising as theory predicts developed countries to export skilled-labor intensive goods which would be expected to increase the skill premium of labor and income inequality. In contrast, the regression analysis suggests that an increase in exports to LDCs may raise the demand for unskilled relative to skilled labor which in turn may reduce the wage difference between the two types of labor. Though the regression results should be interpreted with caution, the inverse relationship between exports to LDCs and income inequality lends some support to the argument that globalization has not led to growing income disparities in developed countries.

Meanwhile, Table 4 also shows that *South Imports* had a significant positive impact on *Inequality*. This observation suggests that an increase in imports from LDCs relative to GDP by one percent raises the Gini coefficient by 0.02755 units. This result is in line with the

result predicted by theory as developed countries would be expected to import unskilled-labor intensive goods from LDCs. Since income inequality appears to increase as a result, imported goods from LDCs may be substitutes for those produced using unskilled labor at home. Increased imports from LDCs in this case would lower the demand for domestic unskilled labor which may increase the wage disparity between skilled and unskilled labor. As a result, income inequality would indeed increase. Moreover, both *North Exports* and *North Imports* had positive, but insignificant, effects on *Inequality*, suggesting that neither of the two variables significantly impacts *Inequality*.

The effects of the control variables on *Inequality* in Tables 3 and 4 were similar to those observed in Tables 1 and 2. *Employment in Industry, Trade Union Density, Technological Progress* and *Inflation* were again the only significant control variables. The former two showed a negative effect on I*nequality*, thereby suggesting that an increase in *Employment in Industry* and *Trade Union Density* improves the income distribution. Conversely, *Technological Progress* and *Inflation* had positive effects, which implies that an increase in the two variables raises *Inequality*.

5.2. Taking the Natural Logarithm of all Variables

As a second sensitivity test, the natural logarithm of all variables was used in order to examine the elasticity of *Inequality* with respect to the independent variables and whether the results would be affected. The results for the logarithmic regressions are shown in Tables 5-8 in the appendix. When the logarithm of *Inequality* was regressed on the logarithms of *Total Trade* and all the control variables, *Total Trade* showed a positive but insignificant effect. This is in line with the findings in Table 1 and further suggests that *Total Trade* has no impact on the within-country variation in inequality. It is interesting that *Technological Progress* and *Inflation* turned insignificant when they were logarithmized (Table 5). *Employment in Industry* and *Trade Union Density* remained significant, even though the latter variable was only significant at the ten percent level. However, the coefficient for *Trade Union Density* surprisingly changed from negative to positive in this regression. As previously mentioned, this variable is defined as the proportion of all salary and wage earners who are members of a trade union. It is possible that an increase in union

membership benefits union members relative to non-members. This appears likely since unions may only consider the interests of their members, rather than those of all salary and wage earners. Thus, an increase in *Trade Union Density* may result in higher wages for union members, and greater unemployment for non-union members (due to the increased wages). This may increase income disparities between union and non-union members which could explain why the positive relationship between *Trade Union Density* and *Inequality* was observed.

Similar to *Total Trade*, neither *North Trade* nor *South Trade* had a significant effect on *Inequality* when these variables were logarithmized (Table 6). Interestingly, the only significant variable in the logarithmic regression when trade was distinguished into that with LDCs and developed countries was *Employment in Industry*. The effect of this variable was once again negative, suggesting an inverse relationship exists between this variable and *Inequality*. The insignificance of the other control variables implies that the significant results obtained in the non-logarithmic regressions should be interpreted with caution.

Logarithmic regressions were also conducted when trade was divided into exports and imports. As shown in Table 7 in the appendix, *Total Exports* and *Total Imports* remained insignificant. This adds further support to the claim that these variables have no effect on I*nequality*. *Employment in Industry* and *Trade Union Density* were the only significant variables in this logarithmic regression. The former variable exhibited a negative influence on *Inequality*. *Trade Union Density* once more showed the unexpected positive effect.

When exports and imports were disaggregated into those from LDCs and developed countries (Table 8 in the appendix), *South Exports* retained a significant, small negative effect on *Inequality*. By contrast, the significantly negative effect of *South Imports* disappeared. Moreover, *North Imports* and *North Exports* countries again failed to significantly impact *Inequality*. The significant effect of *Trade Union Density* disappeared, however, whereas *Government Expenditure* exhibited a significant negative effect on *Inequality,* as predicted by theory. Moreover, the logarithm of *Employment in Industry* was once more significant and showed a negative impact on *Inequality*.

In essence, the effects of *Total Trade, South Trade* and *North Trade* proved robust to the logarithmic transformation of these variables. Similar results were furthermore obtained for

North Imports, North Exports and *South Exports* in both the logarithmic and non-logarithmic regressions. On the other hand, *South Imports* failed to replicate a significant effect in the logarithmic regression. This suggests that the significant result obtained for this variable in Table 4 should be interpreted with care. Thus, the only significant trade effect that was robust across the different models was that increased exports to LDCs are associated with reduced income inequality.

5.3. Using the Instrumental Variable (IV) Approach

As a third sensitivity test, the potential problem of endogeneity was addressed. Since it is theoretically possible that income inequality may impact a country's trade volume (as well as the other independent variables), an instrumental variable (IV) approach was used to overcome this problem. Previous studies have recommended using the lagged values of the independent variables as instrumental variables (e.g. Bergh and Nilsson, 2010, Jaumotte et al., 2008, Demir et al., 2012). As a result, this method was used in this thesis as well. Table 9 in the appendix shows the results from regressing *Inequality* on the instrumental variables for four different models. The first uses lagged *Total Trade* as the independent variable of main interest; the second divides lagged *Total Trade* into lagged *South Trade* and *North Trade*; the third uses lagged *Total Exports* and *Total Imports* as the independent variables of main interest; the fourth divides lagged *Total Exports* and *Total Imports* into lagged *South Exports, North Exports, South Imports* and *North Imports*. Table 10 in the appendix reports the results from the logarithmic regressions of these instrumental variables. This table therefore also contains four models. In all of the eight models in Tables 9 and 10, the full set of lagged control variables is included.

As shown in Table 9, the effects of *Total Trade*, *South Trade* and *North Trade* were insignificant. These findings are in line with the results of the OLS regression. *Total Exports* and *Total Imports* were also insignificant which further corroborates the previous results. *South Imports* was significant, however. The effect was positive and large, suggesting that an increase in imports from LDCs by one percent increases the Gini coefficient by 0.03619 units. This effect is larger than the one obtained in the OLS regression. By contrast, the significant

effect of *South Exports* observed in the OLS regression disappeared. Similar to the OLS regression, *North Exports* and *North Imports* had no effect on *Inequality* in the IV regression.

With regard to the control variables in Table 9, *Education* was significant in all four models. This is surprising as this variable was never significant in the OLS regressions. Though the impact of *Education* on *Inequality* was modest in magnitude, the effect was negative which suggests this variable reduces *Inequality*, supporting the hypothesis for this variable. *Employment in Industry* showed a negative significant effect in all four models. An increase in this variable by one percent thus reduces the Gini coefficient by around 0.002 units. *Trade Union Density* was significant with the expected negative sign. Moreover, *Technological Progress* and *Inflation* were significant and had positive effects on *Inequality* as expected. These results correspond to the ones obtained in the (non-logarithmic) OLS regressions. Thus, the findings in the OLS regression analysis for these variables were robust to the endogeneity problem. Finally, *FDI, M2* and *Government Expenditure* were never significant.

The IV regression analysis was also conducted for the natural logarithm of the variables (Table 10). These findings are similar to those obtained using OLS regression. *Total Trade*, *South Trade* and *North Trade* were again insignificant. This further corroborates that the OLS regression results for these variables are robust to endogeneity. Moreover, *Total Exports* and *Total Imports* had no significant impact on *Inequality*. *South Imports* had a significant negative effect on *Inequality* which corroborates the previous OLS and IV regression results. However, unlike in the non-logarithmic IV regression, *South Exports* were significant and negatively related with *Inequality*. A similar result was obtained for the logarithmic OLS regression. This finding should be interpreted with care, however, for two reasons. Firstly, a significant effect for *South Exports* was found in the logarithmic IV regression but not in the non-logarithmic one. Secondly, it goes against the theory that increased exports to LDCs should reduce income inequality in developed countries.

As in the non-logarithmic IV regression analysis, *Education* was significantly negative in all four models in Table 10. *Employment in Industry* also had a significant and negative effect in all models. As this variable was robust in both IV regressions, it appears robust to the endogeneity problem. In contrast to the results in Table 9, *Technological Progress* and *Inflation* were insignificant in all models. Moreover, *Trade Union Density* was significant in

two of the four models in Table 10. *Government Expenditure, M2* and *FDI* were, like in all other models, insignificant.

In essence, the IV regression analysis produced similar results compared to the OLS regression models. The IV regression confirmed that *Total Trade, South Trade* and *North Trade* have no statistically significant effects on *Inequality*. Thus, the results obtained in the OLS regression for these three trade variables appear robust to endogeneity. *South Imports* furthermore showed a positive and significant effect in the IV regression analysis, which strengthens the observation that these imports increase *Inequality* in developed countries. *South Exports* also had a significant impact in the logarithmic IV and both of the OLS regressions. These results should be interpreted with care, however, since this variable was insignificant in the non-logarithmic IV regression. Moreover, a notable difference between the IV and OLS regression results was that *Education* was significant and negative in the former. This might suggest that the insignificant effect found for this variable in the OLS regressions were not robust to the endogeneity issue. The IV regression results furthermore corroborated the view that *Employment in Industry* is a significant negative predictor of *Inequality*. *Technological Progress* and *Inflation* were also significant and positive in the non-logarithmic IV regression, which partly supports the previous results. Though a significant negative effect was found in the non-logarithmic IV regression analysis for *Trade Union Density*, strong conclusions cannot be drawn from this result since this variable exhibited a positive effect in the logarithmic OLS regressions.

5.4. Removing the Country Fixed Effect

A fourth sensitivity test was included to examine whether the OLS results changed when the country fixed effect was replaced with a regional fixed effect. The previous OLS regressions (Tables 1-8) which used a country fixed effect had abnormally high R squared values. This is likely due to the country fixed effect absorbing most of the variation in income inequality. In addition, the short time span of the data may prevent sufficient within-country variation in the independent variables and in *Inequality*. This may in turn restrict the ability of the regressions to provide accurate results. By incorporating regional instead of country dummies, these problems become less severe. At the same time, however, this changes the

nature of the analysis to more between- than within-country variation. The results when including the regional dummies are shown in Tables 11 and 12 in the appendix for various models. Table 11 illustrates the results for four different non-logarithmic regression models, whereas Table 12 depicts the results for the logarithmic versions of these four models.

As shown in Tables 11 and 12, the R squared values for all models are, as predicted, much lower than when the country fixed effect was incorporated. The two tables furthermore paint a very different picture of the relationship between *Inequality* and the independent variables compared to the regressions that used a country fixed effect. As shown, *Total Trade* and *North Trade* turned highly significant and showed negative effects on *Inequality* in both the non-logarithmic and logarithmic models. Moreover, *South Trade* was significant in the non-logarithmic regression with a large, positive effect on *Inequality*. This contradicts the previous findings once more. The positive and significant effect of *South Trade* supports the first hypothesis that North-South trade increases inequality.

When *Inequality* was regressed on *Total Exports, North Exports* and *South Imports*, the effects were significant in both the non-logarithmic and the logarithmic regressions. The coefficients of the two former variables were negative whereas that of *South Imports* was positive. Moreover, *Total Imports* was significant and positive in the non-logarithmic regression whereas *South Exports* was significantly negative in the logarithmic one. Most control variables also became significant when the country fixed effect was removed. In the non-logarithmic regression, all control variables were significant in at least one model. All control variables had the expected sign, except for *Technological Progress* which surprisingly had a negative impact on *Inequality*. Moreover, in the logarithmic regression, *Education, M2, Employment in Industry* and *Inflation* were insignificant in all four models.

At first glance, it appears as if the regression results in Tables 11 and 12 provide evidence that many variables in fact influence *Inequality*, and thus that the results in Tables 1 and 2 are not robust. However, the findings in Tables 11 and 12 must be interpreted with caution. Unobservable heterogeneity between countries that may influence *Inequality* is not fully accounted for by these models. Though the regional fixed effect controls for dissimilarities between regions, differences between countries within the regions may be large. Indeed, it is likely that large unobservable country-specific differences which influence *Inequality* exist

between Germany and Slovenia, for instance. These unobservable differences would be unaccounted for by the regional dummy variable *Europe*. As a result, the regression coefficients in Tables 11 and 12 may be biased, thereby reducing the validity of these results. It would therefore be incorrect to conclude that *Total Trade, South Trade* and *North Trade* impact *Inequality*. On the other hand, the significant effects found for these variables when the country fixed effect was removed suggests that investigating the effects of these variables on *Inequality* using a larger data sample (which would allow for more within-country variation) is desirable for future research.

6.0 Conclusion

This thesis has established that the combined trade with LDCs and other developed countries had no impact on income inequality in the OECD countries between 2000 and 2010. The finding fails to corroborate the view that the proliferation of trade through globalization has widened the income gap in developed countries. Moreover, in contrast to the predictions of the Heckscher-Ohlin model, trade with LDCs exhibited no significant effect on inequality. The regression analysis furthermore failed to support the hypothesis that trade among developed countries increases inequality, as the effect was insignificant. All the results were robust to endogeneity and remained unchanged when the variables were logarithmized. The findings essentially suggest that developed countries may increase their trade intensity with both LDCs and other developed countries without widening national income disparities. It could therefore be argued that developed countries should encourage trade with LDCs since this may increase economic growth in both categories of countries without hurting the income distribution in developed countries.

The effects of exports and imports on inequality were also investigated. Imports from LDCs were found to increase income inequality in developed countries. This result was robust to endogeneity and is consistent with the theory. Indeed, as imports from LDCs are likely substitutes for goods produced intensively in developed countries using low skilled labor, these imports may be expected to increase income inequality (Lejour and Tang, 1999). The effect was small, however, which suggests that the impact of imports from LDCs should not be exaggerated. Exports to LDCs furthermore had a small negative effect on inequality.

Strong conclusions cannot be drawn from this result, however, as the effect was insignificant in the non-logarithmic IV regression. Thus, an endogeneity problem may exist. The regression analysis also suggests that a number of control variables may influence income inequality. In particular, a large share of industrial employment was found to reduce inequality. This result was robust to endogeneity and supports the hypothesis for this variable. Moreover, technological progress and inflation were generally found to increase inequality.

For further research, it may be desirable to employ a data sample spanning longer than eleven years. This would allow for more within-country variation in inequality and the independent variables. Indeed, the within-country variation was likely limited in the regression analysis of this thesis, most notably when the country fixed effect was included. Moreover, it may be interesting to use other measurements of income inequality besides the Gini coefficient, to examine the impact of trade. As highlighted by Jakobsson (2006), the Gini coefficient may sometimes fail to accurately represent the actual distribution of income. Using other measurements of income inequality may therefore improve the robustness of this thesis' results. Finally, it may be desirable for future research to examine the impact of trade in both goods and services (as opposed to only goods) on inequality. Services are a growing share of world trade, and investigating its distributional impacts on inequality may indeed prove pertinent (Cassette et al. 2012).

References

Alderson, A. S., & Nielsen, F. (2002). Globalization and the Great U-Turn: Income Inequality Trends in 16 OECD Countries. *American Journal of Sociology 107*, 1244-1299.

Alesina, A., & Rodrik, D. (1994). Distributive Policies and Economic Growth. *The Quarterly Journal of Economics 109*, 465-490.

Antwelier, W., & Trefler, D. (2002). Increasing Returns and All That: A View from Trade. *The American Economic Review 92*, 93-119.

Batra, R. (1993). *The Myth of Free Trade.* New York: Charles Scribner's Sons.

Berggren, N. (1999). Economic freedom and equality: Friends or foes? *Public Choice 100*, 203-223.

Bergh, A., & Nilsson, T. (December 2010). Do liberalization and globalization increase income inequality? *European Journal of Political Economy 26*, 488-505.

Borjas, G. J. (2013). *Labor Economics.* New York: McGraw-Hill.

Cassette, A., Fleury, N., & Petit, S. (2012). Income inequalities and international trade of goods and services: short and long-run evidence. *International Trade Journal 26*, 223-54.

Davis, D. R., & Weinstein, D. E. (2001). Do Factor Endowments Matter for North-North Trade? *NBER Working Paper No. 8516*.

De Melo, J., Gourdon, J., & Maystre, N. (2006). Openness, Inequality and Poverty: Endowments Matter. *Centre for Economic Policy Research Discussion Paper No. 5738*.

Demir, F., Ju, J., & Zhou, Y. (2012). Income Inequality and Structures of International Trade. *Asia-Pacific Journal of Accounting and Economics 19*, 167-80.

Dollar, D., & Kraay, A. (2002). Growth Is Good for the Poor. *Journal of Economic Growth*.

Edwards, S. (1997). Trade Policy, Growth, and Income Distribution. *The American Economic Review 87*, 205-210.

Epifani, P., & Gancia, G. A. (2008a). The Skill Bias of World Trade. *The Economic Journal 118*, 927-960.

Epifani, P., & Gancia, G. A. (den 7 October 2008b). Why does trade liberalisation raise wage inequality worldwide? *VOX*.

Galor, O., & Moav, O. (2004). From Physical to Human Capital Accumulation: Inequality and the Process of Development. *The Review of Economic Studies 71*, 1001-1026.

Higgins, M., & Williamson, J. G. (1999). Explaining Inequality the World Round: Cohort Size, Kuznets Curves, and Openness. *NBER Working Paper No. 7224*.

Jakobsson, A. (2006). Trade Openness and Income Inequality.

Jaumotte, F., Lall, S., & Papageorgiou, C. (2008). Rising Income Inequality: Technology, or Trade and Financial Globalization. *IMF Working Papers 08/185*.

Krugman, P. R. (1979). Increasing Returns, Monopolistic Competition, and International Trade. *Journal of International Economics 9*, 469-479.

Krugman, P. R., & Lawrence, R. Z. (1993). Trade, Jobs, and Wages. *NBER Working Paper No. 4478*.

Lancaster, K. (1980). Intra-Industry Trade Under Perfect Imperfect Competition. *Journal of International Economics 10*, 151-175.

Lawrence, R. Z., & Slaughter, M. J. (1993). International Trade and American Wages in the 1980s: Giant Sucking Sound or Small Hiccup? *Brookings Papers on Economic Activity: Microeconomics 2*, 161-226.

Lejour, A. M., & Tang, P. J. (1999). Globalisation and wage inequality. *CPB Netherlands Bureau of Economic Policy Analysis*.

Lindert, P. H., & Williamson, J. G. (2001). Does Globalization Make the World more Unequal? *NBER Working Paper No. 8228*.

Milanovic, B. (2005a). Can We Discern the Effect of Globalization on Income Distribution? Evidence from Household Surveys. *The World Bank Economic Review 19*, 21-44.

Milanovic, B. (2005b). Why Did the Poorest Countries Fail to Catch Up? *Carnegie Papers*.

Neary, P. (2002). Foreign Competition and Wage Inequality. *Review of International Economics 10*, 680-693.

OECD. (2011). *Divided We Stand: Why Inequality Keeps Rising.* OECD Publishing.

Ohlin, B. (1933). *Interregional and International Trade.* Cambridge: Harvard University Press.

Osborne, J. W. (2002). Notes on the use of data transformations. *Practical Assessment, Research & Evaluation 8*.

Pop, I. A., van Ingen, E., & van Oorschot, W. (2013). Inequality, Wealth and Health: Is Decreasing Income Inequality the Key to Create Healthier Societies? *Social Indicators Research 113*, 1025-1043.

Sarel, M. (1997). How Macroeconomic Factors Affect Income Distribution: The Cross-Country Evidence. *IMF Working Paper 97*.

Slaughter, M. J., & Swagel, P. (1997). *Does Globalization Lower Wages and Export Jobs?* Washington D.C.: International Monetary Fund Staff Studies for the World Economic Outlook.

Soubbotina, T. P. (2004). *Beyond Economic Growth: An Introduction to Sutainable Development.* Washington D.C.: The World Bank.

Stolper, W. F., & Samuelson, P. A. (1941). Protection and Real Wages. *The Review of Economic Studies 9*, 58-73.

Thoenig, M., & Verdier, T. (2003). A Theory of Defensive Skill Biased Innovation and Globalization. *American Economic Review 93*, 709-728.

UNCTAD. (2013). *UN List of Least Developed Countries*. Hämtat från United Nations Conference on Trade and Development: http://unctad.org/en/pages/aldc/Least%20Developed%20Countries/UN-list-of-Least-Developed-Countries.aspx den 21 06 2014

Wood, A. (1994). *North-South Trade, Employment and Inequality: Changing Fortunes in a Skill-Driven World.* Oxford: Oxford University Press.

Wood, A. (1995). How Trade Hurt Unskilled Workers. *The Journal of Economic Perspectives 9*, 57-80.

Data Sources

Central Bureau of Statistics of Israel. (n.d.). *Average Monthly Wages and Employee Jobs*. Retrieved 04 10, 2014, from Central Bureau of Statistics of Israel: http://www1.cbs.gov.il/reader/?MIval=cw_usr_view_SHTML&ID=418

Central Bureau of Statistics of Israel. (n.d.). *Social Survey Table Generator*. Retrieved 04 10, 2014, from Central Bureau of Statistics of Israel: http://surveys.cbs.gov.il/Survey/surveyE.htm

EconStats. (n.d.). Retrieved 04 12, 2014, from EconStats: http://www.econstats.com/wdi/wdiv_897.htm

OECD Statistics. (n.d.). *OECD Data Lab*. Retrieved 04 10, 2014, from OECD: http://www.oecd.org/statistics/

Statistics Canada. (n.d.). *Employment by major industry group, seasonally adjusted, by province (monthly)*. Retrieved 04 10, 2014, from Statistics Canada: http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr67a-eng.htm

Statistics New Zealand. (n.d.). *Statistics New Zealand*. Retrieved 04 10, 2014, from Statistics New Zealand: http://www.stats.govt.nz/

SWIID, Standardized World Income Inequality Database, Version 4.0, September 2013. Retrieved 04 09, 2014 from: http://thedata.harvard.edu/dvn/dv/fsolt/faces/study/StudyPage.xhtml?studyId=36908&tab=files

The Economist. (5 December 2011). Inequality street. *The Economist*.

UN Comtrade, United Nations Commodity Trade Statistics Database, 2009. Retrieved 04 09, 2014 from: http://comtrade.un.org/db/dqQuickQuery.aspx

UNCTAD Statistics. (n.d.). *Foreign Direct Investment*. Retrieved 04 12, 2014, from UNCTAD STAT: http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sRF_ActivePath=P,5,27&sRF_Expanded=,P,5,27

Wood, A. (1994). *North-South Trade, Employment and Inequality: Changing Fortunes in a Skill-Driven World.* Oxford: Oxford University Press.

World Development Indicators Database, The World Bank, May 2014. Retrieved 04 10, 2014 from:

http://data.worldbank.org/data-catalog/world-development-indicators

Table 3. Income inequality OLS regression results

(Dependent variable: *Inequality*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	32.043***	32.250***	36.112***	36.092***	35.702***	42.635***	45.707***	42.036***	40.656***	40.822***
	(.369)	(.403)	(1.250)		(1.275)	(1.604)	(1.776)	(1.762)	(1.753)	(2.184)
Total Exports	.012	.022	.016	.017	.023	.016	.013	.011	.010	.010
	(.012)	(.014)	(.015)	(.015)	(.015)	(.014)	(.015)	(.014)	(.014)	(.014)
Total Imports		-.027	-.029	-.027	-.028	-.008	-.002	.011	.006	.006
		(.021)	(.022)	(.022)	(.022)	(.021)	(.021)	(.020)	(.020)	(.020)
Education			-.027***	-.026***	-.027***	-.027***	-.025***	-.008	-.007	-.007
			(.008)	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)
FDI				-.002	.003	-.004	-.004	-.004	-.003	-.003
				(.008)	(.008)	(.008)	(.008)	(.007)	(.007)	(.007)
M2					.007**	.002	.002	-.003	-.002	-.002
					(.004)	(.004)	(.004)	(.004)	(.004)	(.003)
Employment in Industry						-.302***	-.333***	-.258***	-.222***	-.223***
						(.046)	(.047)	(.045)	(.045)	(.046)
Trade Union Density							-.109***	-.118***	-.116***	-.117***
							(.029)	(.027)	(.028)	(.027)
Technological Progress								.106***	.091***	.091***
								(.016)	(.016)	(.016)
Inflation									.057***	.057***
									(.015)	(.014)
Government Expenditure										-.009
										(.073)
N	374	374	368	366	362	362	340	337	337	337
R Squared	.976	.976	.976	.977	.977	.980	.981	.983	.984	.984
Adjusted R squared	.973	.973	.973	.973	.973	.976	.977	.980	.981	.981
P-Value (of full model)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

Table 4. Income inequality OLS regression results

(Dependent variable: *Inequality*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Constant	32.209***	36.649***	36.622***	36.214***	43.180***	46.140***	42.528***	41.139***	41.527***
	(.404)	(1.264)	(1.270)	(1.284)	(1.599)	(1.763)	(1.765)	(1.743)	(2.174)
South Exports	-.589	-.558	-.554	-.553	-.698	-.880*	-.695	-.822*	-.834*
	(.531)	(.525)	(.527)	(.527)	(.494)	(.487)	(.457)	(.444)	(.447)
North Exports	.017	.010	.010	.016	.010	.005	.007	.004	.004
	(.014)	(.015)	(.015)	(.015)	(.014)	(.015)	(.014)	(.014)	(.014)
South Imports	1.965	3.175**	3.119***	3.453***	3.395**	3.089**	2.270	2.758**	2.755**
	(1.376)	(1.409)	(1.428)	(1.456)	(1.365)	(1.450)	(1.392)	(1.355)	(1.357)
North Imports	-.019	-.021	-.019	-.020	.001	.009	.018	.014	.013
	(.022)	(.022)	(.022)	(.022)	(.021)	(.022)	(.021)	(.020)	(.020)
Education		-.031***	-.030***	-.032***	-.031***	-.029***	-.012	-.011	-.012
		(.008)	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)	(.008)
FDI			-.003	.001	-.006	-.005	-.005	-.004	-.004
			(.008)	(.008)	(.008)	(.008)	(.007)	(.007)	(.007)
M2				.008**	.003	.003	-.002	-.002	-.001
				(.004)	(.003)	(.004)	(.004)	(.003)	(.004)
Employment in Industry					-.304***	-.341***	-.267***	-.229***	-.232***
					(.046)	(.046)	(.045)	(.044)	(.046)
Trade Union Density						-.099***	-.110***	-.106***	-.104***
						(.029)	(.028)	(.027)	(.026)
Technological Progress							.103***	.086***	.086***
							(.016)	(.016)	(.016)
Inflation								.062***	.061***
								(.014)	(.015)
Government Expenditure									-.022
									(.073)
N	374	368	366	362	362	340	337	337	337
R Squared	.976	.977	.977	.977	.980	.981	.984	.985	.985
Adjusted R squared	.973	.974	.973	.974	.977	.978	.981	.982	.982
P-Value (of full model)	.000	.000	.000	.000	.000	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

Table 5. Income inequality OLS regression results

(Dependent variable: natural logarithm of *Inequality*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Constant	3.396***	3.898***	3.809***	3.869***	4.491***	4.301***	4.095***	3.986***	4.178***
	(.046)	(.159)	(.164)	(.178)	(.196)	(.254)	(.269)	(.276)	(.306)
Ln (Total Trade)	.024	.017	.018	.017	.023	.031*	.021	.012	.011
	(.015)	(.016)	(.017)	(.017)	(.016)	(.017)	(.018)	(.018)	(.018)
Ln (Education)		-.097***	-.078**	-.079**	-.079***	-.072**	-.039	-.031	-.032
		(.030)	(.031)	(.031)	(.029)	(.030)	(.033)	(.033)	(.033)
Ln (FDI)			-.002	-.003	-.002	-.003	-.002	-.002	-.002
			(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Ln (M2)				-.013	-.017	-.011	-.008	.007	.011
				(.014)	(.013)	(.014)	(.015)	(.016)	(.016)
Ln (Employment in Industry)					-.199***	-.197***	-.173***	-.180***	-.185***
					(.033)	(.036)	(.039)	(.041)	(.041)
Ln (Trade Union Density)						.032	.025	.043	.048*
						(.024)	(.026)	(.027)	(.027)
Ln (Technological Progress)							-.006*	-.004	-.005
							(.003)	(.004)	(.004)
Ln (Inflation)								.004	.003
								(.003)	(.003)
Ln (Government Expenditure)									-.073
									(.050)
N	374	368	345	342	342	321	308	288	288
R Squared	.975	.975	.976	.976	.979	.979	.980	.981	.981
Adjusted R squared	.972	.972	.973	.972	.975	.975	.976	.977	.977
P-Value (of full model)	.000	.000	.000	.000	.000	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

Table 6. Income inequality OLS regression results

(Dependent variable: natural logarithm of *Inequality*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	3.466***	3.387***	3.887***	3.802***	3.862***	4.484***	4.306***	4.107***	3.998***	4.196***
	(.017)	(.050)	(.160)	(.164)	(.178)	(.197)	(.255)	(.270)	(.276)	(.306)
Ln (South Trade)	.000	-.002	-.004	-.002	-.002	-.004	-.002	-.004	-.007	-.007
	(.006)	(.006)	(.006)	(.006)	(.006)	(.006)	(.006)	(.007)	(.007)	(.007)
Ln (North Trade)		.025*	.019	.019	.018	.025	.032*	.022	.014	.013
		(.015)	(.016)	(.017)	(.017)	(.016)	(.017)	(.018)	(.018)	(.018)
Ln (Education)			-.098***	-.079**	-.079**	-.080***	-.073**	-.040	-.033	-.034
			(.030)	(.031)	(.031)	(.029)	(.030)	(.033)	(.034)	(.033)
Ln (FDI)				-.002	-.003	-.002	-.003	-.002	-.002	-.002
				(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Ln (M2)					-.013	-.017	-.011	-.008	.007	.011
					(.014)	(.013)	(.014)	(.015)	(.016)	(.016)
Ln (Employment in Industry)						-.200***	-.198***	-.175***	-.181***	-.187***
						(.033)	(.036)	(.039)	(.041)	(.041)
Ln (Trade Union Density)							.030	.021	.037	.042
							(.025)	(.027)	(.028)	(.028)
Ln (Technological Progress)								-.006*	-.004	-.005
								(.003)	(.004)	(.004)
Ln (Inflation)									.005*	.004
									(.003)	(.003)
Ln (Government Expenditure)										-.075
										(.050)
N	374	374	368	345	342	342	321	308	288	288
R Squared	.975	.975	.975	.976	.976	.979	.979	.980	.981	.981
Adjusted R squared	.971	.971	.972	.972	.972	.975	.975	.976	.977	.977
P-Value (of full model)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

Table 7. Income inequality OLS regression results

(Dependent variable: natural logarithm of *Inequality*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	3.443***	3.434***	3.924***	3.830***	3.893***	4.511***	4.323***	4.112***	4.007***	4.203***
	(.017)	(.039)	(.157)	(.161)	(.173)	(.193)	(.250)	(.265)	(.272)	(.300)
Ln (Total Exports)	.011*	.010*	.009	.008	.009	.007	.008	.006	.005	.006
	(.006)	(.006)	(.007)	(.008)	(.008)	(.007)	(.007)	(.007)	(.008)	(.008)
Ln (Total Imports)		.004	.002	.004	.004	.013	.023	.015	-.001	-.002
		(.016)	(.016)	(.017)	(.017)	(.016)	(.016)	(.017)	(.018)	(.018)
Ln (Education)			-.097***	-.078**	-.078**	-.078***	-.071**	-.038	-.031	-.031
			(.030)	(.031)	(.031)	(.029)	(.030)	(.033)	(.034)	(.033)
Ln (FDI)				-.002	-.003	-.003	-.003	-.002	-.002	-.002
				(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Ln (M2)					-.014	-.018	-.012	-.009	.006	.011
					(.014)	(.013)	(.014)	(.015)	(.016)	(.016)
Ln (Employment in Industry)						-.199***	-.198***	-.174***	-.178***	-.183***
						(.033)	(.037)	(.039)	(.042)	(.042)
Ln (Trade Union Density)							.033	.026	.044	.049*
							(.024)	(.026)	(.027)	(.027)
Ln (Technological Progress)								-.006*	-.004	-.005
								(.003)	(.004)	(.004)
Ln (Inflation)									.004	.003
									(.003)	(.003)
Ln (Government Expenditure)										-.077
										(.050)
N	374	374	368	345	342	342	321	308	288	288
R Squared	.975	.975	.975	.976	.976	.979	.979	.980	.981	.981
Adjusted R squared	.972	.972	.972	.972	.972	.975	.975	.976	.977	.977
P-Value (of full model)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

Table 8. Income inequality OLS regression results

(Dependent variable: natural logarithm of *Inequality*)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Constant	3.440***	3.952***	3.861***	3.915***	4.524***	4.444***	4.234***	4.132***	4.352***
	(.045)	(.157)	(.161)	(.173)	(.192)	(.251)	(.267)	(.276)	(.304)
Ln (South Exports)	-.006	-.008*	-.008*	-.008*	-.008**	-.009**	-.009**	-.008*	-.009**
	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)
Ln (North Exports)	.010*	.009	.008	.009	.008	.007	.005	.005	.006
	(.006)	(.007)	(.007)	(.008)	(.007)	(.007)	(.007)	(.007)	(.007)
Ln (South Imports)	.006	.006	.006	.006	.005	.008*	.006	.005	.005
	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)	(.005)	(.005)	(.005)
Ln (North Imports)	.005	.002	.005	.005	.015	.023	.016	.001	.000
	(.016)	(.016)	(.016)	(.017)	(.016)	(.016)	(.017)	(.018)	(.018)
Ln (Education)		-.102***	-.083***	-.083***	-.083***	-.080**	-.050	-.043	-.043
		(.030)	(.031)	(.031)	(.029)	(.030)	(.033)	(.034)	(.034)
Ln (FDI)			-.004	-.004	-.004	-.005**	-.003	-.003	-.003
			(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
Ln (M2)				-.013	-.017	-.013	-.010	.005	.010
				(.014)	(.013)	(.014)	(.015)	(.016)	(.016)
Ln (Employment in Industry)					-.197***	-.206***	-.183***	-.187***	-.193***
					(.033)	(.036)	(.039)	(.041)	(.041)
Ln (Trade Union Density)						.022	.016	.032	.037
						(.025)	(.027)	(.028)	(.028)
Ln (Technological Progress)							-.005	-.004	-.004
							(.003)	(.004)	(.004)
Ln (Inflation)								.004	.003
								(.003)	(.003)
Ln (Government Expenditure)									-.084*
									(.050)
N	374	368	345	342	342	321	308	288	288
R Squared	.975	.976	.977	.977	.979	.979	.980	.981	.981
Adjusted R squared	.972	.972	.973	.973	.976	.975	.976	.977	.977
P-Value (of full model)	.000	.000	.000	.000	.000	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level, *** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

Table 9. Income inequality IV regression results

(Dependent variable: *Inequality*)

	Model 1	Model 2	Model 3	Model 4
Constant	40.819***	40.818***	40.933***	41.303***
	(2.283)	(2.282)	(2.291)	(2.258)
Lagged Total Trade	.003			
	(.008)			
Lagged South Trade		-.470		
		(.420)		
Lagged North Trade		.003		
		(.008)		
Lagged Total Exports			.010	
			(.013)	
Lagged Total Imports			-.010	
			(.019)	
Lagged South Exports				-.682
				(.429)
Lagged North Exports				.004
				(.013)
Lagged South Imports				3.619**
				(1.399)
Lagged North Imports				-.003
				(.019)
Lagged Education	-.017**	-.016**	-.017**	-.024***
	(.007)	(.008)	(.007)	(.008)
Lagged FDI	.008	.008	.008	.007
	(.007)	(.007)	(.007)	(.007)
Lagged M2	-.001	-.001	-.001	-.001
	(.004)	(.004)	(.004)	(.004)
Lagged Employment in Industry	-.202***	-.199	-.201***	-.198***
	(.046)	(.046)	(.046)	(.046)
Lagged Trade Union Density	-.085***	-.087***	-.085***	-.072***
	(.028)	(.028)	(.028)	(.028)
Lagged Technological Progress	.100***	.100***	.100***	.094***
	(.016)	(.016)	(.016)	(.016)
Lagged Inflation	.039***	.040***	.039***	.045***
	(.014)	(.014)	(.014)	(.014)
Lagged Government Expenditure	.000	-.007	-.004	.001
	(.076)	(.076)	(.076)	(.075)
N	310	310	310	310
R Squared	.986	.986	.986	.987
Adjusted R squared	.983	.983	.983	.984
P-Value (of full model)	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level,

*** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

Table 10. Income inequality IV regression results

(Dependent variable: natural logarithm of *Inequality*)

	Model 5	Model 6	Model 7	Model 8
Constant	4.383***	4.409***	4.424***	4.569***
	(.309)	(.312)	(.307)	(.305)
Lagged Ln (Total Trade)	.009			
	(.018)			
Lagged Ln (South Trade)		-.005		
		(.007)		
Lagged Ln (North Trade)		.010		
		(.018)		
Lagged Ln (Total Exports)			.006	
			(.007)	
Lagged Ln (Total Imports)			-.008	
			(.018)	
Lagged Ln (South Exports)				-.011**
				(.004)
Lagged Ln (North Exports)				.006
				(.007)
Lagged Ln (South Imports)				.009*
				(.005)
Lagged Ln (North Imports)				-.005
				(.017)
Lagged Ln (Education)	-.084**	-.085***	-.083**	-.097***
	(.033)	(.033)	(.033)	(.032)
Lagged Ln (FDI)	-.002	-.002	-.002	-.004
	(.003)	(.003)	(.003)	(.003)
Lagged Ln (M2)	.019	.019	.019	.015
	(.016)	(.016)	(.016)	(.016)
Lagged Ln (Employment in Industry)	-.183***	-.185***	-.181***	-.184***
	(.041)	(.041)	(.041)	(.040)
Lagged Ln (Trade Union Density)	.049*	.044	.050*	.039
	(.027)	(.028)	(.027)	(.027)
Lagged Ln (Technological Progress)	-.006	-.006	-.006	-.005
	(.004)	(.004)	(.004)	(.004)
Lagged Ln (Inflation)	.003	.004	.003	.003
	(.003)	(.003)	(.003)	(.003)
Lagged Government Expenditure	-.071	-.075	-.078	-.081
	(.051)	(.051)	(.051)	(.050)
N	267	267	267	267
R Squared	.983	.983	.983	.984
Adjusted R squared	.979	.979	.979	.980
P-Value (of full model)	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level,

*** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and country fixed effects.

Table 11. Income inequality OLS regression results

(Dependent variable: *Inequality*)

	Model 1	Model 2	Model 3	Model 4
Constant	55.748***	55.934***	55.714***	57.065***
	(2.346)	(2.282)	(2.290)	(2.240)
Total Trade	-.038***			
	(.007)			
South Trade		3.870***		
		(.903)		
North Trade		-.052***		
		(.007)		
Total Exports			-.113***	
			(.020)	
Total Imports			.064**	
			(.026)	
South Exports				.678
				(1.131)
North Exports				-.109***
				(.019)
South Imports				9.311***
				(1.968)
North Imports				.010
				(.028)
Education	-.032**	-.043***	-.025	-.051***
	(.016)	(.016)	(.015)	(.016)
FDI	.040*	.030	.025	.017
	(.022)	(.022)	(.022)	(.021)
M2	-.005**	-.003	-.006***	-.005**
	(.002)	(.002)	(.002)	(.002)
Employment in Industry	-.126***	-.120***	-.146***	-.131***
	(.046)	(.044)	(.045)	(.043)
Trade Union Density	-.063***	-.052***	-.061***	-.053***
	(.010)	(.010)	(.010)	(.010)
Technological Progress	-.150***	-.187***	-.131***	-.160***
	(.029)	(.030)	(.029)	(.030)
Inflation	.149***	.153***	.124***	.151***
	(.039)	(.038)	(.039)	(.038)
Government Expenditure	-.217***	-.197***	-.274***	-.242***
	(.059)	(.058)	(.060)	(.058)
N	337	337	337	337
R Squared	.813	.824	.823	.835
Adjusted R squared	.800	.810	.809	.822
P-Value (of full model)	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level,
*** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and regional fixed effects.

Table 12. Income inequality OLS regression results

(Dependent variable: natural logarithm of *Inequality*)

	Model 5	Model 6	Model 7	Model 8
Constant	4.588***	4.718***	4.334***	4.660***
	(.358)	(.369)	(.358)	(.378)
Ln (Total Trade)	-.104***			
	(.015)			
Ln (South Trade)		.014		
		(.010)		
Ln (North Trade)		-.110***		
		(.015)		
Ln (Total Exports)			-.076***	
			(.015)	
Ln (Total Imports)			.002	
			(.023)	
Ln (South Exports)				-.013*
				(.007)
Ln (North Exports)				-.072***
				(.014)
Ln (South Imports)				.030***
				(.010)
Ln (North Imports)				-.005
				(.023)
Ln (Education)	-.064	-.076	-.055	-.086
	(.068)	(.068)	(.068)	(.069)
Ln (FDI)	.015**	.015**	.010	.008
	(.007)	(.007)	(.007)	(.007)
Ln (M2)	.016	.014	.012	.011
	(.013)	(.013)	(.013)	(.013)
Ln (Employment in Industry)	.065	.063	.048	.032
	(.040)	(.040)	(.040)	(.040)
Ln (Trade Union Density)	-.054***	-.047***	-.055***	-.056***
	(.011)	(.012)	(.011)	(.012)
Ln (Technological Progress)	-.027***	-.030***	-.025***	-.026***
	(.006)	(.006)	(.006)	(.006)
Ln (Inflation)	.011	.010	.010	.009
	(.008)	(.008)	(.008)	(.008)
Ln (Government Expenditure)	-.158***	-.165***	-.162***	-.171***
	(.038)	(.038)	(.039)	(.038)
N	288	288	288	288
R Squared	.794	.796	.795	.801
Adjusted R squared	.776	.777	.776	.782
P-Value (of full model)	.000	.000	.000	.000

*Significant at 10 % level, ** Significant at 5 % level,
*** Significant at 1 % level

Notes: Standard errors are reported in parentheses. The regression uses both time and regional fixed effects.

Table A. Summary statistics of variables

Variable	Number of Observations	Minimum	Maximum	Mean	Standard Deviation
Inequality	374	22.50	50.44	30.8351	6.19681
Total Trade	374	9.20	159.02	52.7472	30.45199
South Trade	374	.01	2.16	.1932	.20226
North Trade	374	9.11	158.17	52.5540	30.36666
Total Exports	374	.24	82.89	26.9034	17.29783
South Exports	374	.00	2.05	.0955	.14765
North Exports	374	.22	82.55	26.8079	17.27829
Total Imports	374	3.76	77.46	25.8438	14.11057
South Imports	374	.00	.84	.0977	.10568
North Imports	374	3.74	77.01	25.7461	14.04830
Education	368	70.04	160.62	104.4455	14.27056
FDI	372	-55.07	74.71	4.6916	8.43070
M2	370	22.90	669.88	117.1241	101.25441
Employment in Industry	374	12.40	40.50	26.0161	5.63391
Trade Union Density	351	5.80	99.07	29.5583	20.73188
Technological Progress	370	.00	38.09	13.6156	11.08831
Inflation	374	-5.39	52.85	3.3914	4.87966
Government Expenditure	374	9.95	29.79	19.2380	4.23910

Table B. Developed country sample by region

Europe	**North America and Mexico**
Austria	Canada
Belgium	Mexico
Czech Republic	United States
Denmark	
Estonia	**Oceania and Asia**
Finland	Australia
France	Japan
Germany	Republic of Korea
Greece	New Zealand
Hungary	
Iceland	**Middle East**
Ireland	Israel
Italy	Turkey
Luxembourg	
Netherlands	**South America**
Norway	Chile
Poland	
Portugal	
Slovak Republic	
Slovenia	
Spain	
Sweden	
Switzerland	
United Kingdom	

Table C. Least developed country sample

Afghanistan	Malawi
Angola	Mali
Bangladesh	Mauritania
Benin	Mozambique
Bhutan	Myanmar
Burkina Faso	Nepal
Burundi	Niger
Cambodia	Rwanda
Central African Republic	Samoa
Chad	Sao Tome and Principe
Comoros	Senegal
Dem. Republic of Congo	Sierra Leone
Djibouti	Solomon Islands
Equatorial Guinea	Somalia
Eritrea	South Sudan
Ethiopia	Sudan
Gambia	Tanzania
Guinea	Timor-Leste
Guinea-Bissau	Togo
Haiti	Tuvalu
Kiribati	Uganda
Lao PDR	Vanuatu
Lesotho	Republic of Yemen
Liberia	Zambia
Madagascar	