

Beyond Borders

An Empirical Analysis on the Effect of Economic Globalisation on Human Capital
Investment and National Economic Prosperity

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Abstract

This thesis examines the impact of economic globalisation on national economic prosperity. Through export revenues, there are significant relationships found between economic globalisation to schooling investment decision, human development level, and income inequality. A higher export earnings increase educational attainment and the HDI score, while the Gini Index is significantly lowered. Nonetheless, the effects found were relatively small, inferring that other factors could explain the variation in these variables. It was discovered that population growth and death rate mainly affect the level of human capital and development attainment. These outcomes imply a requirement for appropriate and flexible economic reforms to enable nations to extract the gains out of globalisation and openness fully.

1. Introduction

"We are moving toward a global economy. One way of approaching that is to pull the covers over your head. Another is to say: it may be more complicated - but that's the world I am going to live in, I might as well be good at it."

- Phil Condit, Former Chairman, and CEO of Boeing (The Globalist, 2001)

Hitching on recent controversial statements that criticised politicians' aggressive pursuit of globalisation, the story of economic changes has long-gone revolved around the benefits and drawbacks of the matter. It is well known that the age of globalisation generated pronounced prosperity. As borders close, the flow of goods, money, and people across regions swelled, scoring benefits for millions (The New York Times, 2016). In his prominent piece of *The World is Flat*, Thomas Friedman contended that the global market had made historical and geographical boundaries to become irrelevant. More recently, for many expat families, this has evolved as a new reality that takes them out of their home country, exposing them to a newer environment (The Huffington Post, 2016). Regardless, one of the most important questions today is how do we help the younger generation to secure a better life amidst the fast-paced change and the inevitable trend of globalisation in the future. British Economics think-tank Andrew Fitzmaurice (2016) argued that it has become apparent that skills to improve the ever-changing world require a focus shift as to how the state and the private sectors provide education. Referring to the quote by Phil Condit above, the only way a nation can survive in an integrated world is 'to be good at it.' In other words, preparing a labour force of students instilled with the ability to communicate, collaborate, build cultural awareness, and think adaptably to bridge the gaps in a moving world is a necessity rather than choice.

A previous study by Rodrik (1998) examined the importance of the role of globalisation in economic growth from two different institutional approaches in Southeast Asia and the European countries. He argued that what matters the most is how you globalise and not merely whether you globalise. An important implication of his research is the acknowledgment that trade liberalisation could be a source of upheaval as much as it gives an opportunity for economic growth. Additionally, Rodrik (1998) added that to have successful reforms through economic globalisation, a nation has to harmonise its domestic complementary institutions, such as its bureaucracies, judiciaries, as well as through education to reap the most benefits out of it. From Rodrik's analysis

as to how important institutions help nations acquire the most out of globalisation, we aim to fill in the scientific gap by examining the phenomenon's impact on educational attainment and how human capital responds to these changes through schooling decisions. Similarly, earlier researchers have also found a favourable influence on economic development as a result of globalisation into formal and informal schooling decisions. Education also creates a positive economic spillover for growth, as the return to education is greater the more technologically progressive is the economy (Nelson & Phelps, 1996). Likewise, output depends upon the current tangible capital, active labour, and the educational attainment of each job-holder. In studying China, one of the fastest growing industrialised countries today, it was found that a larger share of government expenditure spent on schooling facilities, teacher's compensation, and labour system is rewarded with growing private enterprises, leading to higher economic development (Chen & Yeng, 2000). Reasoning that globalisation induces higher economic development, which is linked to a greater need for skilled human capital; it is therefore the aim of this thesis to look into the effect of economic globalisation on human capital investment decisions and national economic prosperity across years from a wide array of nations.

The first aspect of social relevancy is an overview of educational attainment, development level, inequality, and average export revenues across 102 different countries. More importantly, economic globalisation in the form of more global trade could mean more wealth, but not necessarily equal or more jobs for everyone (The New York Times, 2016). According to economist Peter Goodman (2016), trade is much under attack in many parts of the world as economists failed to anticipate the joblessness that comes with it, and made worse by government's failure to help. Therefore, through our literature, by examining the role of globalisation, we aim to provide insights into future policy decisions that involve human capital and economic development advancement. More recently, the establishment of the ASEAN Economic Community has threatened low-skilled labour across member states (Deloitte, 2017), prompting leaders to execute appropriate training plans for domestic labour to be able to compete with an open economic community, rather than being competed away by its existence. Lastly, The Economist (2012) reported that a major contributor to countries' prosperity and their most competitive industries on foreign markets is the competency of their human capital resources.

This thesis aims to make scientific contribution to economic work and researches. This thesis differs from the previous literature such that; instead of focusing only on certain regions or countries (Southeast Asia, European Union), we incorporate 102 countries with different economic backgrounds, development attainment, and income inequality levels. Embodying 102 countries would allow for external validity in our models. Moreover, many past literatures have largely focused on the implication of globalisation on economic growth, while it has been discussed socially that globalisation in today's world impacts the development and inequality level just as much. Therefore, our thesis intends to extensively examine the role of globalisation on country's level of income inequality and human development attainment. Additionally, previous scientific investigation has linked human development level to country's government and bureaucratic institutions. Our thesis aims to capture the effect of development through the role of exports and country's schooling attainment. By exploring human development from these two components, our model will scrutinise two of the main elements of the HDI, which will later be used in the preceding analysis. Finally, past literatures largely focused on the impact that schooling places on trade and national economic prosperity. Hence, our thesis aims to explore the other side of the coin by examining the role of exports to the aforementioned variables. Nonetheless, this thesis follows the general conduct of scientific analysis in an economic-globalisation setting, deploying trade revenues to quantify one's degree of globalisation.

Given the grounds above, this thesis will focus on the impact that economic globalisation place into schooling decisions, national income gap, and one's attainment in development. Therefore, the research question is postulated as follows:

To what extent does economic globalisation affect the level of human capital investment, development, and income inequality?

We will quantify economic globalisation using data of export revenue, and average years of total schooling for human capital investment. Likewise, income inequality is measured using the Gini Index, and human development using the HDI score.

The thesis will be divided into six parts. Firstly, the literature review will summarise previous research findings that bring together the main arguments in the paper. Secondly, the hypotheses

section will define the concept of economic globalisation and its link to human capital investment, income inequality, and human development. Here, the hypotheses will be stated. Next, the data section will describe the information used in this research. Furthermore, the econometric analysis will explain the methods used in testing the postulated hypotheses. The result section reveals the research outcomes, followed by policy implication that will suggest policy propositions, and evaluate the globalisation regime in more depth. Finally, the conclusion will answer the research question; discuss the shortcomings and possible approaches for further studies.

2. Brief Synopsis of Earlier Work

This section will go deeper into the broader elements that might impact educational attainment, income inequality, and the level of human development in an economically globalised setting from past works of literature.

2.1 Literature Review on Education

Blake (1981) explored the role of family size to schooling decision, inducing the inconsequence of its size to not influence school enrolment, as this is more relatedly linked to authorities' commitment to the education sector itself. Nonetheless, countries experiencing rapid population growth are inevitably under pressure on schooling facilities, which in turns constrains national schooling budget. However, in the absence of population growth, authorities may shift their priorities by spending government revenue elsewhere, which will reduce the aggregate educational attainment in their country. Hence, rapid population growth could translate to a higher level of education, as government is under pressure to improve the education sector, and also prepare this community to later engage in economic activities as a set of productive labour forces.

Xu (1996) studied that as long as the government does not discriminate against resources availability and export-promoting policies, a positive causality between GDP growth to exports is likely to be found. In assessing the effect of import on labour wages, Slaughter & Swagel (1997) argued that; all else equal, imports increase the labour endowment of the recipient country and reduce the labour endowment of the shipping country. In other words, the import sector in the domestic country feels the need to compete with the foreign industries, translating into increased productivity, and hence more skilled workforce. From this reasoning, economic globalisation could indeed be seen as a way to increase the average years of schooling in the importing country.

Furthermore, wage differential effects will be neutralised following this baseline theory: country exports the services of workers with which it is more well-endowed and imports the services of labour that is relatively scarce. Trade then increases each country's relative supply of its scarce labour and reduces its relative supply of abundant labour, converging into identical labour cost across countries. Failure to provide appropriate set of workforces in a globally open economy could only lead to small trade and capital flows, which in the long run explains the occurrence of income inequality of nations.

Population growth itself has been one of the main factors of economic changes in the demographic field. Population amends the course of national economic development, and so do modern institutions forcing flexible public policies and government programs to help the economies to adjust to rapid changes caused by population growth (Cincotta & Engleman, 1997). These factors created opportunities at household and national levels that positively impact education, health, and the labour market. It was found that parents with fewer offspring are more able to invest in their child than larger families, meaning that children from smaller families attain higher schooling years. Specifically, this finding is strongest in developing countries that have just newly experienced economic and social transformations.

In early 2000, Krueger & Lindahl studied the positive causality between GDP growth and exports, leading to higher educational attainment especially in the Western world. Keeping schooling as a proxy for steady-state income, countries with more schooling, conditional on initial GDP, are expected to grow faster. This circumstance is bound to occur as education could change the steady-state growth by allowing labour force to acquire new skills and adapt to newer technologies. Another positive causality to education was further stressed by Population Reference Bureau of the United States (2002) verifying the significance of higher education to mortality rates. The mortality advantage for Americans with higher education has risen in the past decade, implying an added benefit for the educated population rate of illness and disability. Amongst the two factors that can partly explain this phenomenon are; lifestyle, and second, the possessions of insurance, where those with higher educational attainment are likely to have better insurance coverage than those of with less schooling years in general. As researchers have found the causality between educational attainment and mortality, it is the aim of this thesis to go beyond the scientific realm to assess whether there is a certain impact placed by mortality rate to educational attainment.

As a country continues to grow in income, more job opportunities are available and are likely to prompt workforce to be better-qualified in the job market, hence increasing educational attainment (Aghion *et al.*, 2009). Moreover, death rate in the majority parts of the world has plunged, implying improved quality of life of citizens of these nations. Education is known to have an enduring and growing effect on health as well as longevity, inducing higher national income to countries with falling mortality (Baker *et al.*, 2011). Dustmann & Glitz (2011) further elaborated the role of migrant share on human capital investment. Migration is not only intertwined with schooling decision of those who move, but also poses a significant consequence for those who do not migrate both in the home and host countries. Educational choices and skill acquisition are also inherently connected to migration decisions. So, instead of higher wages, education could be the primary trigger for migration movements. Likewise, with a growing national income, government has a higher funding available to be spent on education (OECD Working Paper, 2013), implying that a growing GDP should translate to higher educational attainment for citizens. The same holds for the increasing demand for education.

More recently, migration networks work not only bilaterally, but also among many more countries involved in international trade and migrants flow (Fagiolo & Mastrorilo, 2014). Ottaviano (2015) argued that immigrants have become one of the most important channels that link one country to its other trading partners. Likewise, international trade requires overcoming of cultural and institutional barriers. Therefore, the role of immigrants will facilitate this flow of goods and services under economic globalisation.

2.2 Literature Review on Income Inequality

To measure the social impact of globalisation through economic liberation, the difference in expenditure for trade pattern between industrialised and developing countries is determined by factor endowment that will later contribute to unequal national income distribution (Kugler & Zweimuller, 2002). They argued that contracting exports and more imports may lead to higher inequality, in which the redistribution does not have an apparent effect. Through their persistent robustness tests of a sample of 58 countries over three decades, inequality is found to be lower when international trade flow (export) is higher. On the other hand, better education does not necessarily help the overall economic picture especially for the poorer Americans (White, 2015). The reason why there is no significant change in overall earnings inequality is that improved

prospects for median and low-income earners do not remove the existence of what he called as the 'runaway growth' of income of the very wealthiest. Nonetheless, for low-skilled workers and low wage earners, additional education is inevitably still central. In 2016, Ireland also studied the impact of policies and the law on learning outcomes. He argued that income inequality often begins with vastly unequal schooling quality, suggesting the imposition of excellent education to address the curtailing income gap.

2.3 Literature Review on Human Development

In a research of selected African countries, the low level of human development score has been widely affected by high population growth rate (Haghshenas *et al.*, 2007). The association between poverty and population reflects the lower schooling level and rural residence of poor households. Population size, as well as the pace of populace growth, are linked to economic development. Nevertheless, rapid population growth is exacerbated by poverty and inequality, implying an adverse effect to national development level. They concluded that persistent population growth poses an enormous threat to poverty reduction in most countries and that this increase will require sustainable investment in infrastructure and create challenges for authorities and social institutions.

High adult mortality rate is also arguably the salient factor that drives down the level of human development. A lower death rate implies an improvement in life expectancy and healthcare, while a higher mortality rate conveys the reverse. One of the main causes that a country is trapped in poverty is its poor provision of the future (Lorentzen *et al.*, 2008). They noticed a bidirectional relationship between development (measured by poverty) and mortality, showing that countries with high mortality experienced lower economic growth, and eventually a lower level of human development. Mortality affects growth in a way that there is a diminishing incentive for behaviour of short-run costs, but long-run payoffs. In fact, theoretical link between mortality and human capital investment is even stronger than the relationship between mortality and physical capital investment. Regardless, adult mortality rates will affect the accumulation on the decision on physical, and human capital investment is made primarily by adulthood longevity. Therefore, a higher death rate that implies a short adulthood lifespan will decrease the investment into human capital, lowering domestic development attainment. Most recently, Wako (2012) studied that countries with rapid population growth tend to be weaker in development, as a result of authorities' reduced focus on population policy.

3. Hypotheses

As far as one goes, the role of globalisation in human capital and economic prosperity has been effectively in line with economic researches. Globalisation itself accounts for three different aspects, in the form of, economic, political, and sociocultural. This thesis will focus on the framework of economic globalisation, defined as the integration process domestic economies into the international realm through trade, foreign direct investment, capital flows, labour mobility, and technology spillover (Shin, 2009). The IMF (2017) made further implication by specifying the following definition: the growing economic interdependence of nations resulting from cross-national transactions of goods and services as a process of market integration and expansion. From these definitions, we quantify economic globalisation using country's export revenues in Dollar terms.

3.1 Globalisation and Education

Buckley & Ghauri (2004) examined globalisation through the conflicts between market and economic management that suggest a different pace of challenges to policy makers in international institutions to deepen the global division of labour. One of the problems in the organisations of multinational enterprises is frequently presented as oppositions, where knowledge flows and diffusions become harder without on-par schooling attainment. By applying Economic Geography theories, Buckley and Ghauri further argued that the evolvement of locational policies of multinational companies intensify the need for skilled labour. Additionally, globalisation as a result of production chains represent changes that affect different reactions to capitalism as well as one's moral basis, one of them being in the form of education. All in all, with greater economic globalisation through international trade and multinational enterprises, citizens are prompted to be more endowed with both general and specific skills to serve in such markets.

Likewise, empirical evidence suggests that trade liberalisations, depicting openness, positively impact growth (Falvey *et al.*, 2012). Falvey *et al.* modelled an economic reform during a monetary crisis condition. In their work, the role of the World Bank and the International Monetary Fund (IMF) was assessed, as governments have undertaken liberalisation not because they wish to do so, but rather out of requirement to receive access to financing from these institutions. Principally, these intergovernmental agencies have used the funding to promote trade liberalisation, reflecting the beliefs that economic globalisation enhances growth. However, although recent evidence showed

that not all liberalisation had been a progressive trade reform, the influence of the IMF and the World Bank often comes with a clause when agreeing to the loans given. One of the packages is to use loans to boost human capital development (often primarily meant for less developed countries). Despite the differences in countries' credibility over commitment to impose these agreements, Falvey *et al.* found a constructive impact on the monetary amount of IMF funding allocated to education to primary and secondary schooling expenditure in developing countries. These shreds of evidence further suggest that, through the IMF, trade liberation could indeed bring a positive out-turn in a nation's aggregate educational attainment.

Similarly, growth in skill-intensive exports was found to increase schooling, while a rise in less skill-intensive exports reduces the average schooling years (Blanchard & Olney, 2017). They argued that changes in macroeconomic circumstances amend job opportunities and wages, which across time shape individuals' decision to invest in human capitals. Crucially, the importance of skill composition of trade flows exacerbates schooling attainment. At the national level, exports could generate a positive aggregate income effect by increasing GDP. This positive effect could induce larger level of education, disregarding the winners and losers from trade discussed prior. Moreover, the effect of incentives arising from export growth could impose similar effects to all workers, who initially may be at different levels of educational ladders to be more competitive by pursuing higher education further.

Given the findings mentioned earlier, to examine the impact of economic globalisation to educational attainment, the first hypothesis is postulated as follows:

H0: There is no statistically significant relationship between exports and educational attainment

H1: As exports increase, there is a statistically significant increase in educational attainment

3.2 Two entities apart: between the developed and developing world

Marno (1998) theorised that higher corruption in developing nations is associated with lower education spending, inducing fewer years of schooling on average. Wealthy urban elites could lobby the government to bias social expenditure towards higher education, which is associated to benefit these individuals. Also, corruption can increase the share of current spending devoted to

labour in the education sector, which in turn lowers the quality of education and affects the ability of the state to improve the educational attainment levels.

Furthermore, following the theory of the stratification of education and the dependency theory, educational opportunities in developing countries are much more constrained by structural inequalities in the global economy, due to their dependence on the operation of multinational corporations and international organisations (Buchmann & Hannum, 2001). Contrary to the arguments in section 3.1, aids from organisations such as the IMF that facilitates debt servicing through fiscal austerity often pressures the government to privatise and decentralise their educational system, reducing education demand. In their research, Buchmann and Hannum defined the indebted nations as those with lower level of per capita national income, or in other words, the developing ones. Given this definition, it is plausible to argue that educational attainment is lower in developing countries than that of in industrialised regions.

Going back to bureaucratic affairs, corruption itself affects income distribution and poverty through its impact on human capital formation (Gupta *et al.*, 2002). The first way in which poor democracy through corruption affects educational attainment is that the weakening tax administration could lead to tax evasion, which lowers the resources available for public services provision including education. Besides the prevailing pressures from international donors, poorer government performance also has an adverse impact on the average schooling years in a nation. Unstable democracy often brings about slower growth and corruption in developing economies (Diskin & Hazan, 2005).

To have explored previous theories above, it remains cogent to propose that the effect of globalisation on educational attainment is higher in developed than in developing countries. Besides greater credibility from the government to allocate public funds, the size of GDP that also accounts for exports, which is our baseline interest, could have positively impact schooling more in developed than in developing nations.

To examine country's income level and the effect it brings to the citizens' educational attainment, the second hypothesis is the following:

H0: There is no statistically significant relationship between country income level and educational attainment

H2: Country income level significantly affects educational attainment (re: developed countries significantly have higher average schooling years)

3.3 Globalisation and Inequality

To explain the occurrence of trade openness to income inequality, the main theory used in this section is the Heckscher-Ohlin (HO) Model, summarised by the Stolper-Samuelson (SS) theorem. Countries tend to export goods whose production is intensive in factors which the countries are abundantly endowed with (Heckscher & Ohlin, 1991). Accordingly, economic globalisation can have a powerful effect on the distribution of income, both in the short and in the long run. Owners of a country's abundant factors (whose price rises) gain from trade, while owners of a country's scarce factors lose. In other words, factors of production used intensively by the import-competing industries are hurt by opening up to trade. Nonetheless, opening up to trade expands an economy's consumption possibilities, which means that there is a way to make everybody better off (Leamer, 1995). To note, the adverse effect of commerce on low-skilled workers is still considered as a political problem, which cannot be solved by temporary policy reliefs using unemployment insurance for instance (Lahiri & Ono, 1995). Consequently, this gives rise to income inequality in advanced economies.

Knowing that trade changes relative price, the SS theorem suggested that if the price of commodity increases, the real wage of the factor used intensively in the production of that good increases (Gilbert & Tower, 2009). Additionally, as opening up to trade increases the relative price of the good produced by a country's abundant factor intensively, owners of these factors gain from trade, meaning that their real income goes up. The reverse holds true for owners of a country's scarce production factors; they are hurt by trade and their real income declines.

We see from the two conjectures that economic globalisation through trade openness indeed brings about changes in income level in the country, leading to inequality. Several models have predicted as to where the direction of income inequality is shifting. More exports should increase the wages in less developed nations, which will then reduce the salaries in developed countries, and finally results in a smaller global gap in income (Smits, 2014).

Moreover, as it becomes more common for firms to outsource from other countries, trade intermediaries can have an impact on wages that is much larger than trade in final commodities. Henceforth, economic globalisation through outsourcing from developed to developing countries could indeed decrease the global income inequality gap. Likewise, as trade is seen as an engine for growth, a continuous trade expansion can reduce income inequality of the trading nations (Urata & Narjoko, 2017). They added that export expansion enables countries to earn foreign exchange that allows them to import raw materials, intermediate goods, capital goods, and technology, which is seen to promote growth. Likewise, export expansion also improves scale economies through productivity, which in the long run contributes to economic growth. Following the SS theorem, trade liberalisation in developing countries would expand the exports of unskilled-labour-intensive goods and imports of skilled-labour intensive goods. Therefore, the demand for unskilled labour rises and vice versa for the demand for skilled labour. As labour income comes from wages, an expansion of foreign trade would improve income across countries. This theory is in line with Zhu & Trefler (2017), stating that globalisation indeed raises the demand for unskilled labour, and hence reducing inequality in the Southern (developing) countries.

Given that global trade expands countries' possibility for growth and that it induces an equal wage within nations, the third hypothesis is postulated as follows:

H0: As economic globalisation increases, there is no statistically significant decrease in income inequality.

H3: An increase in economic globalisation significantly decreases the level of income inequality

3.4 Globalisation and HDI

Following Chudnovsky & Lopez (1999), all countries involved in international trade are also dependent on one another's technology. Therefore, economic globalisation is unquestionably one of the leading vehicles to keep them up in more up-to-date, open, and competitive environment. The way in which, countries benefit from technological advantage of international trade to enhance their social and economic development. Likewise, economic globalisation through free market is

deemed to be morally superior as they maximise the collective social good as the best preservers of individual liberty, increasing happiness and development.

It is important to note that one of the aims of globalisation is to promote the interest of human welfare and development. Beyond the baseline theory, the process in which economic globalisation at the country level affects human development is mediated by economic freedom (Akhter, 2004). Through globalisation, economic freedom influences human development such that the interest in human development is partly in response to the concerns raised about the effects of growing economic freedom on the life of the people. By providing protection of private property and the removal of the barriers that restrict transactions eventually increase economic activities.

Additionally, FDI itself has a substantial positive impact as it permits the creation of new employments through investment (Figueroa, 2014). Not only does this give a lower inequality, but the increase in income also gives rise to per capita GDP, inducing higher level of human development. According to the economic development of the 21st-century theory introduced by Naqvi (2017), globalisation and human development work side-to-side to enhance people's well-being and their freedom of choice in ways that do not always converge. Through a minimalist government, globalisation works its way out through the pursuit of freer selection of consumer goods and production possibilities. At the same time, human development enlarges people's capabilities to translate economic progress into human happiness by being knowledgeable and acquire a decent living standard. Together, the link between economic and human development is strengthened. Moreover, the technology transfer that comes with economic globalisation makes it possible to increase total factor productivity and eases the economy with how the information is stored and communicated. The technological transfer also illuminates new ways in which knowledge's reach is extended into the human mind.

Drawing out of the premises mentioned prior, the greater is trade involvement, the more favourable will be the effects of human development. Therefore, the fourth hypothesis is proposed as the following:

H0: There is no statistically significant effect of economic globalisation on human development

H4: Economic globalisation significantly increases the level of human development

4. Data

The aim of this empirical research is to evaluate the effect of economic globalisation into countries' economic prosperity. In this study, a total of 102 countries is used to assess the postulated research question within the time span of 1965-2010. The time span of 1965 to 2010 was chosen due to data availability by Barro and Lee that comprises of educational attainment of only until 2010. Due to this limited availability, our analysis covers only the period of 1965 to 2010. Furthermore, our starting year is 1965 due to the occurrence of educational reform that took place in that year widely across countries (Thomas & Brady, 2005). Hence, because of the different schooling opportunities before the education reform in 1965, incorporating earlier statistics could result into an incoherent inference and may be irrelevant for our analysis. More importantly, according to the World Trade Organisation (2008), international integration in commodity, capital and labour markets as a form of globalisation largely (and strongly) emerge only after 1964. Therefore, it is wise to use 1965 as the kickoff point of our analysis.

Additionally, we deploy 102 countries in the aim of breadth and to assure external validity. In our work, we incorporate country samples from every region and income group. This thesis implements all countries that belong to the Advanced Economies category. This is so that there is enough representation when we later examine them together with the other emerging and less developed economies which are greater in numbers. Furthermore, a considerable amount of nations does not have publicly available resources to be included in our analysis span of 1965 to 2010.

4.1 Aggregate Exports (in current USD)

In measuring the effect of economic globalisation, countries' export revenues can be a good indicator as this illustrates one's openness to free trade, ease of mobility (of goods and services), as well as labour market competitiveness in adapting to changes in economic shocks (Barton & Murray, 2009). This definition is also used by the Eurostat of the European Union (2016) stating that the level exports and imports volume in an industry that controls for employment by foreign and domestic enterprises, indicating the extent to a country's level of economic globalisation. A set of panel data of aggregate export revenues of 102 economies in current USD, were obtained from the World Development Indicators (WDI). According to the WDI, data for total exports represent the value of all goods and market services provided to the rest of the world, excluding

compensation of employees, investment income, and transfer payments. These values are reported in current US Dollars and were derived from World Bank National Accounts data and the OECD National Accounts data files.

4.2 Educational Attainment (in Years)

Panel data for educational attainment were obtained from Barro & Lee (2016), reporting data of average schooling years for individuals from age 15 to 75 years old. Data covers 165 countries at a five-year interval starting from 1950 to 2010. Following Blanchard & Olney (2017), this research focuses on the younger individuals, given that this populace is still in the process of making educational decisions, and hence is potentially the most sensitive to changes in domestic labour markets, given changes in aggregate demand composition. Accordingly, many workers remain to acquire education (mostly tertiary) until the age of 24. Following the 5-year interval formation, this research will incorporate individuals of age 15 to 29 into the effect that economic globalisation places to one's level of human capital investment. Older people are not examined in this analysis as the more elderly population is less sensitive to changes in the export market (Blanchard & Olney, 2017).

Data from Barro and Lee are classified as a quantitative set offering a quantity-based rather than quality-based measure of education. In earlier research, Hanushek & Kimko (2000) deployed a quality-based measure analysis on education and economic growth arguing that, although the two kinds correlate, quality-based measures have been proven to have a higher predictive power than quantity-based approaches. However, the limited availability of data of quality-based education restraint the statistical analysis in this paper. Not only that this limits the panel analysis as proposed before, the altering quality of education across years means that this data type may not be comparable across time. Therefore, the effect that economic globalisation establishes into human capital investment may only be assessed partially.

4.3 Gini Index

Data for Gini Index were derived from the World Development Indicator, and partly from the Central Intelligence Agency of the US Government. Gini Index is a proxy of income inequality, measuring the extent to which the income distribution among households or individuals within an

economy diverges from an entirely equal distribution. Following the World Bank estimates, the Gini Index measures the area between the Lorenz curve and a hypothetical line of complete equality, shown as a percentage of the maximum area below the line. Therefore, a Gini index of 0 implies an absolute equality, while a Gini index of 100 conveys perfect inequality.

4.4 The HDI

To measure the level of welfare state, the Human Development Index (HDI) is used for analysis purposes. The HDI is a composite poll of education, life expectancy, and income per capita indicators. HDI data for 102 countries were obtained from Human Development Reports gathered by the United Nations Development Programme (UNDP). According to the UNDP (2017), the HDI builds upon three core components that are health, education and living standard. Health is assessed by life expectancy calculated at the time of birth in each country. The education aspect is measured on two levels, that are; the average schooling years of citizens of the country and expected years of schooling for children at the average age to start schooling years. Lastly, the living standard dimension is measured by gross national income per capita. Furthermore, corresponding to our analysis of economic globalisation to human capital investment, the HDI measures the education dimension using average years of schooling, which is comparable to our baseline study. Additionally, the HDI deploys the logarithm of income to depict the diminishing importance of income as the Gini index increases. Therefore, a distinct analysis can be examined.

4.5 Control Variables

To minimise the effect of omitted-variable bias (OVB), we incorporated a number of variables that might have an effect on the dependent variables and the independent variable. In this thesis, all data for control variables comprising 102 countries were acquired from the WDI.

Imports (in current USD): Like exports, aggregate imports (in current USD) may have an equal impact on human capital investment in an opposite direction. However, in practice, it is observed that the effect of imports on educational attainment is less sensitive than that of placed by exports (Blanchard & Olney, 2017). Therefore, controlling for import is necessary for the regression equation. The Imports of Goods and Services from WDI represent the value of all goods and market services received from the rest of the world in current US Dollars.

Population: Second, we control for total population reported in annual summation, estimating the midyear estimates of counts of all residents irrespective of legal status and citizenship. After applying natural logarithm in our analysis, population growth will be reported in percentage change. Data for total population were derived from the World Population Prospects by the United Nations Population Division and the Demographic Statistics of the Eurostat.

Death Rate: Thirdly, the control variable for death rate indicates the number of deaths that occurred within a year, per 1000 population estimated at midyear. After applying natural logarithm in our analysis, death rate will be reported in percentage change.

International Migrant Stock (Migrant Share): Furthermore, when controlling for international migrant stock (in % share of total domestic population), we use the data from total international migrant stock, that is the number of people, including refugees, born in a country other than that in which they currently reside. These estimates are obtained from the data on foreign-born populace who have dwelled in one country, but were born in another country.

Gross Domestic Product (in current USD): GDP (in current USD) measures the sum of all value added by producers in the economy within a specified geographical boundary and a specified period. We also obtained the data for GDP per capita that will later be used to categorise countries based on their income level; developed or developing following the World Bank's definition of such.

In their latest publication, Blanchard & Olney (2017) controlled for the same variables when measuring education through country's types of exports. As for income inequality, Berman (2016) and Mode (2016) both controlled for GDP and death rate in examining growth and trade openness. Lastly, in observing the impact of economic globalisation to HDI, Jha & Bawa (2006) as well as Lemons *et al.* (2001) controlled for death rate and population. In principal, there are not many researchers controlling for the variables that we aim to explore here in our study. Therefore, we intent to delve into the role of these variables deeper by incorporating them into our baseline models.

For education in particular, the effect of imports might work in the opposite direction than that of with exports. Also, a higher population growth and death rate imply a lower standard of living,

which may cause a lower educational attainment too. Respectively, a higher share of migrant induces competition, prompting higher schooling years. In the same direction, a higher GDP conveys that a country is growing, and hence requires greater skilled labour force.

Correspondingly, more imports convey an increase in inequality as locals are faced with fewer job opportunities, and hence less income for particular group of people. The same goes with population and death rate. Baker (2013) studied that a shrinking workforce redistributes income from the rich to the middle class. Meanwhile, a rise in mortality rate is associated with poverty, translating into a higher Gini Index. A higher share of international migrants also means a higher inequality score, as migrants are likely to be short in income and jobless. Lastly, a rise in GDP, by the same token increases job opportunities and could promote equality for citizens, thus a lower Gini Index.

Finally, for HDI, a higher import means lower GDP, and hence, if population is kept constant, this translates to a lower per capita income, meaning a lower HDI. A lower per capita income also holds true when population and GDP rises (given that GDP and population are kept constant respectively). Moreover, an increase in mortality rate implies a lower health and living standard, identifying a lower HDI score. The same goes for migrant share. If policies and welfare system are exerted more to migrants, this could induce a lower living standard in the country.

The direction for each control variable with respect to each dependent variable is summarised below:

Table 1: Hypothesised sign for control variables

	Imports	Population	Death Rate	Migrant Share	GDP
Schooling Years	-	-	-	+	+
Gini Index	+	+	+	+	-
HDI	-	-	-	-	+

4.6 Data Transformation

To analyse the independent variables into percentage changes, natural logarithm (ln) was applied to all the data of these variables that will be used entirely for analysis purposes. Moreover, the application of natural logarithm will also allow the coefficients to be understood in an elasticity

form, to see the degree of responsiveness of a change in the independent variable(s) to the dependent variable.

We divided countries based on their income level. Following the World Bank's definition, we categorise those with GDP per capita of at least 13.000 USD (current USD) as developed, and countries with GDP per capita of less than 13.000 USD (current USD) as developing. Therefore, a dummy of 1 will indicate that a state is regarded as a developed economy, while a dummy of 0 implies that the respective country is classified as a developing economy.

4.7 Descriptive Statistics

The aforementioned panel data covering 102 countries are summarised as follows:

Table 2: Summary statistics

Variable	No. of Observation	Mean	Standard Deviation	Min	Max
Educational Attainment	495	8.735	2.658	0.81	13.803
GINI Index	495	38.637	9.731	18.5	66.1
HDI Score	495	0.678	0.155	0.222	0.939
LnExports	495	23.627	2.026	19.292	28.247
LnImports	495	23.714	1.875	19.348	28.492
LnPopulation	495	16.604	1.384	13.873	21.014
LnDeathRate	495	2.088	0.395	0.391	2.997
LnMigrantShare	495	1.079	1.541	-3.424	4.476
LnGDP	495	24.789	1.970	20.573	30.337

5. Econometric Analysis

5.1 Spearman's Rank Correlation

To discover the strength of a link between two sets of variables, the Spearman's rank correlation is performed. The Spearman's rank correlation requires that the data must be ordinal, and hence, for the purpose of this test, Educational Attainment, Exports, Inequality, and HDI were ranked before being compared to one another. An ordinal scale list orders the data items to indicate if they possess more, less, or the same amount of the variables being measured. In other words, from this scale, we can determine if $X > Y$, $Y > X$, or if $X = Y$. Following Cohen (2017), a Spearman's rho between 0.10 to 0.29 indicates a weak correlation; coefficients between 0.30 to 0.49 imply a medium association; values between 0.50 and above depicts a great relationship between the variables. Although so, this scale does not define the magnitude of the relationship between the units examined. To further gauge at the effects that each dependent variable imposes to the independent variable, a regression analysis is required.

5.2 Fixed Effects

To eliminate the needs for time-invariant constraint, we control for country and year fixed effects in all statistical models performed throughout. Given that exports, educational attainment, and the HDI are likely to be higher in developed countries and more recent years (lower for Gini Index), failure to account for these issues will result in an obvious empirical bias.

5.3 Regression Model

To examine the extent as to how far does globalisation, proxied by aggregate exports, affect the level of human capital investment, quantified by average years of schooling, we estimated the following regression model:

$$\begin{aligned} \text{EducationalAttainment}_t = & \beta_0 + \beta_1 \ln \text{Exports}_{t-5} + \beta_2 \ln \text{Imports}_{t-5} + \beta_3 \ln \text{Population}_{t-5} + \\ & \beta_4 \ln \text{DeathRate}_{t-5} + \beta_5 \ln \text{MigrantShare}_{t-5} + \beta_6 \ln \text{GDP}_{t-5} + \gamma_i + \gamma_t + \varepsilon_t \end{aligned}$$

(Equation 1)

In the specifications above, educational attainment is measured by average years of schooling, that is the mean of total schooling from the primary, secondary, and tertiary level per country i at time t . The key independent variable of interest is the (natural logarithm of) exports, $\ln \text{Exports}_{t-5}$ of country i at year $t - 5$. T-5 refers to the value of a variable 5 years ago from time t . Here, the time-

varying country-level control variables include imports, population, migrant share, and GDP. These factors are controlled as they could as well influence educational attainment for the sample countries. All of the independent variables are lagged five years to account for the time taken that economic factors place to influence the level of educational attainment. The time and country fixed effects are shown by γ_i and γ_t respectively.

Regressing Educational Attainment to both GDP and the dummy variable for country's income level (1 if developed, 0 otherwise) could give rise to the problem of multicollinearity. To prevent multicollinearity, a separate regression that tests for the effect country's level of income to human capital investment is modelled as follows:

$$Educational\ Attainment_t = \beta_0 + \beta_1 Developed + \gamma_i + \gamma_t + \varepsilon_t \quad (Equation\ 2)$$

For the third hypothesis, the aim is to examine the effect that globalisation places to income inequality. Proxied by GINI index for inequality, the model is as follows:

$$Inequality_t = \beta_0 + \beta_1 \ln Exports_{t-5} + \beta_2 \ln Education\ Attainment_{t-5} + \beta_3 \ln Imports_{t-5} + \beta_4 \ln Population_{t-5} + \beta_5 \ln Death\ Rate_{t-5} + \beta_6 \ln Migrant\ Share_{t-5} + \beta_7 \ln GDP_{t-5} + \gamma_i + \gamma_t + \varepsilon_t \quad (Equation\ 3)$$

Additionally, the fourth hypothesis tests whether economic globalisation affects the human development level in a country through the following regression equation:

$$Human\ Development_t = \beta_0 + \beta_1 \ln Exports_{t-5} + \beta_2 \ln Education\ Attainment_{t-5} + \beta_3 \ln Imports_{t-5} + \beta_4 \ln Population_{t-5} + \beta_5 \ln Death\ Rate_{t-5} + \beta_6 \ln Migrant\ Share_{t-5} + \beta_7 \ln GDP_{t-5} + \gamma_i + \gamma_t + \varepsilon_t \quad (Equation\ 4)$$

In both of the models above, the same control variables as *Equation 1* are incorporated. The difference lies such that in *Equation 4* and *Equation 5*, Educational Attainment is added as a control variable to minimise the problem of Omitted Variable Bias. As discussed before, education can affect exports, which is the main variable of interest, and that it has been deliberately considered to give rise to human development level and reduce income inequality.

6. Results

After ranking countries based on four main categories (*Appendix 1*), Table 3 below summarises the rank correlation of each variable.

Table 3: Spearman's Rho

	Export	Education	GINI	HDI
Export	1			
Education	0,621261909	1		
GINI	-0,610027703	-0,995449903	1	
HDI	0,59372247	0,992486516	-0,991942762	1

6.1 Exports and Average Schooling Years

Table 4 shows the outcome of Educational Attainment regressed to Exports, together with the other control variables. The regression was run for six models, starting with regressing only Educational Attainment to Exports. The regression was expanded by adding the control variable one by one, yielding a total of up to six models. In Model 7, Educational Attainment was regressed only to the Developed dummy variable to examine the influence of income level to average years of schooling.

A small positive significant effect was found for Exports in the first model that directly assess its effects to Educational Attainment. This positive correlation matches the Spearman's rho in Table 3. However, when each regressor is added, the coefficient of Exports becomes insignificant except in Model 3. One of the reasons is that an added regressor implies a loss of degrees of freedom, which costs precision, and therefore results to a higher value of probability. Second, the insignificance as model increases in regressor could also be due to the correlation to the independent variable. Meaning that, the regressors are measuring variables that are similar in nature, and compete to explain its effects. This later induces either one or both of the variables to lose its significance, as none of the effect is sufficient enough to get a statistically significant estimate for the other variable. Indeed, multiple regressions examine the relationship between a dependent variable and many variables, while a simple regression only assesses a one-on-one

relationship between the dependent and independent variable. In this case, the significance of Exports is worn out by other control variables.

Nevertheless, the direction of the sign for Exports does not change throughout the entire models, deducing a positive relation between Exports and Educational Attainment. Given the reasoning above, it is plausible to reject the first null hypothesis, as a significant relationship is found at 1% level when the variable of Exports is directly regressed to Educational Attainment. Therefore, we infer that there is a statistically significant association between exports and educational attainment. From Model 1, an increase of 1% in Exports at t-5, brings about an increase of 0.3 years of Educational Attainment at time t. This finding is in line with previous pieces of literature discovering that economic globalisation, through export, indeed brings about a positive impact on human capital investment decisions. Among past researchers that procured similar results were Buckley & Ghauri (2014) studying that the rise of free trade creates an intensified need for skilled labour and that growth enhancements as a result of trade liberalisation further reinforces government's funds to be allocated to human capital advancement (Falvey *et al.*, 2012).

As for the control variables, significant effects were found for Population and Death Rate at 1% significance level. For Population especially, the effect is significant for all regression models and that the magnitude of this variable is relatively large compared to other regressors. From Model 6, it can be seen that a 1% increase in the number of Population at t-5, increases Educational Attainment by approximately 2.2 years at time t. For Death Rate itself, a negative relationship was found to Educational Attainment. Model 4 shows that, a 1% decrease in Death Rate at t-5 increases average years of schooling by approximately 1.3 additional years at time t. It is important to note that as soon as other regressors were added, Death Rate became insignificant. As discussed prior, this means that the effect of Death Rate is partially captured by Migrant Share and GDP in explaining country's educational attainment. Nonetheless, these findings are in line with previous literature that established similar conclusions. The major significance of population growth to level of education is ineluctable as a growing population pressures the government to invest in the educational sector to prepare pupils to later engage in a fast-paced growing economic setting (Cincotta & Engelman, 1997). Moreover, a fall in death rate depicts improvement of quality of life, which may include the assessment that educational attainment is ought to progress as a result of positive health outcomes both mentally and physically (Baker *et al.*, 2011).

Turning into the rest of the control variables, Imports, Migrant Share, and GDP, insignificant relationship was found to educational attainment. Not only that the insignificance is found at the complete model, of Model 6, but the same effect has been observed in all models. As for Imports, one of the most interesting outcomes is that the direction of the magnitude changes at the most complete model, depicting a negative relationship between schooling years and import revenues, while a positive coefficient was found in the rest of the models. Deducing from Slaughter & Swagel (1997), wages differential will be neutralised, implying that in order for workers to compete for higher wages, instead of increasing their skills through educational attainment, they could move to another country with higher marginal product of labour, given that free labour mobility prevails. Moreover, as for Migrant Share, the insignificant effect opposes Dustmann & Glitz (2011) hypothesis that people migrate exclusively to attain schooling. In reality, this may not be the case, such that migration decision involve security, income, or even leisure reasons. Lastly, the opposing effect of GDP than that of predicted by Aghion *et al.* (2009) stating that as countries grow in income, the higher job availability is likely to prompt the state to allocate its budget more for schooling to improve workers' skills in the job market. However, as countries grow, the rising national income might be used for infrastructure for transaction convenience or R&D in product development to better compete in international trade. Therefore, the effect that GDP places to educational attainment becomes insignificant.

The effect of country's income level to educational attainment was regressed through Model 7. The outcome shows a P-Value of 0.000, meaning that country's income level significantly affects educational attainment at 1% significance level. The coefficient of the Developed dummy variable can be interpreted as such; developed countries on average have a higher educational attainment than developing countries by approximately 2.4 years of schooling. From this result, we reject the second null hypothesis and infer a significant effect of county income level to schooling years, and that educational attainment is significantly higher in developed than in developing countries.

All in all, from the regression outcomes, we can deduce that economic globalisation, measured through exports, indeed place a positive effect to educational attainment, measured using average years of schooling.

Table 4: Educational Attainment Ordinary Least Square Regression ResultsDependent variable: *Educational Attainment (Average Years of Schooling)*

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	1274 [0.449]	0.631 [0.729]	-36.124*** [0.000]	-14.302*** [0.009]	-34.099*** [0.000]	-34.991*** [0.000]	8.240 [0.000]
LnExports_{t-5}	0.292*** [0.000]	0.173 [0.247]	0.281** [0.0475]	0.207 [0.136]	0.224 [0.253]	0.186 [0.351]	
LnImports_{t-5}		0.147 [0.357]	0.173 [0.2500]	0.196 [0.181]	0.0071 [0.718]	-0.0760 [0.740]	
LnPopulation_{t-5}			1.985*** [0.000]	0.964*** [0.000]	2.233*** [0.000]	2.160*** [0.000]	
LnDeathRate_{t-5}				-1.281*** [0.000]	-0.494 [0.244]	-0.462 [0.277]	
LnMigrantShare_{t-5}					0.110 [0.344]	0.100 [0.392]	
LnGDP_{t-5}						0.258 [0.214]	
Developed							2.403*** [0.000]
Country FE	YES	YES	YES	YES	YES	YES	NO
Time FE	YES	YES	YES	YES	YES	YES	NO
N	751	751	751	751	751	751	751
R-Squared	0.940	0.940	0.947	0.949	0.968	0.968	0.134
Adjusted R-Squared	0.930	0.930	0.938	0.941	0.955	0.955	0.132
Prob (F-Statistic) of Full Model	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

Note: P-values are reported in parentheses.

6.2 Exports and the Gini Index

In assessing the effect of economic globalisation to inequality, the outcome of *Equation 3* is summarised in Table 5. From Model 3 to Model 6, the variable of Exports is significant at 5%. Inducing from Model 6, an increase of 1% in Exports at time t-5 decreases the Gini Index by 3.62 points at time t. The direction of the magnitude is similar to that of deduced before from the rank correlation in Table 3. The coefficient of Export is significant to inequality, and the same holds for Imports. Deducing from Model 7, a 1% increase in Imports at t-5 raises the Gini Index at time t by approximately 5.7 points. This outcome is in line with the previous literature by Smits (2014) and Urata & Narjoko (2017). It was reasoned that trade is an engine of growth, which later induces more equal wages as citizens are given more equal job opportunities, contributing to a smaller gap of income inequality. Therefore, economic globalisation indeed reduces income inequality in the developed and developing worlds. Given this outcome, the third null hypothesis is rejected, and we construe that an increase in economic globalisation significantly decreases the level of income inequality.

Besides Imports, the remaining control variables are insignificant to Inequality. One of the most impressive results is the insignificance of Educational Attainment, as we previously found that there is a significant one-on-one effect of schooling years to economic globalisation. Therefore, the Spearman's rho in Table 3 fails to predict the important impact of Education to Inequality, as well as the sign of the direction. Nonetheless, this finding matches with the analysis done by White (2015), arguing that the result insignificance of education to income inequality is due to the asymmetric improvement that different groups of incomes are experiencing as a result of improved educational attainment. Subsequently, although the lower and median income groups increase in affluence, the wealthier populace experiences the same thing by a proportionate extent, if not more. Hence, this could explain the absence of significance of schooling to income inequality. However, as our data measures education quantitatively, the insignificance of education to inequality could be because a qualitative measure might be needed to assess such occurrence.

Table 5: Income Inequality Ordinary Least Square Regression ResultsDependent variable: *Income Inequality (GINI Index)*

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	24.275 [0.273]	24.043 [0.278]	7.916 [0.722]	83.952 [0.212]	64.869 [0.390]	66.079 [0.401]	65.829 [0.403]
LnExports_{t-5}	0.607 [0.527]	0.525 [0.589]	-3.974** [0.017]	-3.733** [0.026]	-3.633** [0.032]	-3.621** [0.034]	-3.525 [0.065]
Education_{t-5}		0.257 [0.547]	0.149 [0.720]	0.318 [0.470]	0.327 [0.452]	0.328 [0.458]	0.323 [0.466]
LnImports_{t-5}			5.208*** [0.001]	4.975*** [0.002]	4.941*** [0.002]	4.929 [0.002]	5.707*** [0.002]
LnPopulation_{t-5}				-4.674 [0.231]	-3.843 [0.358]	-3.195 [0.371]	-3.458 [0.434]
LnDeathRate_{t-5}					1.703 [0.575]	1.712 [0.575]	1.588 [0.603]
LnMigrantShare_{t-5}						-0.047 [0.955]	-0.033 [0.969]
LnGDP_{t-5}							-1.372 [0.397]
Country FE	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES
N	324	324	324	324	324	324	324
R-Squared	0.374	0.353	0.355	0.489	0.486	0.487	0.489
Adjusted R-Squared	0.408	0.412	0.492	0.434	0.435	0.459	0.463
Prob (F-Statistic) of Full Model	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

Note: P-values are reported in parentheses.

6.3 Exports and the HDI

Similar to that of in income inequality, a significant positive relationship between economic globalisation and HDI is also found following *Equation 4*. The results are summarised in Table 6. In every model, the coefficient of Exports remains significant at 1% level, except in Model 7, where the coefficient is significant only at 5% level. The direction of Exports is the same as to how previously derived in Table 3. Although this finding conveys a significant impact of globalisation to HDI, the magnitudes of these coefficients are fairly small. Deducing from Model 5, a 1% increase in Exports at t-5, raises the HDI score by only 0.013 points at time t. Nonetheless, the result is in correspondence with the previous literature by Chudnovsky & Lopez (1999) and Akhter (2004). It was argued that economic globalisation through trade openness drives up a competitive environment where countries benefit from technological transfer to enhance their social and economic development. Additionally, freedom of trade is also seen to promote human welfare and development. Therefore, the fourth null hypothesis is rejected, and we glean that economic globalisation significantly increases the level of human development.

Moreover, variable Population shows a significant effect at 5% level to HDI. Inducing from Model 5, a 1% increase in Population at t-5, decreases HDI score by 0.028 points at time t. This adverse relationship is consistent with Haghshenas et al. (2007) examining that low level of human development is largely affected by high population growth rate. The same goes with Wake (2012), where high population growth often induces poor social policy practice and application, producing a lower standard of human happiness.

Another variable that poses a significant impact to HDI score is Death Rate. Across the three models, the coefficient generally has the same approximation. From Model 7, a 1% increase in Death Rate at time t-5 reduces the HDI score by 0.065 points at time t. This outcome is also compatible with previous literature by Lorentzen *et al.* (2008) suggesting that high mortality drives the human development level down, as investors see a 'short-future' to deploy their resources to be devoted to human and physical capital. Similarly, the magnitudes of these variables are rather small. As to the other control variables, there are no significant effects found in Educational Attainment, Imports, Death Rate, Migrant Share, and GDP.

Table 6: Human Development Ordinary Least Square Regression ResultsDependent variable: *Human Development Index (HDI)*

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	0.274*** [0.000]	0.275*** [0.000]	0.290*** [0.000]	0.232 [0.297]	0.934*** [0.000]	0.965*** [0.000]	0.958*** [0.000]
LnExports_{t-5}	0.015*** [0.000]	0.014*** [0.000]	0.017*** [0.000]	0.017*** [0.001]	0.013*** [0.008]	0.013*** [0.007]	0.013** [0.013]
Education_{t-5}		0.005 [0.724]	0.005 [0.730]	0.004 [0.789]	0.003 [0.837]	0.003 [0.806]	0.003 [0.808]
LnImports_{t-5}			-0.003 [0.540]	-0.002 [0.564]	[-0.001 [0.813]	-0.001 [0.787]	-0.003 [0.587]
LnPopulation_{t-5}				0.003 [0.780]	-0.028** [0.032]	-0.029** [0.028]	-0.031** [0.024]
LnDeathRate_{t-5}					-0.066*** [0.000]	-0.065*** [0.000]	- 0.065*** [0.000]
LnMigrantShare_{t-5}						-0.001 [0.611]	-0.002 [0.581]
LnGDP_{t-5}							0.003 [0.543]
Country FE	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES
N	389	389	389	389	389	389	389
R-Squared	0.864	0.864	0.865	0.865	0.882	0.882	0.882
Adjusted R-Squared	0.813	0.813	0.812	0.812	0.835	0.834	0.834
Prob (F-Statistic) of Full Model	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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

Note: P-values are reported in parentheses.

7. Policy Implications

The outcomes of our empirical work bear several important social and economic policy inferences for policy makers. The insignificance of GDP to all dependent variables conveys that policies aimed at improving national prosperity do not necessarily require a boost in spending, for the mere sake of raising aggregate demand. To allocate the country's monetary resources more efficiently, it is important to look at the most significant drivers of educational attainment, income inequality, and human development level. Given that population positively affects educational attainment, it is central for the government to allocate sufficient resources to maintain, if not raise, the domestic schooling quality. As population expansion is significantly matched with higher average years of schooling, authorities must be consistent with educational quality to ensure pupils' excellence that will contribute to the nation's productivity in the subsequent period. In today's world of fluctuating population growth, to guarantee the quality of human capital, necessary population-control strategy could be taken as a safeguard. The need for population control scheme is also substantiated by our significant negative results of population to the HDI score, implying that a higher population growth decreases the level of human development in that country. Having these outcomes could only mean that failure to control for population growth will emerge as a loss of human capital and development quality in a nation.

Furthermore, the negative significance of death rate to schooling attainment and human development level conveys a rather prime measure that is often neglected by the greater public. Mortality rate, as a standard of health, affects individuals in the ways they perform core activities in their daily life. As healthier population significantly have higher educational attainment and human development level, it could be seen as wise for authorities to spend suitably for the country's health sector in return for more-educated workforce and a prosperous population.

All in all, the significance of exports to educational attainment, income inequality, and human development level implies that economic globalisation is indeed an important driver for human capital advancement and income equalisation across nations. Among the policies that government can pursue is an open economy that practises a freer trade, at the same time employing proper schooling (or training) to its people, so that a group of workers is not competed out by economic openness. Additionally, by becoming trading partners, it is possible for governments of different nations to negotiate and create an educational partnership. From here, knowledge and technology

transfer are further magnified, reducing what we identify as 'knowledge gap' across borders. Skilful pupils that later turn into labour force aids economic productivity and further enhances the manifestation of international trade in an open economy. To add, not only does education partnership between nations create economic gains in the form of a higher labour productivity, this too increases diplomacy ties between the parties involved; sustaining prosperity, not only for one nation but to many.

8. Conclusion

The effect of globalisation on country's well-being has been widely scrutinised in academic works and socially. This thesis aimed to examine the impact that economic globalisation, measured through export revenues bring to human capital investment, development level, and income inequality across 102 countries between the period of 1965 to 2010. Four hypothesis were postulated to answer the following research question: *To what extent does economic globalisation affect the level of human capital investment, development, and income inequality?*

The significance of economic globalisation to educational attainment from the first model conveys that a more open economy contributes to higher schooling level, that will later create gains for country's labour productivity to compete in international trade or simply domestically. The second hypothesis revealed that the effect of globalisation on educational attainment in developed countries are significantly higher than those of in the developing world counterparts. Additionally, economic globalisation poses a significant effect on income inequality and the level of human development. Through the third and fourth hypothesis, a higher economic globalisation was found to lower the gap of income inequality, while in a different direction increased the level of one's HDI. Nonetheless, the magnitudes of these coefficients were relatively small, implying that economic globalisation should be much more extensively treated through government policies in order to exert the full gains out of country and trade openness.

Previous works of literature from Blanchard & Olney (2017), Urata & Narjoko (2017), Buchmann & Hanum (2012), and Akhter (2004) discovered the same significances for the variables assessed prior. These findings imply that the result of this research is not an isolated one and that the conclusion reached is realistic.

9. Limitations and Further Research

Coming into realisation, the results of this thesis suffer from a number of limitations. Firstly, the effect that economic globalisation generates through exports on educational attainment may not be fully captured in our model as we only accounted for quantity-based measure of schooling. Moreover, this thesis follows the World Bank's conventional definition of country's income group, whereas they have established a newer version, which divides countries into four income groups and not only into two; developed and developing (The World Bank, 2017). Therefore, by applying the latest income classification, the regression outcome from the second hypothesis could be more recent and thorough. Additionally, researchers have found several flaws in using the Gini Index to measure income inequality, which could impact the fit of our results. According to the World Development Indicator (2017), the Gini coefficients are not unique, so then it is possible for two different Lorenz curves to have the same Gini Index. More importantly to our research, as the Gini coefficient is not additive across groups, the country-level Gini coefficients cannot be aggregated into global Gini indices.

In overcoming these inadequacies, further researchers who are aiming to discuss similar issues could gather data on more recent educational attainment and exports level of each sample country. This would allow for more within-country variation of each variable employed, as the within-country variation was limited in the regression analysis given the inclusion of fixed effects. Additionally, further researches could aim to obtain data for quality-based measure of schooling to wholly examine the effect that economic globalisation places to schooling decision. To assure for recency in research outcomes, the latest income group classification can be applied instead of following the standard developed-developing countries definition. Also, a different measure of income inequality could be used to assess the effect income inequality besides the Gini Index. Given its limitations, a different inequality measure could improve the robustness of our results. Finally, an instrument variable for exports, differentiating the types of exports could further contribute to policy issues. Since most countries are already integrated into world markets, the relevant policy question is how to best engage in trade with the rest of the world (Blanchard & Olney, 2017). While the benefits of international trade are often stressed, it could be examined more complexly as to which types of exports are most beneficial for one's national economic prosperity through human capital accumulation, development level, and income inequality.

Appendix 1

Average Exports by Country Ranking

Country	Exports (in current billion USD)	Rank	Country	Exports (in current billion USD)	Rank
United States	12,1	1	Hungary	10,2	18
New Zealand	11,9	2	Tajikistan	10,2	19
Australia	11,4	3	Netherlands	10,1	20
Japan	11,4	4	Slovenia	10,1	21
Czech Republic	11,2	5	Greece	10,0	22
Canada	11,1	6	Norway	10,0	23
Hong Kong	11,1	7	Switzerland	10,0	24
Korea, Rep.	11,0	8	Estonia	9,9	25
Israel	10,9	9	Romania	9,9	26
Slovak Republic	10,9	10	United Kingdom	9,9	27
Denmark	10,7	11	Lithuania	9,8	28
Ireland	10,7	12	Poland	9,8	29
Sweden	10,6	13	Sri Lanka	9,7	30
Belgium	10,4	14	Moldova	9,6	31
Armenia	10,3	15	Croatia	9,5	32
Russian Federation	10,3	16	Trinidad and Tobago	9,2	33
Ukraine	10,3	17	Bulgaria	9,1	34

Country	Exports (in current billion USD)	Rank	Country	Exports (in current billion USD)	Rank
Kazakhstan	9,1	35	Jordan	7,9	52
Latvia	9,1	36	Mauritius	7,9	53
Singapore	9,1	37	Germany	7,8	54
Italy	9,0	38	Portugal	7,8	55
Kyrgyz Republic	9,0	39	Mongolia	7,7	56
Malaysia	9,0	40	China	7,6	57
Albania	8,8	41	Philippines	7,4	58
Argentina	8,8	42	Costa Rica	7,2	59
Chile	8,8	43	Ecuador	7,2	60
Spain	8,8	44	South Africa	7,2	61
Finland	8,6	45	Mexico	7,1	62
France	8,6	46	Colombia	6,7	63
Panama	8,3	47	Dominican Republic	6,6	64
Austria	8,1	48	Iran, Islamic Rep.	6,6	65
Uruguay	8,1	49	Paraguay	6,6	66
Bolivia	8,0	50	Thailand	6,5	67
Peru	8,0	51	Venezuela, RB	6,5	68

Country	Exports (in current billion USD)	Rank	Country	Exports (in current billion USD)	Rank
Saudi Arabia	6,4	69	India	4,6	86
UAE	6,4	70	Tanzania	4,6	87
Libya	6,2	71	Bangladesh	4,1	88
El Salvador	6,0	72	Uganda	4,0	89
Vietnam	6,0	73	Haiti	3,8	90
Tunisia	5,9	74	Pakistan	3,8	91
Brazil	5,7	75	Cote d'Ivoire	3,7	92
Turkey	5,7	76	Morocco	3,7	93
Algeria	5,6	77	Papua New Guinea	3,6	94
Indonesia	5,6	78	D.R. Congo	3,3	95
Zambia	5,6	79	Benin	2,8	96
Kuwait	5,5	80	Nepal	2,8	97
Egypt, Arab Rep.	5,4	81	Sudan	2,7	98
Kenya	5,3	82	Afghanistan	2,6	99
Cameroon	5,2	83	Senegal	2,6	100
Honduras	5,2	84	Yemen, Rep.	2,0	101
Syria	4,9	85	Mali	1,3	102

Average Educational Attainment by Country Ranking

Countries	Educational Attainment (in years)	Rank	Countries	Educational Attainment (in years)	Rank
United States	12,11	1	Hungary	10,24	18
New Zealand	11,92	2	Tajikistan	10,17	19
Australia	11,43	3	Netherlands	10,15	20
Japan	11,39	4	Slovenia	10,15	21
Czech Republic	11,17	5	Switzerland	10,02	22
Hong Kong SAR, China	11,13	6	Norway	9,95	23
Canada	11,06	7	Greece	9,95	24
Korea, Rep.	11,04	8	United Kingdom	9,92	25
Israel	10,90	9	Romania	9,92	26
Slovak Republic	10,85	10	Estonia	9,87	27
Ireland	10,75	11	Poland	9,81	28
Denmark	10,74	12	Lithuania	9,76	29
Sweden	10,64	13	Sri Lanka	9,65	30
Belgium	10,44	14	Moldova	9,64	31
Russian Federation	10,32	15	Croatia	9,48	32
Ukraine	10,27	16	Trinidad and Tobago	9,16	33
Armenia	10,25	17	Singapore	9,14	34

Countries	Educational Attainment (in years)	Rank	Countries	Educational Attainment (in years)	Rank
Bulgaria	9,12	35	Jordan	7,90	52
Kazakhstan	9,12	36	Mauritius	7,86	53
Latvia	9,06	37	Germany	7,81	54
Italy	9,04	38	Portugal	7,80	55
Kyrgyz	8,96	39	Mongolia	7,71	56
Malaysia	8,96	40	China	7,55	57
Chile	8,85	41	Philippines	7,45	58
Argentina	8,83	42	Costa Rica	7,25	59
Albania	8,82	43	Ecuador	7,24	60
Spain	8,77	44	South Africa	7,17	61
Finland	8,64	45	Mexico	7,12	62
France	8,62	46	Colombia	6,72	63
Panama	8,34	47	Dominican Republic	6,65	64
Austria	8,11	48	Iran, Islamic Rep.	6,62	65
Uruguay	8,09	49	Paraguay	6,62	66
Bolivia	8,00	50	Thailand	6,51	67
Peru	7,98	51	Venezuela, RB	6,50	68

Countries	Educational Attainment (in years)	Rank	Countries	Educational Attainment (in years)	Rank
UAE	6,42	69	Tanzania	4,58	86
Saudi Arabia	6,41	70	India	4,58	87
Libya	6,16	71	Bangladesh	4,06	88
El Salvador	6,03	72	Uganda	4,01	89
Vietnam	6,01	73	Haiti	3,81	90
Tunisia	5,93	74	Pakistan	3,75	91
Turkey	5,74	75	Morocco	3,73	92
Brazil	5,67	76	Cote d'Ivoire	3,73	93
Zambia	5,65	77	Papua New Guinea	3,65	94
Algeria	5,59	78	Congo, Dem. Rep.	3,29	95
Indonesia	5,56	79	Benin	2,80	96
Kuwait	5,53	80	Nepal	2,77	97
Egypt, Arab Rep.	5,40	81	Sudan	2,68	98
Kenya	5,31	82	Afghanistan	2,64	99
Honduras	5,20	83	Senegal	2,60	100
Cameroon	5,18	84	Yemen, Rep.	2,00	101
Syria	4,88	85	Mali	1,26	102

Average Gini Index by Country Ranking

Countries	GINI index	Rank	Countries	GINI index	Rank
United Arab Emirates	23,4	1	Croatia	29,8	18
Saudi Arabia	24,6	2	Sudan	30,0	19
Czech Republic	24,9	3	Albania	30,3	20
Slovenia	25,9	4	Pakistan	31,2	21
Slovak Republic	26,0	5	Kyrgyz Republic	31,2	22
Bulgaria	27,2	6	Canada	31,4	23
Hungary	27,5	7	Latvia	31,6	24
Netherlands	27,6	8	United Kingdom	31,7	25
Sweden	27,7	9	Switzerland	31,7	26
China	27,7	10	Germany	31,9	27
Finland	27,9	11	Syrian	32,0	28
Belgium	28,1	12	Armenia	32,1	29
Afghanistan	28,4	13	Estonia	32,9	30
Austria	28,4	14	Tajikistan	33,2	31
Poland	28,5	15	Japan	33,4	32
Romania	29,0	16	Spain	33,7	33
Kazakhstan	29,1	17	France	33,7	34

Countries	GINI index	Rank	Countries	GINI index	Rank
Australia	33,7	35	Jordan	36,9	52
Norway	33,8	36	Hong Kong	37,3	53
Denmark	33,9	37	Greece	37,6	54
Nepal	34,0	38	Algeria	37,7	55
Bangladesh	34,0	39	Yemen, Rep.	37,7	56
Mongolia	34,0	40	United States	37,8	57
Indonesia	34,1	41	Ukraine	38,4	58
Lithuania	34,4	42	Benin	38,5	59
Egypt, Arab Rep.	34,6	43	India	38,8	60
Moldova	34,9	44	Ireland	39,3	61
Korea, Rep.	35,3	45	Uganda	39,9	62
Tanzania	35,3	46	Mali	40,6	63
Cameroon	35,5	47	New Zealand	40,6	64
Italy	35,9	48	Turkey	40,7	65
Portugal	36,2	49	Tunisia	41,5	66
Sri Lanka	36,2	50	D.R. Congo	41,5	67
Russia	36,3	51	Mauritius	42,0	68

Countries	GINI index	Rank	Countries	GINI index	Rank
Thailand	42,3	69	Peru	48,2	86
Libya	42,5	70	Trinidad and Tobago	48,7	87
Argentina	43,2	71	Malaysia	49,2	88
Uruguay	43,3	72	Papua New Guinea	49,7	89
Iran	43,6	73	Dominican Republic	49,9	90
Morocco	43,7	74	Panama	52,7	91
Venezuela, RB	43,7	75	Mexico	53,1	92
Singapore	45,1	76	Chile	53,3	93
Philippines	45,5	77	Bolivia	53,6	94
Vietnam	45,6	78	Colombia	56,0	95
Israel	46,7	79	South Africa	56,1	96
Paraguay	46,8	80	Honduras	56,7	97
Costa Rica	46,9	81	Ecuador	56,9	98
Cote d'Ivoire	47,1	82	Haiti	57,0	99
Kuwait	47,5	83	Brazil	57,2	100
Senegal	47,9	84	Kenya	58,3	101
El Salvador	48,1	85	Zambia	58,8	102

Average HDI Score by Country Ranking

Countries	HDI Score	Rank	Countries	HDI Score	Rank
Norway	0,90	1	Hong Kong	0,84	18
Australia	0,90	2	Austria	0,84	19
United States	0,89	3	Italy	0,82	20
Switzerland	0,88	4	Slovenia	0,82	21
Netherlands	0,88	5	Spain	0,82	22
Canada	0,87	6	Korea, Rep.	0,82	23
Sweden	0,87	7	Czech Republic	0,82	24
New Zealand	0,87	8	Singapore	0,81	25
Germany	0,86	9	Greece	0,81	26
Belgium	0,86	10	UAE	0,79	27
United Kingdom	0,85	11	Estonia	0,78	28
Japan	0,85	12	Slovak Republic	0,77	29
Denmark	0,85	13	Poland	0,77	30
Ireland	0,84	14	Portugal	0,77	31
France	0,84	15	Hungary	0,77	32
Israel	0,84	16	Kuwait	0,77	33
Finland	0,84	17	Lithuania	0,76	34

Countries	HDI Score	Rank	Countries	HDI Score	Rank
Chile	0,76	35	Jordan	0,70	52
Argentina	0,76	36	Dominican Republic	0,70	53
Saudi Arabia	0,75	37	Venezuela, RB	0,69	54
Latvia	0,74	38	Sri Lanka	0,69	55
Croatia	0,74	39	Mauritius	0,68	56
Russian Federation	0,74	40	Ecuador	0,68	57
Uruguay	0,74	41	Brazil	0,67	58
Romania	0,73	42	Peru	0,67	59
Bulgaria	0,73	43	Iran,	0,66	60
Libya	0,73	44	Armenia	0,66	61
Trinidad and Tobago	0,72	45	Albania	0,66	62
Panama	0,72	46	Turkey	0,65	63
Malaysia	0,71	47	Thailand	0,65	64
Kazakhstan	0,71	48	Colombia	0,65	65
Costa Rica	0,70	49	Tunisia	0,65	66
Ukraine	0,70	50	Algeria	0,65	67
Mexico	0,70	51	Moldova	0,63	68

Countries	HDI Score	Rank	Countries	HDI Score	Rank
South Africa	0,63	69	Bangladesh	0,47	86
Paraguay	0,63	70	Pakistan	0,46	87
Philippines	0,62	71	Cameroon	0,45	88
Mongolia	0,61	72	Zambia	0,45	89
Egypt, Arab Rep.	0,61	73	Nepal	0,45	90
El Salvador	0,61	74	Yemen, Rep.	0,45	91
Kyrgyz Republic	0,60	75	Haiti	0,44	92
Syrian Arab Republic	0,60	76	Papua New Guinea	0,43	93
Indonesia	0,60	77	Tanzania	0,41	94
Bolivia	0,60	78	Cote d'Ivoire	0,41	95
China	0,60	79	Benin	0,40	96
Tajikistan	0,58	80	Senegal	0,40	97
Vietnam	0,57	81	Sudan	0,40	98
Honduras	0,56	82	Uganda	0,39	99
Morocco	0,53	83	Afghanistan	0,36	100
India	0,50	84	D.R. Congo	0,36	101
Kenya	0,48	85	Mali	0,31	102

Appendix 2

Countries by Income Group

Developed Countries	Average GDP Per Capita (in current USD)
Australia	18026
Austria	19000
Belgium	18692
Canada	18926
Denmark	23967
Finland	19733
France	18095
Germany	18460
Hong Kong	13807
Ireland	17678
Italy	15311
Japan	21710
Kuwait	17119
Netherlands	20300
Norway	30089
Singapore	15289
Sweden	23250
Switzerland	29178
United Arab Emirates	26547
United Kingdom	17704
United States	22963

Developing Countries	Average GDP Per Capita (in current USD)	Developing Countries	Average GDP Per Capita (in current USD)	Developing Countries	Average GDP Per Capita (in current USD)
Afghanistan	155	Hungary	3329	Philippines	814
Albania	1004	India	426	Poland	3053
Algeria	1944	Indonesia	810	Portugal	8215
Argentina	4496	Iran	2339	Romania	1798
Armenia	646	Israel	12027	Russia	2392
Bangladesh	325	Jordan	1610	Saudi Arabia	8712
Benin	350	Kazakhstan	1701	Senegal	562
Bolivia	824	Kenya	387	Slovak Republic	4087
Brazil	3287	Korea, Rep.	7717	Slovenia	6253
Bulgaria	2042	Kyrgyz	261	South Africa	3020
Cameroon	640	Latvia	2457	Spain	11719
Chile	3931	Libya	3907	Sri Lanka	741
China	908	Lithuania	2532	Sudan	498
Colombia	1924	Malaysia	3050	Syria	906
D.R. Congo	303	Mali	267	Tajikistan	193
Costa Rica	2799	Mauritius	2532	Tanzania	182
Cote d'Ivoire	748	Mexico	3792	Thailand	1648
Croatia	3345	Moldova	329	Trinidad and Tobago	5997
Czech Republic	4874	Mongolia	707	Tunisia	1681
Dominican Republic	1817	Morocco	1152	Turkey	3208
Ecuador	1893	Nepal	209	Uganda	252
Egypt	897	New Zealand	12754	Ukraine	794
El Salvador	1389	Pakistan	426	Uruguay	4077
Estonia	3209	Panama	3130	Venezuela, RB	4164
Greece	10032	Papua New Guinea	699	Vietnam	309
Haiti	195	Paraguay	1252	Yemen, Rep.	342
Honduras	837	Peru	1720	Zambia	554

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