Poverty in an Unequal World: A Quantitative Structural Analysis of the Effects of Inequality Between and Within Countries on World Poverty, 1980-2007

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Declaration

I, Niheer Dasandi confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I can confirm that this has been indicated in the thesis.

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Abstract

Dominant explanations within the development literature for the differences in poverty levels around the world have tended to ignore the influence of international inequality on poverty, instead focusing exclusively on domestic factors. Furthermore, these explanations pay little attention to the effect of domestic inequality on poverty. This study addresses these shortcomings through a quantitative analysis of the effects of inequality between and within countries on poverty, between 1980 and 2007.

The study introduces a new *structural* measure of international inequality based on countries' positions in the international system, created by applying social network analysis to international trade networks to place countries into four hierarchical positions. The results of the regression analysis demonstrate that international inequality has a strong effect on poverty, controlling for a range of other factors typically associated with poverty, such as geography and institutions. In addition to assessing the effects of international inequality on poverty; this study also considers the historical roots of the current unequal international system. The results of the regression analysis demonstrate that colonial factors strongly influence international inequality.

The analysis also considers the impact of domestic inequality on poverty, and finds that inequality within countries has a significant effect on poverty. The analysis finds support for the argument that domestic inequality domestic inequality impacts poverty though the effect it has on politics and policy outcomes. Furthermore, by including an interaction term in the regression analysis, the study also demonstrates that domestic inequality has a greater impact on poverty in countries that face lower levels of international inequality than

in those that face higher international inequality. In doing so, the study shows that poverty is impacted by a combination of international and domestic factors. In particular, the study demonstrates the manner in which contemporary world poverty is fundamentally tied to the structure of global political economy.

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1. Introduction

What are the principal causes of poverty around the world? A considerable literature seeks to answer this question. Yet in doing so, the analyses conducted in this literature typically ignore the role of the non-poor in producing poverty, and instead focus almost exclusively on examining the poor. Subsequently, the causes of world poverty provided in the existing literature tend to point towards various attributes of the poor – either in terms of the attributes of poor countries, or in terms of the characteristics of poor individuals. As Øyen (1996) points out, however, in order to gain a fuller understanding of the prevalence of poverty in the world, it is necessary to ask what role the non-poor play in the creation and perpetuation of poverty. What effect do richer nations, and the global order created by such nations, have on the incidence of poverty around the world? What impact do wealthier groups in a society have on the poverty experienced by others in society? It is these questions that inform this research project. Specifically, this study focuses on the *inequality* between the non-poor and the poor at the international and domestic level, and examines the effect inequalities between and within countries have on world poverty.

Inequality is a comparative concept. That is to say it describes the position of actors relative to one another. Actors can be unequal across different dimensions, for example, education, status, and power. In this study, inequality is considered in terms of power asymmetries. In focusing on differences in power, the study takes a political economy approach, which is concerned with the linkages between economic and political processes (see Cohen 2008). Hence, differences in power from this perspective refers to differences in wealth and access

to political processes, whereby some actors are able to exert greater influence over decision-making, agenda-setting, and preference-shaping processes than others (see Hay 2002: 172-179). As I explain in more detail in Chapter 3, at the international level, inequality between countries refers to power asymmetry between states in the international system. The analysis of international inequality in this study is specifically focused on relations between states, the structure of these relations, and the manner in which this shapes and reflects hierarchies of power. At the domestic level, the analysis of inequality within states focuses on unequal power between groups within a country, and is largely centred on the unequal distribution of wealth within a country – and the manner in which this is linked to unequal political influence, thereby shaping policy outcomes. As such, the focus on inequalities as power asymmetries in this study leads to an analysis of different types of inequality at the international and the domestic levels. At the domestic level, the analysis is concerned with unequal wealth between groups, while at the international level the analysis considers hierachy between countries in the international system based on the structure of relations between states.

The example of Haiti – the poorest country in the Western Hemisphere – demonstrates the impact inequality between countries can have on poverty. As a French colony, Haiti was incorporated into the world economy to supply primary commodities, such as sugar, coffee, cotton, and indigo, which were transferred to the wealthier nations. These raw materials were produced using slaves transported from Africa and generated huge revenue for France (James 1980; Farmer 2003). Following the Haitian revolution in 1791, France demanded trade concessions and 'compensation' for the slave owners from the new independent state amounting to 150 million francs, which Haiti continued to pay to France until 1947. This

'independence debt' had a catastrophic impact on Haiti's economy and ecology, as the country was forced to intensify primary commodity exporting – including the logging of its forests for export to Europe – in order to pay its debt to France (Heinl and Heinl 1978; Aristide 2000; Farmer 2003; Coupeau 2008).

Haiti came to be seen as a source of advantageous trade deals by the USA, UK, and France for the country's raw materials, with trade relations benefitting the European powers and the US, together with a small Haitian elite; the majority of the Haitian population was pushed into further poverty, as resources continued to be transferred from Haiti to the wealthier nations. In addition, the US sent gunboats to Haiti to demand various payments from the country, followed by a series of US invasions of the country from the middle of the nineteenth century (Heinl and Heinl 1978). This enabled US companies to secure large amounts of Haitian land for plantations to the detriment of the Haitian peasantry who were forced off this land (Farmer 2003: 82).

The unequal economic and political relations between Haiti and the US continued to impact the country's development into the twentieth century, particularly during the highly repressive and authoritarian rule of François Duvalier, who was succeeded by his son Jean-Claude Duvalier. The US provided the Duvalier with loans, gifts, and military support, which was largely used for his personal benefit and to ensure his continued rule (Farmer 2003; Klein 2010). The high government repression, the denial of minimal labour rights, and an impoverished population meant that, in addition to being a source of cheap raw materials, Haiti became a source of cheap labour for US companies who began to outsource assembly production during the 1960s (Burbach and Herold 1984). Yet the low wages on offer together with the tax breaks provided to the US companies meant that there was little

benefit of this production for the majority of Haitians. Instead the country sank further into debt (Farmer 2003: 100).

As a result of the high levels of debt accrued through the independence debt and during the rule of the Duvaliers, in the 1980s the country underwent an IMF Structural Adjustment Programme (SAP), which included the forced liberalisation of the agricultural sector. This eventually led to the destruction of Haiti's rice industry – rice being a staple food in the country – as domestic producers were unable to compete with the inflow of heavily subsidised US rice.[1] In addition to the negative impact this had on poorer households involved with agricultural production in the country; in 2008, rising international rice prices led to many in the country not being able to afford to buy rice (Katz 2010).

The discussion above demonstrates how international inequalities have significantly impacted Haiti's development and poverty levels. Yet the role of international inequality in creating and perpetuating poverty in Haiti receives little attention in mainstream development literature and policy. For example, the World Bank's (1999) Poverty Assessment of Haiti explains that poor governance, particularly corruption, and environmental degradation are the major causes of poverty in the country. There is no mention of the impact of international factors on both the country's governance and its environmental degradation, and more generally, there is no discussion of how external international factors have played a role in Haiti's current poverty.[2] The majority of the academic literature also tends to focus on the role of bad governance and corruption in explaining Haiti's poverty (see Easterly 2002). Some, such as Lawrence Harrison (1993),

[1] In 2010, former US President Bill Clinton issued a public apology for his role in pushing Haiti to implement the policies that led to the destruction of the country's domestic rice production and the impact this has had on hunger in Haiti (see Katz 2010).

[2] The content of Haiti's Poverty Assessment was analysed in Dasandi (2009) and found to make no mention of external international factors when discussing the causes of poverty in the country.

blame the country's 'voodoo' culture for its high poverty levels. The impact of structural international inequalities on Haiti's poverty is largely ignored in the mainstream development literature.

The southern African country of Zambia provides a further example of how structural inequalities in the international system can influence poverty levels. British colonial rule in the country led to Zambia being incorporated into the world economy as a supplier of raw materials; particularly copper (Elliott 1971; Seidman 1974; Fincham 1980). Under British rule, the country's copper mines were owned by two multinationals, *Anglo-American Corporation* and *American Metal Climax*, and as a result, there was no real local investment; instead the country's resources were 'stripped' by Britain and the multinational corporations (Fincham 1980: 298). Futhermore, during this time Seidman (1974: 601-602) points out that many Zambians were required to pay a 'colonial tax', which meant they were forced to find waged employment, together with other forms of colonial regulation, disrupted and undermined existing production systems in the country.

Following independence, the Zambian economy remained highly dependent on copper production, with copper accounting for around 95 per cent of the country's exports (Seidman 1974; Fincham 1980; Shaw 1976). While the country tried to increase its manufacturing sector, this was hindered by its dependence on importing parts and materials from developed countries (Seidman 1974). As I explain in Chapter 3, a key mechanism through which international inequality impacts poverty, is the manner in which many countries, such as Zambia, have been forced to export primary commodities (largely as a result of colonial policies) while importing manufactured goods; the increasing price of manufactures in relation to primary commodities over time, has led to terms of trade

imbalances in countries, such as Zambia (see Fincham 1980: 300). The fall in world copper prices in 1971 had a devastating impact on Zambia's economy, leading to a significant fall in living standards in the country (Seidman 1974). In addition, the further collapse of copper prices in 1975 led to the country experiencing high inflation and high external debt (Daniel 1985).

At the start of the 1990s, the country turned to the IMF for loans, and was consequently forced to implement policies aimed at extensive liberalisation and privatisation, as part of the IMF Structural Adjustment Programme. This included significant liberalisation in the agricultural sector, such as the removal of maize and fertiliser subsidies, together with the introduction of user fees for basic services, such as education and healthcare. The liberalisation of the agricultural sector had a negative impact on smaller-scale farmers who were unable to access necessary inputs (McCulloch et al. 2001). In addition, due to the IMF's prioritisation of repayment, countries such as a Zambia, which had begun to industrialise were pressured to refocus on primary commodities to generate foreign currency (Hertz 2004). The comprehensive trade liberalisation policies that Zambia implemented led to the dramatic collapse of the country's small manufacturing sector (McCulloch et al. 2001: 10). As a result of these policies, poverty in Zambia rose sharply in the 1990s (McCulloch et al. 2001; Green 2008). The implementation of these policies was justified on the basis of controlling inflation in the country. However, as Hertz (2004: 109) points out with regard to the structural adjustment policies in Zambia, these policies made little sense given that inflation in the country was due to the sudden increase in oil prices and not because of high levels of domestic demand.

Despite the questionable basis of the implementation of neoliberal policies and their negative effect on poverty in the country; the World Bank's (2007: vii) *Poverty and Vulnerability Assessment* for Zambia praises these reforms, but cautions that 'the transition to a more market-defined economy is by no means complete'. Furthermore, while the report highlights the need for the country to diversify its export base, it fails to identify the manner in which the implementation of structural adjustment policies has led to increased export concentration (UNCTAD 2010). The report points to corruption has a major obstacle to poverty reduction in the country, and – as with the Haiti Poverty Assessment – there is little mention of the broader international context. Dominant accounts of Zambia's poverty fail to highlight the impact of colonial rule on the structural inequalities the country currently faces, and the impact that this has on poverty. For example, the historian Niall Ferguson (2002: 306) states 'per capita GDP in Britain is roughly twenty-eight times what it is in Zambia, which means the average Zambian has to live on something less than two dollars a day...but to blame this on the legacy of colonialism is not very persuasive, when the differential between British and Zambian incomes was so much less at the end of the colonial period'. Such an argument fails to consider the way in which colonial rule led to the creation of an unequal international system, which has had – and continues to have – a significant negative impact on the development of countries, such as Zambia.

Beyond the examples of Haiti and Zambia, the role of external international factors in general receives very little attention in dominant development thinking and policy (see Pogge 2001; 2008). In Chapter 2, I discuss the existing explanations of poverty provided in the mainstream development literature, and demonstrate that the causes of poverty provided in the extant literature are almost exclusively domestic. It is important to point out

that the argument made here is not that these domestic factors do not impact poverty; but rather that poverty cannot be explained by domestic factors *alone*, as is currently the case. The argument made in this study is that it is necessary to consider the causal role of international factors on poverty in addition to the domestic causes.

This view that poverty is the result of domestic factors alone is also demonstrated by the major international organisations and in development policy-making (e.g. IMF 1997; World Bank 1997; UNDP 2003). This can be seen in the World Bank's country Poverty Reduction Strategy Papers (PRSPs) and Poverty Assessments, which in general tend to ignore the role of external international factors (see Dasandi 2009).[3] This leads to the view put forward by the UNDP that poverty reduction necessitates a partnership between developed and developing countries, 'requiring bold reforms from poor countries and obliging donor countries to step forward and support these efforts' (UNDP 2003: v). This, again, demonstrates the belief that for poverty reduction to occur, change must occur within developing countries alone because this is where the causes of poverty lie.

In addition to overlooking the manner in which international inequality affects poverty, there has also been insufficient attention given to the impact of domestic inequality on poverty. In looking at how inequality within countries can influence poverty, it is useful to consider the example of Mexico. In 2000, the Gini coefficient of Mexico was 0.546 – which is high by international standards – and the incomes of the top 10 per cent of the population were around 45 times those of the bottom 10 per cent of the population (Guerrero et al. 2009: 115). Furthermore, while Mexico has been associated with the emergence of a high

[3] The country Poverty Assessments are reports produced by the World Bank to assess the extent and causes of poverty in a given country, which are used to propose the strategy for poverty reduction. The country Poverty Reduction Strategy Papers (PRSPs) are reports prepared by national governments in partnership with the World Bank and IMF and describe the strategy and policies to reduce poverty in a given country over the following years (see Dasandi 2009).

number of 'new billionaires' in the past decade (see Farmer 2005: 103; Guerrero et al. 2009); around 51 per cent of the population lie below the national poverty line.[4]

The high inequality in the country is strongly linked to its colonial past, although the colonial system set up by the Spanish in the country was, to a certain extent, based on the pre-colonial social system. The system put in place in Mexico was marked by high inequality, particularly between the native population and Europeans, whereby resources, such as land, mineral resources, and native labour, were distributed among a privileged few (see de Ferranti et al. 2003: 110; Karl 2002). These elites were able to secure large amounts of rent and, furthermore, had substantial political influence, enabling them to protect their interests. As de Ferranti et al. (2003: 110) point out, there was little change following independence, with the high inequality in the country persisting over time.[5]

The significant economic inequality in Mexico is associated with groups of elites having high levels of political influence; as such this has led to policies in the country which serve the interests of the elites to the detriment of other groups, which in turns has led to this inequality being perpetuated over time (Guerrero et al. 2009). For example, the political influence led to the country pursuing policies that transferred ownership of land away from indigenous people to large non-indigenous landholders. The result was to force these indigenous groups into poverty, particularly due to the low wages paid for working on these large landholdings (de Ferranti et al. 2003: 119; see also Finan et al. 2002).

The effect of high inequality on policy outcomes has been reinforced by high levels of clientelism in the country (see Grindle 1977; Middlebrook 1995), and in addition to huge

[4] World Bank data available at: http://data.worldbank.org/country/mexico [accessed 22 November 2012].
[5] In fact, Bakewell (1997: 377) argues the independence in Mexico was sought after largely because it enabled domestic elites to avoid the liberal political views spreading in Spain at the time.

land inequalities; it has resulted in inequalities in access to basic public services, particularly quality education; unequal access to financial services; unequal property rights protection; and unequal access to social security (see de Ferranti et al. 2003; Haber et al. 2003; Finan et al. 2002; Karl 2002). All of these factors have significantly impacted the incidence of poverty in the country.

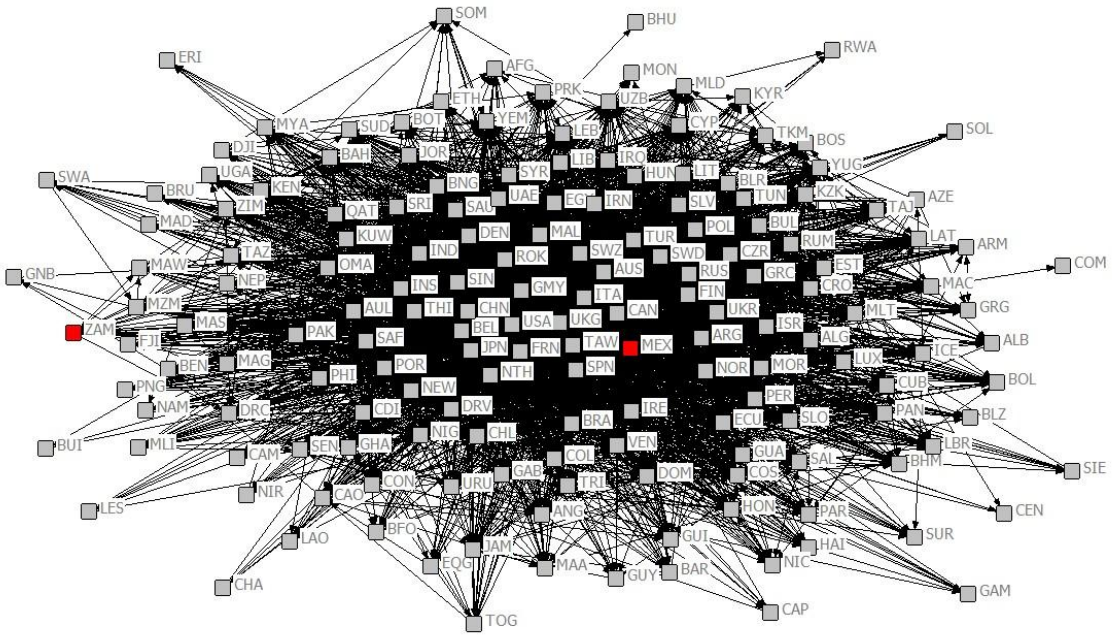
There has, in recent years, been renewed attention given to the issue of domestic inequality in development analysis, particularly in high profile cases such as Mexico (see Nel 2006). This follows the decline of the Washington Consensus period, during which time the issue of economic inequality was largely excluded from mainstream development thinking and policy (see Wade 2007). However, while greater attention has recently been given to the issue of inequality in development research; some have questioned whether there has been a real shift towards incorporating inequality in development policy (Wade 2007). For example, in reviewing PRSPs and donor policy statements, Fukuda-Parr (2010) finds that there is little attention given to the issue of inequality. Furthermore, as I demonstrate in Chapter 2, the issue of inequality receives insufficient attention in the dominant development literature examining the causes of poverty. In fact, the failure to adequately consider the effects of domestic inequality on poverty can be seen by the way in which issues of inequality have largely been excluded from the Millennium Development Goals (MDGs)[6], as a number of studies have highlighted (Saith 2006; Bond 2006; Watkins 2007). In his detailed critique of the MDGs, Ashwani Saith (2006: 1184) points out that 'the profoundly significant issue of the extremely high, and still generally rising levels of

[6] The MDGs are the eight development goals agreed by the governments of the world in 2000, which are central to international development policy (see Fukuda-Parr 2004). The MDGs and the broader framework surrounding the goals have led to poverty reduction emerging as 'the over-arching objective of the international policy agenda' (Fukuda-Parr 2011: 122).

inequality and accompanying socio-economic exclusion find no reflection at all in the goals or targets or indicators'. Therefore, in addition to considering the relationship between international inequality and poverty; this study also examines the impact of domestic inequality on poverty – and, in particular, considers *how* domestic inequality affects poverty.

As well as looking at what effect international inequality and domestic inequality independently have on poverty, it is important to note that inequality between countries and inequality within countries do not occur in isolation to one another. As such, a question that follows from the examples provided above is does the impact of domestic inequality on poverty depend on the level of international inequality a country faces, and vice-versa? In other words, with regard to the examples of Zambia and Mexico provided above; *does domestic inequality in Zambia have the same impact on poverty that it does in Mexico, given the two countries face different levels of international inequality?* The network diagram below, which shows the international trade network from 2000, shows the different positions occupied by Mexico and Zambia in the international network, which – as I discuss in Chapters 3 and 4 – reflect the different levels of constraints, opportunities, and international inequalities the two countries face. As such, the question is given this important international difference between the two countries, does the impact of domestic inequality on poverty differ in the two cases?

Figure 1.1. Mexico and Zambia in the International Trade Network, 2000[7]



This is an area that has received almost no attention in the existing development literature, which is not particularly surprising given the general lack of attention given to the impact of international and domestic inequality on poverty. It is, however, somewhat surprising that the more general question of whether the effect of different domestic factors on poverty vary according to the international constraints a country may face has been under-analysed in the existing literature. Given the different international contexts that different countries face, it is quite possible that domestic factors that have an impact on poverty in one country may have a lesser impact on poverty in another country.

[7] Figure 1.1 shows a network diagram based on international trade ties for 2000, where Mexico is labelled 'MEX' and Zambia is labelled 'ZAM'. I discuss social network analysis (SNA) in greater detail in Chapter 4. The international trade network from 2000 is reproduced in Chapter 4 (see Figure 4.9) and explained in more detail. It is worth noting that for the purposes of clarity the figure only includes trade ties over the value of US$ 10 million at 2000 prices.

In this thesis, I empirically examine the effects of international inequality and domestic inequality on poverty between 1980 and 2007 using a quantitative approach. Poverty in this analysis is measured using countries' infant mortality rates (IMR), as I discuss in Chapter 4. The study employs a new *structural* measure of international inequality, which has been developed using social network analysis (SNA) as I explain in Chapter 4. Specifically, SNA is used to place countries into four hierarchical positions in annual international trade networks based on the manner in which they are connected into the network and how central or peripheral they are in the trade network. As Anthony Payne (2005: 167) has pointed out, trade relations are countries' principal points of contact with other countries, and as such, represent an important indicator of the structure of economic and political relations between countries.

Countries' network positions are used in this study to proxy their positions in the international system, and hence the levels of structural inequality each country faces. In order to examine the effects of international inequality I conduct a regression analysis of the impact of international inequality on poverty, using this structural measure of international inequality. This study also examines the effect of domestic inequality on poverty by conducting a regression analysis using the recent *Standardized World Income Inequality Database* (SWIID) to measure domestic inequality (Solt 2009).

In considering the question posed above – whether domestic inequality in Zambia and Mexico have the same impact on poverty, given the different levels of international inequality they each face – this study also examines the effect of the interaction of international and domestic inequality on poverty. In other words, the empirical analysis

considers how the impact of domestic inequality on poverty varies between countries that face different levels of international inequality.

The analysis conducted in this study additionally considers the process through which inequalities between and within countries impact poverty. As I have highlighted above, in the cases of Haiti and Zambia, the current unequal international system has its roots in the colonial era. As such, I empirically examine whether current inequality between countries, measured by countries' network positions, is influenced by countries' colonial pasts. Furthermore, I consider whether changes in structure of the international system, as a result of the process of globalisation, affect the relationship between international inequality and poverty. The analysis also looks at *how* domestic inequality impacts poverty, and in particular, whether higher domestic inequality leads to higher poverty through the 'policy channel', as I have highlighted above in the case of Mexico.

It is important to point out that in arguing that there is an internalist bias in current explanations of poverty, I do not make the claim that poverty is the result of external factors alone. On the contrary, the analysis conducted in this study seeks to shed greater light on how external and internal factors together contribute towards the prevalence of poverty.

1.1. Findings, Implications, and Limitations

This analysis conducted in this study tests a number of hypotheses, which are drawn from the theoretical argument of this study put forward in Chapter 3. The hypotheses are provided in Table 3.1, together with a description of how each hypothesis is operationalised in the analysis. Table 9.1 presents a summary of the findings in relation to each of the

hypotheses. In this section I provide a brief overview of the main findings of the study and their implications, while also highlighting some of the limits of the analysis conducted in this thesis.

There are a number of important results that emerge from the analysis conducted in this study. The use of network analysis demonstrates that the international system is characterised by a hierarchical system and countries positions in the system are relatively stable over time. As I explain in Chapter 3, the notion of hierachy used in this study differs from previous approaches, such as underdevelopment theory, in that a more flexible notion of hierarchy is employed here. The analysis also shows that countries' current positions in the international system – and hence, the levels of structural inequality they face – are influenced by their colonial legacy. In particular, using Acemoglu et al.'s (2001) *European settler mortality* data, which is argued to influence colonial strategy, the results show that in addition to impact the quality of domestic institutions as Acemoglu et al. (2001; 2006) have argued; settler mortality rates also have a strong independent effect on current inequality in the international system, as measured by countries' network positions.

The analysis of the impact of structural international inequality on poverty finds that poverty levels across the world are strongly influenced by the levels of international inequality countries face. Furthermore, the study also considers how changes in the structure of the international system as a result of the process of globalisation affect the relationship between international inequality and poverty. The results suggest that the process of globalisation has meant that the effect of higher international inequality leading to higher poverty has become stronger. In other words, increased globalisation has meant

countries' positions in the unequal international system matter more for the levels of poverty experienced in these countries.

There are also a number of important findings that come out of the analysis of domestic inequality on poverty. Firstly, the results demonstrate that domestic inequality is strongly associated with poverty. However, when using a *fixed effects* regression model, the relationship no longer holds. Hence, while I find that differences between countries' levels of domestic inequality significantly relate to the different poverty levels they experience; small decreases in inequality within a country are not found to reduce poverty. The analysis also looks at the process through which domestic inequality impacts poverty. The results suggest that the relationship between domestic inequality and poverty occurs independently of any relationship between domestic inequality and economic growth. Furthermore, the results suggest that the relationship between domestic inequality and poverty is stronger in democracies than in non-democracies. As such, the findings provide support for the argument that domestic inequality affects poverty through the 'policy channel', whereby economic inequality within countries leads to policies that favour the wealthier in society over those with lower incomes.

Finally, the study also considers the relationship between international inequality and domestic inequality, and the impact of this relationship on poverty. The results suggest that there is not a particularly strong relationship between international inequality and domestic inequality contrary to the deterministic view put forward by some underdevelopment theorists who have argued that international inequality shapes domestic inequality in a country (see Chapter 3). Furthermore, the results of the analysis suggest that relationship between domestic inequality and poverty changes according to the levels of international

inequality a country faces. The analysis suggests domestic inequality has a greater impact on poverty in countries that are more central in the international system (and hence face lower international inequality) than in countries that are more peripheral.

These findings have a number of policy implications, which are discussed at length in Chapter 9. Broadly speaking, the findings of this study highlight the need for development policy to consider the broader international context facing developing countries, rather than focusing exclusively on domestic reforms within these countries. As such, the analysis suggests that the governments of developing countries need to make use of industrial policy in order to reduce poverty significantly – an argument that has been made by a number of scholars in recent times (see Gore 2000; Rodrik 2001; Chang 2002). However, the findings of this research project also suggest that greater attention needs to be given to addressing structural inequalities in the international system. These structural inequalities have been reinforced by international laws and the global governance system in place, and hence development policy needs to target reducing the negative effects of the current system.

Furthermore, the findings regarding the effect of domestic inequality on poverty also indicate that there needs to be greater focus on addressing inequality within countries. However, the analysis also highlights the manner in which the impact of domestic inequality on poverty varies according to the levels of international inequality a country faces. As such, this suggests while redistribution may have a significant impact on reducing poverty in countries that face lower levels of international inequality; in more peripheral countries that face higher levels of international inequality, policies that seek to address domestic inequality through redistribution may have less of an effect on reducing poverty.

It is also important to highlight some of the limitations of the study. I discuss these in more depth in Chapter 9. An important limitation of the study is that in using a quantitative approach, the study is predominantly centred on understanding factors associated with poverty, and the extent to which these factors – such as international and domestic inequality – impact poverty. Quantitative analyses, however, shed less light on the actual processes through which inequality impacts poverty. A further limitation of the study are the measures of the key variables and the data used in the analysis. As I discuss in detail in Chapter 4, this particularly applies to the main variables of interest in this study: poverty (measured by infant mortality rate), domestic inequality (measured by countries' Gini levels), international inequality (measured by countries' network positions in trade networks), and globalisation (measured by the density of trade networks).

A final limitation of the study, which I discuss in Chapter 9, is that in conducting a time-series cross-sectional analysis, the study focuses exclusively on states. As a result, important non-state actors, such as transnational corporations and international organisations, are excluded from the analysis. It also means that the focus on inequality is country-focused, in that it considers inequality within countries and between countries. There are some who argue that the focus on inequalities should be on *global inequalities*, which consider inequalities between people irrespective of national boundaries (see Milanovic 2005; Hoogvelt 2001). Despite these limitations, which are important to point out; this study provides strong empirical evidence for the effects of international and domestic inequalities on poverty. In doing so this thesis makes a number of significant contributions, which I discuss below.

1.2. Contributions of Research

This study makes a number of contributions to the existing academic literature. These contributions can be divided into three broad categories. The first is the empirical contribution this study makes. The second is the methodological contribution of this research. Finally, the study makes an important theoretical contribution. As I explain below, the study contributes to a number of different theoretical debates and discussion.

Empirical Contribution

This study finds that international inequality and domestic inequality impact poverty when controlling for the effects of factors more commonly associated with poverty. As such, this study makes an important empirical contribution by providing cross-country evidence for the impact of international inequality and domestic inequality on poverty. Both of these factors, particularly international inequality, have been insufficiently analysed in the existing empirical literature.

The use of social network analysis to produce a structural measure of international inequality ensures that this study makes a significant empirical contribution in quantitatively demonstrating the effect of structural international inequality on poverty. There has been no prior effort to analyse the effect of international inequality on poverty using a pooled time-series cross-section approach, as has been done here. Furthermore, the analysis conducted in Chapter 5 also demonstrates that current international inequality is strongly impacted by colonial factors, providing empirical support for the historical roots of current international inequality and poverty.

In demonstrating the effect of domestic inequality on poverty, the analysis conducted in this study also sheds light on the process through which domestic inequality affects poverty. The findings of the analysis suggest that the relationship between domestic inequality and poverty occurs independently of economic growth. Furthermore, the analysis suggests that the effect of domestic inequality on poverty is greater in democracies than in non-democracies. Both of these findings provide empirical support for the argument that domestic inequality affects poverty because of the impact of domestic inequality on distorting policy outcomes to favour the wealthier in society over other groups.

Methodological Contribution

This study makes an important methodological contribution through its use of social network analysis, which is combined with econometric analysis. SNA is used to examine the structure of the international system and to incorporate this into an analysis of poverty. Current quantitative approaches to analysing development issues tend to focus exclusively on attributes of countries, ignoring the broader international economic and political system that countries are a part of. This study demonstrates that using social network analysis, with its focus on relations and structures in addition to attributes, enables us to effectively take into account this broader international structure when conducting quantitative analyses, thereby moving beyond the methodological nationalism that dominates quantitative development analysis.

The main use of SNA in this study is to develop a new structural measure of international inequality, which is based on calculating countries' positions in annual international trade

networks. In doing so, I address the shortcomings of previous attempts to measure structural inequality using SNA. Firstly, this study calculates countries' positions using the SNA concept of *regular equivalence* rather than the more widely used concept of *structural equivalence*, as I discuss in detail in Chapter 4. Previous studies that have attempted to measure structural inequality using SNA (e.g. Snyder and Kick 1979; Nemeth and Smith 1985; Kick and David 2001) have tended to use the latter concept, which fails to accurately capture arguments regarding hierarchy in the international system, and as such the validity of the measures used in these has been called to question (Borgatti and Everett 1992). The use of *regular equivalence* to measure position in this study, addresses this issue.

Secondly, the existing SNA studies analysing the effects of countries' positions in international networks have tended to be cross-sectional studies based on single observations or averaged data for a time period consisting of a number of years. As such, these studies either fail to capture the effect of change in countries' positions, or they distort the nature of the pooled time-series cross-sectional data structure in their regression analyses by averaging data over a number of years (Maoz 2011). This issue is addressed in this study as I calculate countries' positions in international trade networks for each year between 1980 and 2007.

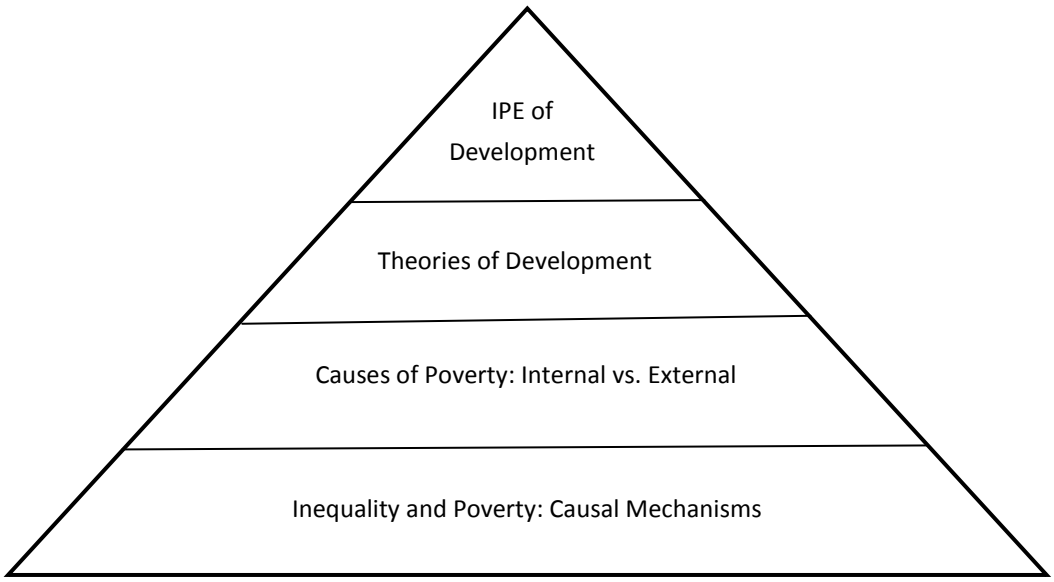
Finally, while SNA has been used in different ways to measure structural inequality; there has been little attempt to assess the validity of these network measures in the existing literature. In Chapter 5, I conduct a detailed analysis of structural international inequality based on the network measure, identifying trends and factors associated with countries' positions in the international system. In doing so, this analysis demonstrates the validity of the network measure of structural international inequality used in this analysis. Overall, this

study builds on the recent efforts to incorporate SNA into the study of international relations and politics (see Hafner-Burton et al. 2009; Maoz 2011).

Theoretical Contribution

The study also makes a number of theoretical contributions. Specifically, the study contributes to a number of different theoretical debates and discussions in the existing academic literature. The theoretical contributions made by this study take place at four different levels, which are presented in Figure 1.2.

Figure 1.2. Theoretical Contributions of Study



At the broadest level, this study contributes towards a recent effort to re-integrate the analysis of poverty – and development more generally – into the discipline of *International*

Political Economy (IPE), bringing about a focus on the *Political Economy of Development* (PED) (see Leftwich 1994; 2000; Tooze and Murphy 1996; Payne and Phillips 2010). The IPE approach taken in this study examines poverty in the context of the global political economy. This differs significantly from the approaches that currently dominate development analysis, which tend to focus on the characteristics of those living in poverty, or on regions in the developing world, divorced from the broader political and economic processes by which those living in poverty are effected (see Green and Hulme 2005; Hickey 2008; Payne and Phillips 2010).

The IPE approach taken in this study means that the analysis considers the close relationship between the economic and political, and examines how different economic and political forces intertwine to influence poverty. Subsequently, the focus on trade ties in this study moves beyond an understanding of trade as the flow of goods from one country to another, and instead emphasises the manner in which trade ties represent an economic, political and social relation between nations. Taking an IPE approach also enables this study to consider how poverty in a specific region can be influenced by global and local structures produced by historical processes.

As such, in seeking to reintegrate the study of poverty into an IPE approach, this study employs an approach, based on what Robert Cox (1981: 129) has called 'critical theory', which 'is critical in the sense that it stands apart from the prevailing order of the world and asks how that order came about'. This study is centred on the argument that poverty is fundamentally linked to prevailing order of the world. The analysis conducted in the study examines how the historical process by which this order came about by focusing on the colonial origins of international inequality. It also considers the impact of this order on

poverty, and how changes in the structure of the order affect poverty. Furthermore, the analysis also considers how this international order relates to domestic structures.

The contribution made here is, in some ways, unusual because in taking a critical structural approach to analyse poverty, I use a quantitative methodology, which differs from the methodological approaches taken to examine the impact of the international structure on development typically used in the critical IPE/PED literature. As such, by combining a critical structural analysis, generally associated with 'British IPE', with a quantitative methodology, typically linked to 'American IPE'; this study also contributes towards Cohen's (2007) call for a synthesis of British and American IPE (see also Dickins 2006; Blyth 2009).

The second theoretical contribution of this study is to the *theories of development* literature, which focus on the process through which countries achieve development. There is a long tradition of development theory, which goes back to the seminal works of Adam Smith, Karl Marx, and Max Weber (see Payne and Phillips 2010). Much of the debate among post-war development theory has focused on the issues of trade, in particular industrialisation and comparative advantage, and on the role of the government in promoting development. More structural approaches, such as the various strands of underdevelopment theory – which I draw on in this study – have argued that countries need to move to higher value-added industrial production in order to development, which means defying their comparative advantage (see Lin 2011). This requires the government to take an active role in promoting development through the use of industrial policy. The more dominant development approaches, in particular, neoliberalism argued that for the need to minimise government intervention in the economy, and for countries' production to be based on the principle of comparative advantage (Payne and Phillips 2010).

The dominance of neoliberalism in development policy, together with some of the failings of underdevelopment theory, meant that for a number of years the process of development was seen in mainstream development as one that required minimal government intervention and the implementation of market-orientated policies rather than an active industrial policy. However, a number of important studies challenged this prevailing view, demonstrating the importance strategic industrial policy in the cases of successful development, particularly Japan and the East Asian Tigers (see Johnson 1982; Wade 1990; Evans 1995; Chang 2002).

The end of the 'Washington Consensus' (see Gore 2000) has led to greater attention given to the role of governments in the process of development, and a revival in development theory more generally (see Lin 2011). In particular, there has been renewed debate on the role of industrial policy and comparative advantage in the process of development, which is in large part due to former World Bank Chief Economist Justin Lin's (2011: 194) 'New Structural Economics' (NSE), which takes a 'neoclassical approach to structure and change in the process of economic development'. Lin's NSE approach views the process of development requiring developing country governments to promote industrial upgrading, by adhering to a country's comparative advantage, which Lin argues, is determined by factor endowments.

The NSE approach has led to an important debate emerging, which particularly centres on whether or development requires governments to implement policies that follow a country's comparative advantage or not (see Lin and Chang 2009; Rodrik 2011; Stiglitz 2011). This study makes a contribution to this emerging debate by highlighting an important shortcoming of the NSE approach. This is the manner in which Lin (2011) views countries'

comparative advantage to be determined exclusively by factor endowments, ignoring the role of international inequalities in shaping countries' comparative advantage – and the impact of international inequalities on development more generally.

The third theoretical area in which this study makes a contribution is to the explanations of poverty. The specific focus of this study is on analysing poverty. As I have pointed out above, a key limitation of the literature considering the causes of poverty that this study addresses is the 'internalist' bias in current explanations of poverty. This failing has, in particular, been highlighted by, political philosopher, Thomas Pogge (2001: 330), who argues that while economists may differ in their views on the role of government in reducing poverty, their explanations of the causes of poverty are the same:

> ...our attention is diverted from what both sides take for granted: That the social causes of poverty, and hence the key to its eradication, lie in the poor countries themselves. We find this shared belief all the more appealing because it reinforces our ever so dear conviction that we [in the developed world] and our governments and the global economic order we impose are not substantial contributors to the horrendous conditions among the global poor.

In this study, I examine how structural inequality in the international system impacts poverty, thus moving beyond the internalist bias that currently dominates poverty analyses in the development literature. However, in doing so, the study avoids moving to the other extreme, whereby poverty is seen solely as a result of external factors. Such a view has come to be associated with various strands of underdevelopment theory, and as Hettne (1995: 262) points out, has meant that development analysis has been dominated by the biases of 'endogenism' and 'exogenism'. This study moves beyond these extremes, as

Hettne suggests, and considers how external and internal factors impact poverty – and, furthermore, the analysis also examines how these external and internal factors interact to affect poverty.

The study also makes a clear argument on *how* inequalities impact poverty, and in the analysis examines whether it is through these channels that international and domestic inequality affect poverty. As such, the final theoretical contribution of this study is to the literature on the processes through which inequality impacts poverty. Drawing on Charles Tilly's (1998) work on *durable inequalities*, it is argued that there are two mechanisms, which link inequality and poverty: exploitation and opportunity-hoarding, which can both be viewed as forms of rent-seeking. The former occurs when the efforts of some in a network – which benefit the entire network – are denied the full value of their efforts; while the latter occurs when some are denied access to a resource that is valuable and renewable. These different mechanisms operate at the international level and at the domestic level.

At the international level, countries are connected to one other through various economic and political ties, such as trade flows and international laws, to form an international system. The structure of these relations, it is argued, is unequal, and as such, the international system resulting from these unequal relations is hierarchical with countries occupying different positions in this hierarchy (Wallerstein 1972; Galtung 1971). The unequal relations between countries in different positions, particularly trade relations, are exploitative and have led to a transfer of resources from countries in lower positions to those in higher. This transfer of resources has led to higher poverty in countries in lower or more peripheral positions in the international system. Furthermore, the economic and political relations between countries have also denied opportunities for countries in more

peripheral positions to move into alternative, higher value-added, forms of production, which again has had a significant impact on poverty.

In analysing the impact of international inequality on poverty in this study, I use a *structural* measure of international inequality, based on examining countries' positions in international trade networks using social network analysis, as I have discussed above. By quantitatively analysing the impact of this structural measure of international inequality on poverty, this study empirically examines the argument above, and demonstrates that international inequality has a significant impact on poverty, when controlling for other factors associated typically associated with poverty.

At the domestic level, groups are also connected through various economic, political and social ties. However, it is argued that these relations are shaped by the inequality between the wealthier in society and the less wealthy. The main focus in this study is on the manner in which economic inequalities within a country shape political processes and policy outcomes in a country, which has a significant impact on poverty levels (see Galtung 1969; Wade 2007; Nel 2006; Rao 2006). The argument made here is that high levels of inequality lead to policies that reproduce exploitative relations between richer and poorer members of society, and restrict economic opportunities to the richer while denying these opportunities to those on lower incomes; a process that forces some groups into poverty (Rao 2006; Wade 2007).

The empirical analysis undertaken in this study provides some support for this causal link between domestic inequality and poverty. The analysis demonstrates that higher domestic inequality is associated with poverty. Furthermore, the results of the cross-country regression show that the impact of domestic inequality occurs independently of economic

growth, providing support for the argument that domestic inequality affects poverty through the 'policy' channel rather than the growth channel, as proponents of the 'median-voter' hypothesis argue. The analysis also suggests that domestic inequality has a larger effect on poverty in democracies rather than in non-democracies.

1.3. Outline of the Study

This study is outlined as follows. In Chapter 2, I review the existing literature on the causes of poverty. The chapter serves two important purposes: to highlight the gaps in the existing literature that this study seeks to fill; and to identify factors associated with poverty, which serve to form the basis of the set of control variables in the regression model specifications in Chapters 6, 7, and 8. The factors viewed as the main causes of poverty in the mainstream development literature are divided into five broad categories: *geography and demography*; *bad governance and policies*; *institutional quality*; *poverty traps*; and *culture*. The discussion of each of these causes considers the theoretical arguments linking each factor to poverty, the empirical evidence, and the existing criticisms of each explanation. I highlight three fundamental weaknesses with the existing literature, which this study aims to address. The first is that the majority of the empirical studies of poverty focus, almost exclusively, on countries' incomes levels or growth rates. I argue that there is a need to consider alternative and more direct measures of poverty. The second limitation of the extant literature is that inequality has largely been ignored as a cause of poverty. The third fundamental weakness of the literature is that explanations of poverty consider domestic or internal factors alone, ignoring the causal effect of external international factors on the incidence of poverty around the world.

In Chapter 3, I discuss the main theoretical arguments made in this thesis on how inequalities between and within countries impact poverty. In making these arguments, a number of hypotheses are developed (provided in Table 3.1), which I empirically test in Chapters 5-8. Chapter 3 begins with a discussion of the mechanisms through which inequality impacts poverty, drawing on Charles Tilly's (1998) work on *durable inequalities*. I suggest that there are two key mechanisms through which inequality produces poverty: *exploitation* and *opportunity-hoarding*. The former refers to a situation in which a group commands resources from which they draw increased returns by coordinating the efforts of others who are denied the full value added by their effort (Tilly 1998: 11). The latter occurs when a group excludes others from access to a resource that is valuable and renewable. These mechanisms connect inequality and poverty both at the international level and at the domestic level. The second section looks more directly at the relationship between international inequality and poverty, drawing on underdevelopment theory and more recent structural arguments that are centred on the process of globalisation. These arguments focus on the manner in which colonial rule led to the creation of an unequal international system in which some countries produce higher value-added manufactures while others were incorporated into the global economy as the suppliers of primary commodities (Prebisch 1950; Frank 1969; Kaplinsky 2005). This structural inequality has in recent times been reinforced by international laws, which are, themselves, the result of unequal power relations between countries. In addition to discussing the structure of the international system, and the relationship between international inequality and poverty; this section also considers the colonial origins of international inequality, and changes in the structure of the international system linked to the process of globalisation.

Chapter 3 also considers the relationship between domestic inequality and poverty, arguing that the key channel through which inequality within countries affects poverty is through the impact it has on the policy process. It is argued that high levels of domestic inequality enables elites to have a greater influence on shaping policies, which serve the interests of the wealthier in society to the detriment of the poorer (Rao 2006; Wade 2007). This argument differs from the view that within-country inequality impacts poverty through its impact on economic growth, as proponents of the *median-voter* hypothesis suggest (see Alesina and Rodrik 1994; Milanovic 2000). The final section of Chapter 3 considers the relationship between international inequality and domestic inequality. I argue that international inequality and domestic inequality affect poverty through largely different channels; the former significantly impacts the availability of resources to a country, which affects poverty, while the latter largely impacts poverty through the policy channel and the distribution of resources within a country. As such, in countries in the periphery of the international system, we would expect poverty to predominantly result from insufficient resource availability, while in countries in more central positions in the international system, poverty is largely linked to the distribution of resources and not the overall availability of resources to a country.

Chapter 4 details the research design and methodology used in the analysis conducted in this thesis. As highlighted above, this thesis is centred on a quantitative cross-country analysis of the effects of inequality between and within countries on poverty. In using a cross-country approach, the principal unit of analysis is this study is the state. While some have questioned whether the focus of IPE analyses should be centred on the state (see Ohmae 1995), there are a number of reasons for doing so in this study. A fundamental

reason is that in taking a quantitative approach in the analysis, it is necessary to have high quality data, and we do not yet have satisfactory data at sub-national levels. In addition, there are good reasons to think that the state remains the crucial political actor in the global system, as Payne (2005) points out. As such, focusing on the state – specifically on inequalities between and within states, and their effect on poverty in states, is the appropriate level of analysis. This study attempts to closely model the international system by including the maximal number of countries based on the Gleditsch and Ward (1999) criterion.

Chapter 4 also discusses the use of social network analysis to create the structural measure of international inequality used in this analysis. This measure is based on calculating countries' positions in international trade networks for each year between 1980 and 2007. The network measure of globalisation used in this study is also discussed. The chapter also provides a description of the three groups of variables and data used in the analysis, and the data used to measure these variables. The first is the dependent variable, poverty, which is measured using countries' infant mortality rates (IMR). I discuss why IMR is used to measure poverty. The second set of variables is the principal independent variables used in this study, which are international inequality, domestic inequality, and globalisation. The third set of variables is the control variables, which as discussed above, are drawn from the literature looking at causes of poverty. The chapter also details the regression models and techniques used in the analysis.

Chapter 5 is the first of the four empirical chapters in the thesis. The chapter focuses on examining trends and determinants of structural international inequality, based on the network measure of inequality between countries employed in this thesis. The chapter

begins by examining trends in international inequality between 1980 and 2007, focusing on the number of countries in each of the four hierarchical positions in the international system. The chapter then sheds greater light on the structural characteristics of the measure of international inequality, by using *block models*, which examine average tie strength between countries in the four positions, focusing on different economic and political ties. In addition to considering trade flows between and within the four positions, the analysis also considers aid flows, UN General Assembly voting patterns, troop deployments, and arms transfers. The analysis demonstrates that the measure of international inequality used is related to the structure of these different economic and political relations.

The second part of the chapter examines the attributes associated with countries in each of the four positions. This is done by considering the sector make-up of economies in each of the four positions, and by conducting an *ordered logit* regression analysis, through which I identify determinants of international inequality. This regression analysis, in particular, focuses on testing the claims made in Chapter 3 regarding the colonial origins of international inequality. This is done first by examining whether a country being a former colony impacts its position in the international system, when controlling for other factors including national income. Secondly, drawing on Acemoglu et al.'s (2001; 2002) insight that colonial powers' decisions on whether to set up extractive economies in a colony was influenced by the European settler mortality rate, I test the impact of European settler mortality rate on international inequality, controlling for the quality of domestic institutions. In both cases, the colonial variables have a strong impact on international inequality, providing support for the arguments laid out in Chapter 3. In demonstrating the colonial

origins of international inequality, this chapter also provides some support for the causal argument made in this study.

Chapter 6 considers the relationship between international inequality and poverty using a regression analysis. As highlighted previously, a key objective of this study is to assess the impact of international inequality on poverty. Using countries' positions in international trade networks as a proxy measure for structural inequality between countries; I examine the effects of international inequality on poverty using an OLS regression model. Two main regression model specifications are used to conduct this analysis, in which I control for factors associated with poverty drawn from the extant literature. The results of the regression analysis suggest that international inequality has a strong and statistically significant effect on poverty – a finding that is confirmed by a number of additional robustness checks.

In Chapter 7, I further examine the relationship between international inequality and poverty by considering how changes in the structure of the international system – linked to the process of globalisation – affect the international inequality-poverty relationship. As I point out in Chapter 3, a key limitation of existing structural approaches to development, particularly linked to underdevelopment theory, is that they fail to adequately consider changes in the structural of the international system (see Cox 1981). In considering change in the structure of the international system, this study focuses specifically on the process of globalisation, which is associated with the greater interconnectedness of the global economy. Using the social network analysis measure, *network density*, to measure levels of globalisation, I first consider trends in globalisation between 1980 and 2007, comparing the network measure to alternative measures of globalisation. The analysis demonstrates that

globalisation has increased between 1980 and 2007. The chapter also considers how the process of globalisation affects how countries in the four positions are incorporated into the international system, focusing particularly on countries in the periphery (Position 4). The main analysis of the chapter focuses on examining how the process of globalisation impacts the relationship between international inequality and poverty examined in the previous chapter. This is done by including an interaction term in the regression analysis, *international inequality x globalisation*. The results of the regression demonstrate that the effect of higher international inequality increasing poverty is greater as globalisation increases.

Chapter 8 examines the relationship between domestic inequality and poverty. It also considers the interaction of international inequality and domestic inequality, and the impact of this interaction on poverty. The results of the regression analysis suggest that domestic inequality, measured using the SWIID income inequality data (Solt 2009), has a significant impact on poverty, with higher domestic inequality associated with higher poverty. However, when a fixed effects regression is used higher domestic inequality is not associated with higher poverty. The fixed effects model controls for all factors that do not change within a country over the 28 year time period, and so sheds light on the impact of changes within a country over time. Therefore, the result that higher domestic inequality is not associated with higher poverty, when using a fixed effects model suggests that while differences in levels of inequality between countries may account for differences in levels of poverty; changes in domestic inequality within a country over time are not associated with changes in levels of poverty in the country. The chapter also examines whether there is evidence to suggest that domestic inequality impacts poverty through shaping policies to

benefit the wealthier in society, as I propose in Chapter 3, rather than through its impact on growth, as proponents of the *median-vote* hypothesis claim (see Alesina and Rodrik 1994; Milanovic 2000). This is done by assessing whether domestic inequality has a greater effect on poverty in democracies, where the public is able to have more influence on policy than in non-democracies. In order to do this, a regression analysis with the interaction term, *domestic inequality x democracy*, is conducted. The results suggest that the relationship between domestic inequality and poverty is stronger in democracies than in non-democracies, supporting the arguments made in Chapter 3, regarding the channel through which domestic inequality impacts poverty.

Chapter 8 also considers the relationship between domestic inequality and international inequality. In Chapter 3, I posit international inequality and domestic inequality affect poverty through largely different channels. Consequently, in countries in the periphery of the international system, we would expect poverty to predominantly result from insufficient resource availability, while in countries in more central positions in the international system, poverty is largely linked to the distribution of resources. This argument is tested using a regression analysis with the interaction term, *international inequality x domestic inequality*. The results provide support for the argument made, as we find the effect of domestic inequality on poverty decreases as we move from countries in the centre of the international system to those in the periphery.

Chapter 9 provides the conclusions of this study. The first part of the chapter summarises the findings of the analysis. I then discuss the contributions of the study, which fall into three categories: empirical, methodological, and theoretical. The chapter also discusses in detail the policy implications that emerge from this study. Finally, I discuss the limitations of

the analysis conducted here, and highlight areas for future research that follow from this thesis.

2. A Review of the Extant Literature on the Causes of World Poverty

In this chapter I review the existing literature on the causes of poverty. There are two principal objectives of the literature review. The first is to assess the dominant explanations of poverty and to highlight the gaps in the literature that this study addresses. The second objective of examining the existing literature is to identify factors associated with poverty, which serve to form the basis of the set of control variables in the regression model specifications I use in Chapters 6-8.

In surveying the literature on the causes of poverty, it is worth pointing out that, in recent times, a number of more critical development scholars have argued that the underlying causes of poverty have largely been under-analysed in development research (Green and Hulme 2005; Hickey 2008; Mosse 2010). Green and Hulme (2005: 868) argue that mainstream development thinking has been marked by 'the failure to move beyond the characteristics and toward underlying causes of poverty'. However, these criticisms largely relate to research on the mechanisms through which *individuals* in a given context are forced into poverty. There has, since the mid-1990s, been a resurgence in the analysis of country-level causal factors associated with a greater likelihood of people within a country being impoverished (see Rodrik et al. 2004; Acemoglu and Robinson 2011).[8] In this study, I

[8] I do not engage in a detailed discussion of the issue of causality and causal analysis in social science. However, an important difference between qualitative approaches and quantitative approaches highlighted in the literature looking as causal analysis is that the former is better suited to look at *causal mechanisms* and processes, while the quantitative approaches are more suited to establishing which factors have a *causal effect* (see King et al. 1994; Gerring 2007).

draw on arguments made regarding causal factors and causal mechanisms. In the review of the literature, however, I focus on factors identified in the mainstream development literature as having a systematic causal effect on poverty levels in a country. In doing so, I focus mainly on cross-country quantitative studies.

I group the factors identified as causes of poverty into five categories, which I discuss in turn: *geography and demography*; *bad governance and policies*; *institutional quality*; *poverty traps*; and *culture*. In discussing each of these areas, I outline the theoretical arguments made for the link between each factor and poverty; I provide an outline of the empirical literature, focusing largely on cross-country studies; and I also highlight existing criticisms of each explanation. I then discuss three key weaknesses of the existing literature, which this study addresses. First, much of the literature surveyed focuses, almost exclusively, on countries' income levels or growth rates. I highlight the need to consider alternative measures of poverty. Second, current research has largely ignored issues of inequality as underlying causes of poverty. This is an area that has received significant attention from critical development scholars. Third, explanations of poverty consider domestic factors alone, ignoring the causal effect of international factors on poverty.

2.1. Geography and Demography

In this section, I consider three arguments made linking geography and demography to poverty. The first is whether a country is located in the tropics or not. The second geographical factor is whether or not a country is landlocked. A third factor, which considers the demographic change, is the relationship between population growth and poverty.

2.1.1. Physical Geography

Geography has long been seen as fundamentally linked to poverty. The impact of geography on development has been highlighted by Montesquieu ([1748]) in *The Spirit of the Laws*; by Adam Smith in *The Wealth of Nations*; and by Gunnar Myrdal (1968) in *Asian Drama*. There are, though, wide-ranging views as to *how* geography affects poverty. The current literature can be divided into those focusing on direct effects of geography on poverty and those arguing geography only has an indirect impact on poverty, through technological and institutional development. The literature that focuses on more direct effects of geography on poverty broadly considers two factors: the *tropical location* of countries and whether or not they are *landlocked*. A number of studies have highlighted the negative impact of countries being in the tropics on development (Sachs and Warner 1995a; 1995b; 1997; Bloom and Sachs 1998; Sachs 2001; Landes 1998; Gallup et al. 1999; Hausman 2001). There are different adverse impacts associated with tropical location: the poorer quality of soil leads to lower agricultural productivity; the high prevalence of crop pests and parasites; adverse conditions for temperate grain crops; high evaporation rates and unstable water supplies; and ecological conditions which favour infectious diseases, such as malaria (Sachs 2001; 2005). The negative consequences of a country being landlocked are also highlighted (Gallup et al. 1999; Collier 2008; Limão and Venables 2001). The most important of these is that landlocked countries face far higher costs of transportation which restricts economic growth (Redding and Venables 2004; Fujita et al. 1999).[9]

[9]As Sachs (2005: 34) points out, the importance of geography and transportation costs were also noted by Adam Smith in *The Wealth of Nations*.

The recent literature on the direct link between geography and poverty has, in particular, focused on the higher *disease burden* in countries that have a tropical location. This reason has been applied specifically to sub-Saharan Africa, which Sachs (2005: 58) explains has 'an ideal rainfall, temperature, and mosquito type that make it the global epicenter of malaria, perhaps the greatest factor in slowing Africa's economic development throughout history'. Diseases, such as malaria, are seen to increase poverty through both direct and indirect channels. The direct channels involve the cost of treatment, which can force households into poverty (Sachs and Malaney 2002; see also Krishna 2010). At the national level this means much higher levels of public spending having to be directed towards healthcare, with malaria accounts for up to 40 per cent of public health expenditure in countries with a heavy malaria burden according to the World Health Organisation.[10] An example of the indirect channels through which tropical diseases, such as malaria, affect poverty, is through leaving millions of people debilitated, and unable to work and provide for their families. This often results in children being pulled out of school because households are not longer able to afford the costs associated with education (Sachs 2005).

Quantitative studies have empirically analysed the link between geography and poverty, finding distance from the equator increases nations' productivity (Hall and Jones 1996); the proportion land in the geographical tropics leads to lower income (Gallup et al. 1999; Sachs 2001); the malaria risk of a country (linked to proximity to the equator) has a strong negative relationship with income (Gallup and Sachs 2001; Gallup et al. 1999); tropical location reduces agricultural productivity (Gallup 1998); and being landlocked is associated with higher transportation costs (Limão and Venables 2001; Collier 2008).

[10] World Health Organisation, 'Economic Costs of Malaria': http://www.rbm.who.int/cmc_upload/0/000/015/363/RBMInfosheet_10.htm [accessed: 30 April 2009].

While, much of this focus on the link between geography and development emphasises the direct relationship between the two, others have argued that the main impact of geography on poverty is not direct, but rather through the effect is has on technological development (see Diamond 1998), or through its impact on institutions, which I discuss later in this chapter (see Engerman and Sokoloff 1997; Acemoglu et al. 2001). Rodrik et al. (2004) and Easterly and Levine (2003) find that geography (measured by latitude) has little or no effect of geography on income once the quality of countries' institutions are controlled for.[11]

2.1.2. Population Growth

Another long standing explanation of poverty is *population growth*. This view was expressed by Robert McNamara (1973: 31), who, while President of the World Bank, stated, 'the greatest obstacle to the economic and social advancement of the majority of the people in the underdeveloped world is rampant population growth'. In the nineteenth century, Thomas Malthus (1826) famously warned that rapid population growth would lead to widespread famines. Ehrlich (1968) also linked population growth to famine, incorrectly predicting that in the 1970s and 1980s, millions would starve to death. While these predicted disasters have not materialised; a wide body of literature links population growth to poverty (Coale and Hoover 1958; Birdsall and Griffin 1988; Barro 1991; 1997; Barro and Lee 1994).[12] The channels through which population growth leads to poverty are greater resource scarcity, lower per capita investment in health and education, lower rates of

[11] Sachs (2003) challenges these results using an alternative geography measure based on malaria-risk, which has a direct effect on income even when controlling for institutions.
[12] Easterly (2002) points out this view is widely held among international organisations and NGOs.

capital accumulation per worker, and higher unemployment (Kling and Pritchett 1994; Brown et al. 1999; Birdsall and Griffin 1988).

Quantitative studies that have considered the relationship between population growth and economic growth have generally found that there is no significant relationship between the two (Barro 1991; Kling and Pritchett 1994; Kelley and Schmidt 1995; 1996; Levine and Renelt 1992; Easterly 2002).[13] Significantly, however, Kelley and Schmidt (2001) find that when considering data for the 1980s and beyond (as opposed to earlier periods), population growth does have a statistically significant negative effect on economic growth. Furthermore, in recent times, there has been much focus on moving beyond a narrow focus on population growth towards considering alternative demographic factors, such as demographic structure and birth rates, on income levels.[14]

In addition to the absence of convincing empirical evidence, another criticism some have made of the population growth explanation is that poverty represents more of a *characteristic* of poverty rather than an underlying *cause* – as it has long been acknowledged that population growth is an outcome of poverty (Birdsall and Griffin 1988). Critics of the population growth explanations argue that having a large family does not force households into poverty; on the contrary, it is because households are poor that they attempt to mitigate the risks associated with poverty through having more children, particularly in agrarian societies (Caldwell 1976; Easterly 2002; Bauer 1981; Banerjee and Duflo 2011).

[13] Kling and Pritchett (1994) further test if there is a negative relationship between population growth and economic growth in specific conditions, such as poor countries or land-scarce countries, but find no meaningful relationship.

[14] For a review of this 'new demographics' literature, see Bloom and Canning (2001).

2.2. Bad Governance and Policies

The end of the Cold War saw the rise of the 'good governance' agenda in international development, in which governance came to be viewed as the key factor explaining poverty (Doornbos 2001; Grindle 2004). However, questions remain over the definition of 'good governance', particularly with regard to its broadness, whereby as a concept, it has been applied to 'virtually all aspects of the public sector' (Grindle 2004: 525). As such, while the term 'bad governance' can refer to a broad range of issues; here I focus on the three main governance components that are linked to poverty in the literature: *the absence of democracy*, *high levels of corruption*, and *the failure to implement market-oriented (neoliberal) policies*. I discuss the theoretical arguments and the empirical research of each of these components.

2.2.1 Democracy

The association between democracy and countries per capita income levels has long been noted. While much of this attention focuses on the *modernisation theory* view that economic development leads to democracy[15]; many argue the absence of democracy is linked to poverty (Sen 1981; 1999; Diamond 1992; Dasgupta 1993; Przeworski et al. 2000; Bueno de Mesquita et al. 2003; Siegle et al. 2004). The argument for why absence of democracy can cause poverty is based on the notion that democracy ensures governments are accountable to the public, while in non-democracies such accountability does not exist. In a democratic political system the poor can remove leaders who fail to respond to their

[15] This is known as Lipset's Law, based on the work of Martin Lipset (1959). See Przeworski et al. (2000) for a discussion of this literature.

specific needs through voting against them in elections, and can influence public policy through civil society organisations, the media, and the courts (Sen 1981; 1999; Diamond 1992; Varshney 2006).

Many have contested this view, arguing that authoritarian regimes can more effectively promote development, as the East Asian Tigers demonstrate (Bhagwati 1966; Huntington 1987). This is based on the argument non-democratic governments can implement economic policies which produce higher growth, despite being unpopular with citizens in the short-run. From this perspective, 'the political economy of development poses a cruel choice between rapid (self-sustained) expansion and democratic processes' (Bhagwati 1966: 203-4).

The empirical research on the effects of democracy on poverty has produced mixed results. Cross-country studies looking at the effect of democracy on per capita income have found: democracy increases income (Pourgerami 1988; Barro 1989; Scully 1992; Papaioannou and Siourounis 2008); democracy reduces incomes (Huntington and Dominguez 1975; Marsh 1979; Landau 1986); and that there is no significant relationship between democracy and income (Russet and Monsen 1975; Kohli 1986; De Haan and Siermann 1995). Many of these studies have been criticised on methodological grounds, such as the use of cross-sectional analysis, and the failure to adequately consider the simultaneity of the relationship (Przeworski and Limongi 1993; Sirowy and Inkeles 1990). As such, this has led to a consensus that little is known about the relationship between democracy and growth.

Empirical studies using more non-income measures of poverty (such as infant mortality rate) have tended to find that democracy reduces poverty (Dasgupta 1993; Zweifel and Navia 2000; Seigle et al. 2004). However, Ross (2006) points to flaws in the methodology used in

these studies, particularly selection bias and the failure to control for the effects of the exogenous trend of improving global health since the 1970s, which occurred around the same time that more countries began to democratise.[16] Once methodological weaknesses are addressed, he argues, there is no significant relationship between democracy and poverty (Ross 2006).

One reason for this lack of clear relationship between democracy and income/poverty is because, as Przeworski et al (2000) highlight, in terms of growth rates, authoritarian regimes are among the best and worst performers. Building on this finding, Varshney (2006: 383) argues that, in terms of their poverty-eradication records, while democracies have avoided the worst-case scenarios; 'they have not achieved the best results, namely eradication of mass poverty'. This is consistent with Sen's (1981) seminal finding – fundamental to the view of non-democracy causing poverty – that no substantial famine has ever occurred in a democracy.

A key issue is that democracies and non-democracies differ in their approaches to poverty reduction. While non-democracies may better mobilise savings and implement unpopular policies that can promote higher growth; democracies are generally better at allocating investments and directly transferring resources to the poor (Varshney 2006; Przeworski and Limongi 1993). This argument is supported, to some extent, by a number of empirical studies that find democracies spend more on public services than non-democracies (Avelino et al. 2005; Brown and Hunter 2004; Kaufman and Segura-Ubiergo 2001; McGuire 2006; Stasavage 2005).

[16] Ross (2006: 863) argues that unless the exogenous global health trend since the 1970s is accounted for, 'the reduction in mortality due to health trends may be wrongly attributed to other variables that have also trended over time – such as democracy, which grew more prevalent at the same time that infant and child mortality rates were falling'.

2.2.2. Corruption

The second governance factor associated with higher poverty is corruption, defined as 'the abuse of public office for private gain' (World Bank 1997: 8). Corruption is widely cited as a cause of poverty – particularly in explaining the high levels of poverty in sub-Saharan Africa (Bauer 1981; Easterly 2002; 2006; Commission for Africa 2005; Moyo 2009).[17] There are a number of channels through which corruption affects poverty, centred on the manner corruption diverts public resources away from domestic investment and public services (World Bank 2001: 102).

A principal problem for cross-country studies of corruption is the difficulty in measuring corruption. As such, studies tend to focus on perceptions of corruption rather than direct measures. Furthermore, there is often little correlation between different corruption measures (Aidt 2009; Treisman 2007). A number of studies find empirical support for the relationship between corruption and poverty. Cross-country studies have found a direct link between corruption and lower economic growth (Mauro 1995; Tanzi and Davoodi 2000; Mo 2001). Considering the effect of corruption on income poverty, Gupta et al. (2002: 40) find that 'a one-standard deviation increase in the growth rate of corruption (a deterioration of 0.78 percentage points) reduces income growth of the poor by 4.7 percentage points a year'. Studies also find that corruption has an indirect effect on poverty.[18] For example, corruption is found to negatively impact investment (Mauro 1995; 2002), particularly

[17] It is worth highlighting that previously some argued corruption can be beneficial for economic development by 'greasing the wheels' of an economy (Leff 1964; Huntington 1968). However, this view has largely fallen out of favour.

[18] See Chetwynd et al. (2003) for a review of the corruption and poverty literature, and Bardhan (1997) for a review of the literature on corruption and development.

foreign direct investment (Wei 2000; Habib and Zurawicki 2001). Corruption is also found to reduce government spending – especially spending on education and health (Mauro 1998; Gupta et al. 2002).

There has been criticism of the corruption explanation, by some, on the grounds that the effect of corruption is overstated because of a failure to adequately consider the direction of causality pointing in the opposite direction too, whereby higher income leads to lower corruption (Sachs 2005; Aidt and Dutta 2008; Paldham 2002). Analysing the effects of per capita income on corruption, Treisman (2000: 44) finds 'strong evidence that the process of economic development reduces corruption'. Empirical research also suggests that levels of corruption in a society are strongly linked to the quality of institutions, which – as I discuss below – are linked to higher poverty (see La Porta et al. 1999; Treisman 2000). Therefore, a limitation of the empirical literature is that it has failed to establish a causal link between corruption and poverty (Aidt 2009).[19] Based on the empirical evidence on the numerous (indirect) channels through which corruption impacts poverty, however; many argue that reducing corruption is fundamental for poverty reduction.

2.2.3. Market-Oriented Policies

The final component of the governance explanation of poverty focuses on governments' policies. This is the view that the failure to implement market-oriented or neoliberal policies leads to poverty (see Bauer 1981; Friedman 2000; Dollar and Kraay 2002). These neoliberal or 'Washington Consensus' policies include strengthening property rights, the deregulation

[19] There have been attempts to use instrumental variables to identify a causal relationship, such as Mauro (1995) and Gupta et al. (2002). However, Aidt (2009: 278) points out these instruments are highly problematic.

and liberalisation of domestic markets, the privatisation of state-owned companies and, in particular, opening economies to free trade and financial investment (see Wade 2007: 105). The way in which the failure to implement these policies has been framed meant that the Washington Consensus – which has attracted much criticism – not only involved a shift from state-led to market policies, but as Gore (2000: 790) argues, it also involved 'a deeper shift in the way development problems were framed and in the types of explanation through which development policies were justified'. The link between neoliberal policies and poverty is based on the belief that free markets allocate resources more efficiently, and hence, these policies promote economic growth which leads to poverty reduction.[20]

A huge body of work has focused on empirically testing the effects of these policies. Within a development context, much of the cross-country analysis looks at the effects of trade liberalisation policies on growth. A number of studies – using a range of measures of trade openness/liberalisation – find support for trade liberalisation leading to economic growth (Dollar 1992; Sachs and Warner 1995b; Frankel and Romer 1999; Dollar and Kraay 2004).[21] However, there are a number of problems with these studies. The first is that the measures of trade 'openness' used in these studies fail to actually measure trade openness, as Rodriguez and Rodrik (2001) have demonstrated. Another significant issue is that these studies fail to establish a causal link between trade liberalisation and growth, with many arguing that it is economic growth that leads to liberalisation (Winters 2004; Chang 2002). Frankel and Romer (1999) attempt to address this, using geographical variables to instrument for trade openness; however, there are questions over the validity of these

[20] Gore (2000: 792) explains that while these policies gained prominence in the late 1970s, the roots of these ideas go much further back, and can be seen in the work of economists such as Milton Friedman.
[21] For reviews of trade liberalisation and growth literature, see Winters (2004). For a review of the trade liberalisation and poverty literature, see Winters et al. (2004).

variables as instruments (Rodriguez and Rodrik 2001).[22] As such, Goldberg and Pavcnik (2004) argue the empirical evidence for the benefits of trade liberalisation is inconclusive.

A particularly important criticism of neoliberal arguments for rapid trade liberalisation has come from Ha-Joon Chang (2002). Chang uses historical analysis to demonstrate that the now-developed countries did not achieve growth through liberalisation. On the contrary, they made tactical use of import tariffs to develop their manufacturing sectors, and *then* liberalised. He extends this study to demonstrate this is also the case with countries that have recently achieved high growth rates, such as the East Asian Tigers, China, and India (Chang 2002; see also Wade 1990; Rodrik 2001).

A major criticism of neoliberalism, or the Washington Consensus more specifically, is that during its period of dominance – where many developing countries were forced to implement neoliberal reform due to structural adjustment programmes and changes in global governance – growth rates in developing countries worsened (Easterly 2001; Chang 2002). Easterly (2001) finds that median growth rates for developing countries in 1980-1998 (the period of neoliberal reforms) was 0 percent, compared to 2.5 percent in 1960-79. These criticisms, along with much widespread criticism of the effects of neoliberalism, have led to the end of the Washington Consensus era (Gore 2000; Rodrik 2006). However, while it is widely accepted that *manner* in which countries were forced to rapidly implement reforms has produced disappointing results, the view that poverty is largely due to the failure to implement market-oriented policies remains (see Dollar and Kraay 2002; 2004).

[22] Furthermore, as Rodrik et al. (2002) explain, these instruments address integration into world trade rather than trade liberalisation *policies*.

2.3. Institutions

In the last decade, following the decline of the Washington Consensus, the quality of countries' *institutions* has come to be seen as the key factor explaining poverty by a number of prominent scholars (Acemoglu et al 2001; 2002; Rodrik et al. 2004; Easterly and Levine 2002). While it is because of recent empirical analyses that the institutions explanation has become dominant; the importance of institutions has long been acknowledged; John Locke, Adam Smith, and John Stuart Mill have all highlighted the importance of institutions, particularly property rights, for economic development (see Acemoglu et al. 2006: 20). In more recent times, the work of Douglass North (1981; 1990) on the importance of institutions has been particularly influential.

North (1981: 201-2) defines institutions as 'a set of rules, compliance procedures, and moral and ethical behavioral norms designed to constrain the behavior of individuals in the interests of maximizing the wealth or utility of principals'. In distinguishing institutions from governance and policies more broadly, Glaeser et al. (2004: 7) emphasise *constraints* as the key component of an institution, and furthermore, they argue that to constitute an institution, 'the constraints need to be reasonably permanent or durable'. This focus on constraints is important because it distinguishes constitutions and electoral rules, which are examples of institutions, from 'good policies chosen by dictators who have a free hand', which are not examples of institutions (Glaeser et al. 2007: 7).[23]

Acemoglu et al. (2006) explain that there are three specific components of *good institutions* that lead to higher per capita income and lower poverty. The first is the enforcement of

[23] The similarities and differences between *policy* and *institutions* is also discussed by Rodrik et al. (2004: 20), who claim that institutions can be thought of as 'stocks', while policies can be thought of as 'flows'. Therefore, they, argue 'we can view institutions as the cumulative outcome of past policy actions' (Rodrik et al. 2004: 20).

property rights, which ensures that individuals have incentives to invest and partake in economic activities. The second component is constraints on elites and politicians, ensuring they 'cannot expropriate the incomes and investment of others in society or create a highly uneven playing field'. The third aspect of good institutions that leads to lower poverty is there is 'some degree of equal opportunity for broad segments of the society, so that they can make investments, especially in human capital and participate in productive economic activities' (Acemoglu et al. 2006: 20).

A number of cross-country empirical studies highlight the positive relationship between institutions – measured primarily by protection against expropriation and/or political constraints – and poverty (for example, Knack and Keefer 1995; Mauro 1995; Hall and Jones 1999; Rodrik 1999; Acemoglu et al. 2001; 2002; Easterly and Levine 2003; Rodrik et al. 2004; Tebaldi and Mohan 2010; Besley and Persson 2011). A principal reason for the primacy of the institutions explanation is because of the use of instrumental variables in recent studies to analyse the effects of institutions on income, thereby addressing issues of endogeneity. The most well-known example of this is Acemoglu et al.'s (2001; 2002) use of the *settler mortality* of Europeans in the colonies to instrument for institutional quality. The use of settler mortality as an instrumental variable based on the argument that colonial powers set up extractive institutions in places they were unable to settle, with the principal aim of transferring resources to Europe. Consequently, 'these institutions did not introduce much protection for private property, nor did they provide checks and balances against government expropriation' (Acemoglu et al. 2001: 1370). In colonies where Europeans were able to settle (due to lower mortality rates), they set up institutions which replicated those in Europe, with an emphasis on protecting private property and providing checks and

balances. This, with the use of instrumental variables to assess the effects of institutions, geography, and trade openness, has led to some consensus that the quality of institutions is the principal cause of differences in per capita income and poverty levels across the world (Rodrik et al. 2004; Easterly and Levine 2003; Acemoglu and Robinson 2011).

There are, though, some who question the causal primacy of institutions in explaining poverty (Chang 2002; Sachs 2003; Albouy 2012; Przeworski 2004; Glaeser et al. 2004). A number of studies point to methodological problems with recent studies, particularly the settler mortality instrument, which forms the basis for the causal claims (Albouy 2012; Glaeser et al. 2004). A particularly important criticism has come from Glaeser et al. (2004: 4-5), who argue that the main measures of institutions used in the empirical literature measure *outcomes* of government decisions and most-recent elections, not actual *constraints*; hence, they do not measure institutional quality. Furthermore, the study also highlights fundamental flaws with the use of settler mortality to instrument for institutions.[24]

2.4. Poverty Traps

The 'poverty traps' explanation has also received much attention in recent times (Sachs 2005; UN Millennium Project 2005; Azariadis and Stachurski 2004; Bowles *et al.* 2006). This argument is, in particular, associated with Jeffrey Sachs (2005), the Director of the UN Millennium Project, and consequently, it is also highlighted by the UNDP (2003) with regard

[24]Glaeser et al. (2004: 21-24) argue settler mortality is a flawed instrument for institutions because it is uncorrelated with a measure of constitutional checks and balances and because it can impact current development through channels other than institutions, such as the modern disease environment and human capital.

to the MDGs. The 'poverty traps' explanation is based on the view that poverty, itself, is a cause of further poverty. As such, it is argued that a large transfer of well-targeted aid to the country is required to break the 'poverty trap' (Sachs 2005; UNDP 2003; UN Millennium Project 2005). While this argument has received renewed attention in recent years, mainly because of Sachs and the MDG framework, it is not a new explanation. In the 1950s it was argued that, as a result of low-level stagnation, countries are caught in a 'vicious cycle of poverty' (Nurkse 1953; see also Nelson 1956; Leibenstein 1957).

The basic argument is that poor households are trapped with low or negative growth rates, preventing capital accumulation; all of the household's income is used for consumption and, hence, there are no savings and no taxes paid. The accumulation of this negative household income growth leads to negative national growth. The absence of savings and taxes means the government receives little revenue, and is unable to provide key public services or to make public investments – yet, depreciation and population growth continue, leading to further poverty (Sachs 2005; Azariadis and Stachurski 2004).

While the notion of poverty traps has a great deal of intuitive appeal, the empirical evidence is mixed. Some empirical studies find support for the poverty traps explanation based on the bimodal distribution of world per capita incomes, whereby poorer countries are clustered around a low-level poverty trap equilibrium, while wealthier nations cluster around a high-level equilibrium (Azariadis and Stachurski 2004; Quah 1993; 1996; 1997; Bloom et al. 2003).[25] Furthermore, Hausmann et al. (2004) find empirical evidence that growth accelerations (defined as increases of at least two percentage point sustained for at least

[25] Kraay and Raddatz (2007: 318) criticise the methodology used in these papers because 'the empirical analysis of the evolution of income distribution is non-parametric and unrelated to any underlying growth model, and in particular, to any poverty trap story.'

eight years) are frequent and more likely to occur in poorer countries, which is consistent with the poverty traps hypothesis. Sachs (2005) finds that during 1980-2000 a significant number of low-income countries experienced negative growth rates, which he argues fits the poverty trap hypothesis.

There has, however, been much criticism of the poverty traps argument based on quantitative empirical studies (Easterly 2006; Kraay and Raddatz 2007; Graham and Temple 2004). Easterly (2006: 38) finds that for the period 1950-2001, 'we can statistically reject the growth rate of the poorest countries as a group was zero', which we would expect if these countries were caught in a poverty trap.[26] Kraay and Raddatz (2007) also find no evidence to support the argument, based on a cross-country study of rates of saving and productivity at low levels of development. Using averaged saving rates of African countries during 1970-2000, they find 'saving rates seem to be increasing at low levels of capital per worker, flat at intermediate levels and increasing again at high levels', contrary to the poverty trap hypothesis (Kraay and Raddatz 2007: 316). Finally, if, as Sachs argues, once countries break free of a poverty trap self-sustaining growth follows; we would expect the list of poorest countries to remain fairly constant over time. However, Easterly (2006: 41) finds 'eleven of the twenty-eight poorest countries in 1985 were not in the poorest fifth back in 1950'.

2.5. Cultural Explanations

[26] Easterly finds that the only period for which growth rates of the poorest countries fit the poverty trap hypothesis is 1985-2001; however, this is explained by 'bad government', measured by democracy and corruption, rather than poverty traps.

The final explanation of poverty that I discuss is the view that poverty is the result of the *culture* of a society.[27] Culture has long been used as an explanation for the persistence of poverty in the developing world, particularly by proponents of modernization theory. Early work on the impact of culture on economic development can be seen in Max Weber's (2001 [1904]) analysis of the impact of religion on economic development, in which he explained that the disparity in incomes between Southern Europe and Northern Europe could be explained by the different values of Catholicism and Protestantism. Similarly Alexis de Tocqueville (1998 [1835]) explained the merits of American democracy by its culture. In the 1950s and 1960s with international development being dominated by modernization theory, the role of culture in development received a great deal of attention (see Rostow 1960; McClelland 1964; Banfield 1958). Modernization theorists, who saw poverty as being linked to some countries failure to progress from a 'traditional' state, viewed the culture of traditional societies as a major obstacle to development. They argued, therefore, that contact with modern societies would enable traditional societies to progress (see Rostow 1960).

In recent times there has been a revival in the view that culture plays the key role in explaining the persistence of poverty and differences in economic development between countries (see Huntington 1996; Harrison and Huntington 2000; Etounga-Manguelle 2000; Landes 1998; Fukuyama 1995; Guizo et al. 2002). The general argument of this work is that certain 'traditional' cultures which prevail in developing regions are incompatible with market-orientated development and therefore restrict economic growth.

[27] UNESCO (2002) defines culture as 'the set of distinctive spiritual, material, intellectual and emotional features of a society or a social group and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs.'

The weaknesses of cultural explanation of why some countries are poor and others are rich are well documented (see Sachs 2005; Green 2008; Chang 2007; Pogge 2008; Acemoglu and Robinson 2012). Broadly-speaking, there are two fundamental and related failings of this explanation. The first is that because culture is such a broad concept, it can always be interpreted by those with the benefit of hindsight to match the situation that is observed at the present time. Proponents of the cultural explanations tend to select some particular characteristics that they associate with a country experiencing high poverty, which they then use to explain the poverty that exists in the country (Sachs 2005; Chang 2007). However, proponents of cultural explanations have failed to predict which countries would experience high economic growth. Weber also argued that the Confucian values of China and the Hindu spirituality of India were both antithetic to economic progress, however both have achieved high growth rates in recent years. Following the economic success of China and other East Asian countries, "Asian values" was used as an explanation for this success, however, prior to the high levels of economic growth achieved by these countries, the same cultural values were seen as an impediment (Green 2008: 95).[28]

The second and related flaw of the cultural explanations of poverty is that proponents of this view tend to use crude interpretations of a fixed and bounded 'national' culture.[29] This approach tends to ignore important cultural differences within countries, as well as the manner in which cultural values and trends diffuse across national boundaries. The arguments made by the proponents of the cultural explanation ignore the fluid nature of culture, which as Yousfi (2007: 11) explains, involves multidimensional interactions,

[28] See Chang (2007: 182-185) for a discussion of some of those that have argued that the cultures of countries such as Japan, Korea, and Germany were inimical to economic development.

[29] In fact, many proponents of the cultural explanation of poverty, aggregate culture across a larger unit than the nation. Huntington (1996) argues that 'civilisations' have a shared culture.

'weaving the local and global together in myriad patterns and configurations.' While culture can influence (and be influenced by) development processes, arguments that a 'national' culture is the key determinant of poverty are based largely on crude stereotypes. Therefore, as Pogge (2001: 331) points out with regard to cultural explanations of poverty, 'one can often learn more about the prejudices of their authors than about the countries in question'.

2.6. Limitations of Existing Explanations

There are three key limitations of the current explanations for poverty that dominate mainstream development. The first is the almost exclusive use of national income and income growth in the empirical studies. The second is the manner in which current explanations focus solely on domestic factors, ignoring international causes of poverty. The third is the insufficient attention given to how inequalities produce poverty.

2.6.1. Measuring Poverty

The first criticism of the existing literature is that the empirical research used to support these explanations is almost exclusively based on analyses of per capita national income or income growth.[30] The drawbacks of using national income as a measure of poverty have been highlighted by Sen (1981; 1998). A key issue is that per capita national income does not shed much light on the level of deprivation faced by individuals in society, as it does not

[30] Many of the studies cited in this chapter specifically focus on causes of growth and do not explicitly make claims about poverty. However, because growth is viewed as the sole means to reducing poverty, these studies form part of broader arguments on causes of poverty.

provide information on the share of income individuals in a country receive. As such, there are a number of examples of a country having a higher national income than another country, but a greater number of its citizens facing poverty (see Sen 1999). Furthermore, the prevailing focus on using income-based measures in the existing quantitative studies of poverty fail to reflect the 'paradigm shift' that has occurred in international development in recent years, whereby it is now widely accepted that poverty is multi-dimensional, and principally needs to be understood in terms of the opportunities people have (Lister 2004: 15; see also Sumner 2007). I discuss the limitations of using GDP per capita as a principal measure of poverty in more detail in Chapter 4, where I also demonstrate that GDP per capita is not as closely correlated with the different dimensions of poverty as alternative measures, such as infant mortality rate.

Many quantitative studies that discuss causes of poverty examine the causes of growth (or the lack of) in their analyses. A major reason for this overriding focus on growth is because of the widespread view that poverty reduction equates to 'the elusive quest for growth' (Easterly 2002). Dollar and Kraay's (2002) influential study, which finds the income of the poor rises in proportion with average incomes, provides much support for this view. There are, however, a number of reasons to focus more directly on poverty instead of growth. As Sen (1999) has argued, growth is a means to reduce poverty but there are alternative routes to poverty reduction. This is supported by Donaldson (2008), who using Dollar and Kraay's data, highlights 'positive exceptions' – countries where the income of the poor rose far greater than expected based on national growth; and 'negative exceptions' – where the income of the poor did not increase in proportion with national growth. As such, he argues 'there are multiple pathways to poverty reduction, of which Dollar and Kraay have identified

but one – economic growth generated through liberal economic policies' (Donaldson 2008: 2128).[31]

Leading on from this, it is also important to note that growth does not guarantee poverty reduction. The impact of growth on poverty is often dependent on the type of growth occurring in a country (Kaplinsky 2005; Nissanke and Thorbecke 2006). As Kaplinsky (2005: 212) points out, recent increases in global trade have resulted in a process of 'job-destroying' growth in many countries, which has had harmful effects. Harriss-White (2006) and Mosse (2007; 2010) go further, highlighting different ways in which policies and processes which lead to economic growth nationally, can force some groups into poverty. This can be a result of dispossession needed for 'primitive accumulation' required for productive investment or the manner in which growth in many countries, such as India, is dependent on the availability of easily exploitable casual labour.

An additional reason to consider alternative pathways to poverty reduction is because of the growing recognition of the strains that economic growth has placed on the natural environment (Baker 2006). While in the past, the notion that the increasing environmental problems demonstrated that there are *limits to growth* were dismissed by many; however, as the recent UNDP (2011) *Human Development Report* on 'sustainability and equity' points out, it is now widely accepted that the current development model based on economic growth is reaching its concrete limits. Hence, there is fundamental need to consider alternative routes to reducing poverty.

[31]Rodrik (2001) argues the direction of causality also runs from poverty reduction to economic growth.

2.6.2. International Causes

The second and arguably most fundamental failing of existing explanations of poverty is that they view poverty as being solely the result of domestic factors; the international context is ignored. The manner in which poverty has come to be seen as the result of internal domestic factors alone has been highlighted by a number of scholars (Frank 1969; Townsend 1993; Gore 2000; Pogge 2001; 2008).[32] As I have pointed out in the introductory chapter, in recent times, the 'nationalist' view of the existing explanations of poverty has particularly been emphasised by Pogge (2008: 145-146) who explains that:

> This view permeates the way economists and the financial media tend to analyze global poverty. They present it as a set of national phenomena explainable mainly by bad domestic policies and institutions that stifle, or fail to stimulate, national economic growth and engender national economic injustice.

However, as Pogge (2008) points out, this 'nationalist' view is flawed for a number of reasons. In failing to consider the broader international context in which these national economies and governments are placed, such an approach fails to consider whether the same set of policies and institutions may have a different effect in a different international context. Furthermore, they also fail to consider the manner in which the international system can have an influence on national factors, such as institutions and policies. Finally, the 'internalist' explanations of poverty fail to consider the direct effects of the international system on poverty.

[32] This has in particularly been highlighted by the 'underdevelopment theory' literature, which I discuss in the next chapter, which in part emerged to counter the national-specific bias of modernisation theory (see Payne and Phillips 2010).

Yet, there are clear examples that demonstrate that manner in which international factors can influence national poverty levels. The European colonial conquest of Africa, Asia, and Latin America has had a number of lasting legacies for the economies of the former colonies (see Hoogvelt 2001; McMichael 2001). The unequal power between states in the international system has meant that wealthier nations have been able to shape international laws for their own benefit – often at the expense of development nations (Pogge 2007: Chossudovsky 2005; Hurrell and Woods 1999). The current financial system, and in particular, the free movement of private capital has generally benefitted the developed nations, while the higher volatility in the exchange rates, stock markets, and interest rates have had a destructive impact on the economies of many developing countries (see Wade 2004; Stiglitz 2002). The developing world debt crisis has had a significant impact on poverty, but as Hertz (2002) has pointed out the legitimacy of these debts is, in many cases, highly questionable, as they originate in loans provided by banks and governments in developed countries to repressive autocrats (see also Pogge 2001; 2008).These are just a few examples of how international factors can influence poverty. However, in general, the existing literature has tended to focus exclusively on domestic causes of poverty.

The recent focus on institutions has, to some extent, been positive in this regard. Acemoglu et al.'s (2001; 2002) influential work identifies the 'colonial origins' of development and poverty, moving away from previous dominant views that colonialism is either irrelevant for understanding today's poverty (see Sachs 2005: 191) or that it was beneficial for development and poverty reduction (see Rostow 1960). However, the main limitation with the *institutions* argument is that beyond the colonial origins, there is little attention given to

how international processes have affected – and continue to affect – institutions in the developing world. The example of the Democratic Republic of Congo (DRC) highlights this issue. Acemoglu et al. (2001: 1375) use the Congo as an example of an 'extreme' case, where the Belgians put in place extractive institutions with the sole purpose of transferring resources back to Belgium. These institutions have persisted and are responsible for the current poverty in the DRC. However, while the colonial institutions have no doubt had a huge legacy for development in the DRC, these institutions have persisted in large part because of the influence of international factors. For example, the manner in which the DRC continues to be exploited by transnational corporations for its natural resources which are transferred to richer countries has produced poverty, conflict, and human rights violations in the country (see Mullins and Rothe 2008; Kabel 2004; Molango 2008; Asiimwe 2004; Abadie 2011; Kabamba 2012). Or the manner in which the progressive independence leader of the Congo, Patrice Lumumba was overthrown and murdered with the complicity of the US and Belgian governments; leading to the repressive dictatorship of General Mobutu, who was able to stay in power for over thirty years with the assistance of large amounts of aid from the developed nations (see Gran 1979; Kelly 1993; Blum 2003; De Witte 2001; Ayittey 1999; Renton et al. 2006; Easterly 2006). International factors, such as these, affect both the country's institutional development and its present poverty levels.

In this study I address this limitation of the extant literature by examining the effects of international factors on poverty. Specifically, I analyse the effects of structural inequality between countries on poverty, focusing on international trade. I provide the theoretical argument for how structural international inequalities impact poverty in the next chapter. In making this argument, the study moves beyond the limitations of past approaches to

considering the impact of international inequality on development – most notably underdevelopment theory – by avoiding the tendency to explain development outcomes by international inequalities alone. Instead, the argument here is that international inequality is one of a number of factors impact poverty around the world.

2.6.3. Domestic Inequality

The third limitation of existing explanations is their failure to adequately address inequality and unequal relations within countries as a cause of poverty. The view that inequality and poverty reduction are largely unrelated is demonstrated by Jeffrey Sachs, the Director of the UN Millennium Project. In looking at the feasibility of achieving the MDGs, and asking 'can the rich afford to help the poor', Sachs (2005: 289) argues, 'the goal is to end *extreme* poverty, not to end all poverty, and still less to equalize world incomes or to close the gap between the rich and the poor.' The implication is that inequality and poverty are largely unrelated. As I have pointed out in Chapter 1, the manner in which domestic inequality has generally not been considered as a cause of poverty is reflected in the exclusion of issues of inequality from the MDGs and the broader MDG framework, as a number of critics have pointed out (see Saith 2006; Bond 2006; Watkins 2007). Pieterse (2002) argues that poverty reduction has become the central focus of international development precisely because this has enabled issues of inequality to be eliminated from the development agenda.

The importance of considering domestic inequality in examining poverty is, however, demonstrated by the huge gaps in income between regions, groups, and individuals in the poorest countries. The existing explanations, such as geography, institutional quality, policy,

and even international factors, fail to provide a fully satisfactory answer to the question of how and why some people in poorer countries affected by adverse geography, institutions, and so on, enjoy high incomes and decent living standards, while others in these same countries face extreme poverty (see Green and Hulme 2005). I posit in this study that high levels of domestic inequality have a significant influence on the incidence of poverty. Specifically, as is explained in Chapter 3, it is because economic inequalities are closely linked to unequal power within states that inequality impacts poverty (see Wade 2007; Galtung 1969; de Ferranti et al. 2003).

The recent renewed focus on the impact of institutions on poverty has also, to an extent, been positive in highlighting the effects of inequality on poverty. As has been discussed above, a principal channel through which the *extractive* institutions impact poverty is through elites and politicians expropriating incomes and creating an unequal playing field. However, there are a number of reasons to consider inequality more directly than only in the context of institutions. The first is that while 'bad' institutions may lead to greater inequality; it does not necessarily follow that good institutions lead to lower inequality. For example, based on the Polity IV measure of *executive constraints*, India's institutional quality achieves the highest possible score throughout the 28-year period of analysis considered in this study.[33] However, the problems of high – and rising – inequality in the country during this period have received significant attention (see Dréze and Sen 2011). Hence, a focus on institutions and constraints on the government fails to consider the manner in which unequal social relations existing at different levels of society can produce poverty, as the recent literature on *chronic poverty* has demonstrated (see Green and Hulme 2005; Mosse

[33] The Polity IV measure of *executive constraints* is discussed in Chapter 4.

2010; Kabeer 2004).[34] Furthermore, as Birdsall et al. (2010) demonstrate, there has recently been a sharp decline in inequality in Latin America – a region synonymous with bad/extractive institutions (see de Ferranti et al. 2003). As such, while the relationship between institutions and inequality is certainly important, a central argument of this study is that there is a need for more *direct* focus on inequality as a cause of poverty, and particularly of *how* unequal power relations in society can produce poverty.

In this study this issue is addressed by examining the effects of domestic inequality on poverty. Specifically, I argue that the principal channel through which domestic economic inequality affects poverty is through the close link between economic and political inequalities, which leads to policies which serve the interests of the wealthier in society rather than other sectors. The theoretical argument for how inequality within countries impact poverty is provided in the next chapter.

2.7. Concluding Remarks

This survey has outlined some of the key factors that are seen to have a causal effect on poverty in the mainstream development literature, which have broadly been categorised as geography and demography, bad governance and policies, institutional quality, and poverty traps. This discussion is used to form the basis of the set of control variables in the regression model specifications used to test the main arguments of this study, as I discuss in Chapter 4. This chapter has also identified the limitations of the current literature, which are addressed in this study. The three key weaknesses highlighted are the focus on

[34] 'Chronic poverty' can be defined as poverty that is experienced for much of a person's lifetime and transmitted across generations (Green and Hulme 2005).

income/growth measures of poverty, the manner in which international processes that cause poverty have been ignored, and the lack of attention to how inequality causes poverty. In the next chapter I lay out the theoretical argument of this study, which focuses on how inequalities between and within countries create and perpetuate poverty.

3. A Theory of Structural Inequalities and Poverty

This chapter lays out the theoretical argument of this study on the relationship between inequality and poverty. As I have pointed out previously, there are two important limitations of the existing literature on the causes of poverty. The first is that the effect of international inequalities on poverty has, largely, been ignored. The second is that the impact of domestic in equality on poverty has tended to receive insufficient attention. As such, in this chapter I discuss the channels through which inequality between and within countries produces and perpetuates poverty. In doing so, I develop a series of hypotheses, which I test in the empirical analysis conducted in this study. The full list of hypotheses is provided in Table 3.1.

This chapter is structured as follows. I begin with a brief conceptual discussion of the process through which inequality affects poverty. As I have explained in the introduction, the concept of inequality in this study is centred on power asymmetries. In considering power asymmetries at the international and domestic level, the analysis focuses on two different types of inequality; at the international level the analysis considers countries' positions in the international system based on the relations between actors, and at the domestic level the analysis is centred on unequal wealth between groups, and the manner in which this produces policy outcomes that favour wealthier groups in a country. The second section looks at the relationship between international inequality and poverty. In doing so, the focus is on structural inequalities between countries in the international system, drawing on underdevelopment theory and more recent structural arguments related to the process of globalisation. The third section of the chapter considers the

relationship between domestic inequality and poverty, focusing on the manner in which economic inequality between groups affects inequalities of power leading to policy outcomes, which produce and perpetuate poverty. In the fourth section, I consider the relationship between international and domestic inequalities, and how this relationship impacts poverty.

3.1. The Mechanisms Linking Inequality and Poverty

Before proceeding with a more detailed discussion of how international and domestic inequalities lead to poverty, I first consider the conceptual relationship between inequality and poverty. As I have highlighted previously, the relationship between inequality and poverty links to the broader issue of the role of the non-poor in the creation and perpetuation of poverty – an issue that has largely been excluded from mainstream development analyses of poverty (Øyen 1996; Townsend 1993). A central issue in analysing the relationship between inequality and poverty is that the non-poor and the poor do not exist in isolation from one another, but are connected through economic, political, and social relations. It is through these relations that inequality has an impact on poverty.

Drawing on Charles Tilly's (1998) work on *durable inequalities*, I propose that there are two key mechanisms through which inequality produces poverty.[35] Both of these mechanisms are centred on inequality as differences in power between actors. The first mechanism is *exploitation*, which 'operates when powerful, connected people command resources from

[35] It is important to note that Tilly focuses on inequalities between groups based on identity within a country, such as different ethnic groups, and considers how inequality is perpetuated between these groups. Here, I apply these mechanisms to apply to different groups within a country, and between different countries in the international system, in order to explain the link between inequality and poverty.

which they draw significantly increased returns by coordinating the effort of outsiders whom they exclude from the full value added by that effort' (Tilly 1998: 11). There are two important aspects of this definition. Firstly, exploitation occurs when two groups (of people or countries) are connected to one another, and there is a certain degree of interdependence between these different groups. This is central to the relationship between inequality and poverty; inequality between two actors matters because the actions of one affect the other, and vice-versa. Secondly, while one group benefits from access to resources; the other group does not receive the full value of their efforts. This occurs, despite the benefits gained by the first group being dependent on the participation of the second group. Exploitation in this sense can also be defined as *rent-seeking* (Tilly 1998: 87).

The second mechanism through which inequality leads to poverty is *opportunity hoarding*, where a group acquires 'access to a resource that is valuable, renewable, subject to monopoly', and from which others are excluded (Tilly 1998: 11). The notion of opportunity-hoarding used here is, again, based on the premise of groups that are connected to one another in a network, which can be within a country or at the international level. Within this network only some have access to a valuable resource. This is despite the value derived from this resource being dependent upon the actions of the entire network, and not just the group that has access. Access to the resource also furthers the activities of the network; however, the benefits are accrued only by the group with access to the resources. As such, the concepts of *opportunity-hoarding* and *exploitation* are closely related, and both can be viewed as distinct forms of rent-seeking (see Krueger 1974).[36]

[36] As Mosse (2010: 1157) points out Tilly's approach combines 'Marxian ideas of exploitation and dispossession with Weberian notions of social closure'.

The concepts of *exploitation* and *opportunity-hoarding* are useful for understanding how inequality affects poverty at the international level and at the domestic level. At the international level, countries are connected to one another through various economic, political, and social ties, such as trade flows and international laws, to form an international system (Amin 1974; Griffin 1974). However, the structure of these relations is unequal, and as such, the international system resulting from these unequal relations is hierarchical with countries occupying different positions in this system (Wallerstein 1972; Galtung 1971). The unequal relations between countries in different positions – particularly trade relations, as I discuss in the next section – are *exploitative* and have led to a transfer of resources from countries in lower positions to those in higher. The example of Haiti provided in the introduction demonstrates this process, as the country's unequal relations with France and the US over time have led to a transfer of resources from Haiti to France and the US. In doing so, these relations have led to higher levels of poverty in countries such as Haiti. Furthermore, as I discuss in greater detail in the next section, the economic and political relations between countries have hindered those countries at the bottom of the hierarchy from the opportunity to move into alternative forms of production, for example, which again has increased poverty in these countries.

At the domestic level, different groups are also connected through economic, political, and social ties, such as relations of production and employment, trade, and domestic laws. However, these relations are shaped by the inequality between the wealthier in society and those less wealthy. This has enabled the wealthier to benefit from exploitative economic relations with the less wealthy, leading to some being forced into poverty (see Harriss-White 2006; Green and Hulme 2005; Mosse 2010). In particular, as I discuss in more detail in

Section 3.3, this inequality has enabled the wealthier in society to shape policies to their own advantage, denying opportunities to the less wealthy in areas such as education, which has again led to higher poverty (see Rao 2006; Wade 2007). This was highlighted in the case of Mexico in the introduction, whereby high levels of domestic inequality have meant that policies have served the interests of the elite in the country, providing them with greater access to public services, quality education, and land ownership than other groups in the country (see de Ferranti et al. 2003).

3.2. Inequality Between Countries

In this section, I consider the relationship between *international inequality* – or inequality between states (see Milanovic 2005) – and *poverty*. This relationship has largely been ignored in the existing mainstream development literature, which instead has focused almost exclusively on analysing the effects of country-specific attributes on poverty. Such an approach, however, treats countries as though they exist in isolation from one another; failing to consider the manner in which countries are connected to one another through various ties to form an international system (see Amin 1974: 1; Griffiths 1974). In this study I posit that this international system is fundamental to understanding poverty. As Stephen Beaudoin (2007: 12) has explained in his study of *Poverty in World History*, prior to 1500, 'poverty resulted principally from local sources like natural disaster, warfare, and civilisation-specific systems of distribution'. However, since 1500, poverty is far more directly linked to colonial rule and the process of creating a world economy:

> As time passed, the world economy came to play a much greater causal role in world poverty, influencing both available resources and systems of distribution. This only intensified after the Second World War, as the Cold War and an expanding world economy involved more and more nations (Beaudoin 2007: 12).

A fundamental feature of the world economy is that some countries 'enjoy crushing economic, political, and military dominance' over other countries (Pogge 2008: 6). This significant *inequality* between countries, I argue, has a significant effect on the differing poverty levels that we see across countries.

Focusing specifically on the unequal structure of international trade, I suggest that the principal channel through which international inequality has produced and perpetuated poverty has been the manner in which some countries, such as Zambia and Haiti, have been incorporated into the international system as suppliers of primary commodities and lower value-added manufactures; while others, such as the UK and France, as the producers of higher value-added manufactured products. This structural inequality leads to higher poverty in two ways, as Beaudoin (2007) argues. The first – and principal – way is through wealth flowing from those countries occupying the lowest positions in the international system to those occupying the highest. As such, structural inequality influences the availability of resources to a country. The second channel is through the adverse effects of the type of production that is done in countries at the bottom of the international system, namely primary commodity production and low value-added manufacturing, which is linked to the unequal distribution of resources within countries, higher corruption and instability, and greater vulnerability to shocks.

In making this argument, I draw on existing structural approaches to development that focus on how international inequalities have shaped development processes. Of particular importance are the structural approaches to development originating largely in Latin America in the 1950s and 1960s, which, together, can be termed 'underdevelopment theory' (Payne and Phillips 2010).[37] An underlying argument of underdevelopment theory was that colonial rule had led to the creation of a capitalist world system based on exploitative economic relations between countries in 'the core' or 'the centre' of the world economy who were largely producers of manufactured goods, and the countries of 'the periphery', who were largely producers of primary commodities (see Prebisch 1950; Baran 1957; Frank 1969; Emmanuel 1972; and Wallerstein 2004).[38] This unequal international system is seen as fundamental to understanding differences in levels of development across countries.

In developing this argument, and moving beyond some of the limitations of underdevelopment theory, I also draw on more recent structural arguments looking at development, particularly related to the process of *globalisation* (see Gore 2000; Chang 2003; Kaplinsky 2005). It is worth noting, however, that there are a number of similarities between the arguments made by dependency and other underdevelopment theorists, and those made in critical discussions of globalisation, to the extent that Herath (2008: 831) claims, 'some brands of globalisation theories have reworded and rephrased the central concept of dependency theory'.

[37] As Payne and Phillips (2010: 71) explain, 'underdevelopment theory' can be seen to consist of different sub-fields, such as 'structuralism, neo-Marxism, dependency theory and world systems theory'.

[38] Wallerstein (2004: 24) defines capitalist world system as one that 'gives priority to the *endless* accumulation of capital', and argues that when a system prioritises endless accumulation, 'it means that there exist structural mechanisms by which those who act with other motivation are penalized in some way, and are eventually eliminated from the social scene, whereas those who act with the appropriate motivates are rewarded, and if successful, enriched'.

It is important to recognise that there are a number of examples of how international inequality can impact poverty, as I have noted in the previous chapter. In this study, however, I focus specifically on the unequal structure of international trade. This is because trade represents the fundamental economic relation between countries in the international system. As Payne (2005: 167) points out, trade constitutes a country's 'most obvious point of contact, and, by extension, competition with other countries.' Furthermore, as I explain in more detail below, the trade system set up during the colonial era lies at the heart of the unequal international system.

3.2.1. Structural Inequality and Position in the International System

I begin by considering the nature of the inequality that exists between countries. There has been much discussion about international inequality, in recent times, focusing on the effects of globalisation on inequality between countries.[39] Consequently, this literature has tended to examine international inequality as an outcome, rather than as a cause of development processes.[40] This view of international inequality as an outcome has meant the existing literature tends to conceptualise and measure international inequality by looking at development outcomes, such as countries' per capita national income (see Milanovic 2005). The analysis conducted in this study examines the effects of international inequality on poverty, and therefore is concerned with international inequality as a *cause*, rather an outcome. As noted above, inequality between states affects poverty because countries are connected to one another through various relations, which together make up the

[39] See Wade (2004) and Milanovic (2005) for discussions of this literature.
[40] With regard to the process of globalisation, this has been pointed out by Phillips (2005) and Payne (2005).

international system. Therefore, the focus on international inequality here is on *structural inequality* in the international system and countries' *positions* within the unequal international system.

This notion of structural international inequality where countries occupy different positions in a hierarchical international system can be seen in the underdevelopment literature. Central to the underdevelopment approaches is that present-day inequality between countries has its roots in the colonial era, where the European colonial powers set up extractive economies in the colonies in order to transfer primary commodities to Europe. The European colonial powers, on the other hand, produced manufactured products for the world markets. As such, the international system was characterised by an 'international division of labour' (Prebish 1950; Baran 1957; Frank 1969; Emmanuel 1972; Wallerstein 1972).

From this perspective, countries are seen to occupy different positions in the hierarchical international system: 'the core' (or 'the centre'), which consists of the powerful industrialised nations, and 'the periphery', the weaker non-industrialised former colonies (Prebisch 1950; Baran 1957; Frank 1969; Emmanuel 1972; Griffin 1978; Seers 1963). This 'core-periphery' dichotomy is particularly associated with dependency theory (for example, see Frank 1969; Dos Santos 1970). An important contribution of world systems theory, another strand of underdevelopment theory, has been the conceptualisation of additional positions in the international system (see Wallerstein 1972; 1979; Arrighi and Drangel 1986; O'Hearn 1994). In particular, Wallerstein (1979: 69) has put forward the notion of 'semi-

peripheral' positions, consisting of semi-industrialised countries, which are considered to be the middle sectors of the international system.[41]

In drawing on underdevelopment theory in this study, it is also important to recognise some of the limitations of classical underdevelopment theory, and highlight ways in which this study moves beyond this approach. A key weakness of underdevelopment theory is the overly-deterministic view of the structure of the international system, in which countries were seen as largely fixed in the various positions they occupied (Blomstrom and Hettne 1984; Greig et al. 2007). There was very little space for structural change with this view or for upward or downward movement of countries within the hierarchical structure. As such, underdevelopment theorists were largely unable to account for significant structural changes that occurred in the global economy.. Following independence from colonial rule, the former colonies continued, largely, to rely on exporting primary commodities until the 1960s, when a number of developing countries, located mainly in Asia, moved away from primary commodity dependence and became exporters of manufactured goods following a period of rapid industrialisation. This shift in the world economy has been termed the 'new international division of labour', where a number of industrialised countries relocated parts of their manufacturing sectors to developing countries (Frobel et al. 1980; Hoogvelt 2001; Dicken 2003). A key failing of the underdevelopment approach was the failure to account for this structural change and the success of the East Asian economies who had previously been in the periphery of the international system (Harris 1987; Lipietz 1988).

[41] Wallerstein (1979: 69) explains that there is a political reason for why a capitalist world-system needs a semi-periphery, as 'a system based on unequal reward must constantly worry about political rebellion of oppressed elements', and so to address this issue, 'middle sectors' are created, 'which tend to think of themselves as primarily better off than the lower sector rather than as worse off than the upper sector.'

It is therefore important to consider what is meant by structural inequality and hierachy in the international system. I argue that while these structural changes in the world economy demonstrate the limitations of the underdevelopment theory view of international inequality, the notion of structural inequalities between countries and hierarchy in the international system is still very much relevant. An example of the relevance of structural inequalities can be seen by considering the different types of manufacturing done in developed and developing nations. The technological superiority of the developed nations has meant that production that entails higher levels of processing, associated with higher added value, are still concentrated in the developed world (Mahutga 2006; Kaplinsky 2005). More generally, the approach to hierarchy in this study focuses on the unequal power countries have in the international system, which both shapes and reflects the various relations betwee countries – and consequently shapes the structure of these relations. This view of a hierarchical international system based on assymetric power between nations has also been highlighted by a number of International Relations scholars (Tucker 1977; Milner 1991; Lake 1996; 2009).

The approach taken in this study differs significantly from traditional underdevelopment notions of hierarchy in a number of ways. A key difference is the argument made here employs a far more fluid notion of hierarchy, whereby it is not assumed that international inequality is fixed over time as tends to be the case with classic underdevelopment theory. On the contrary, the argument here is that countries can and do shift positions in the international system. The examples of countries, such as China and Mexico provide a good examples of countries that have shifted positions in the international system. While both countries have historically been more peripheral in the international system, both have

moved to more central positions in recent years, as I discuss in more detail in Chapter 5. Chapter 9 discusses some of the policy options that enables countries to move from more peripheral positions to more central positions in the international system.

A second key difference between the view of hierarchy in the international system taken in this study and the approach taken in underdevelopment theory is that, unlike the underdevelopment approach, this study does not claim that this international hierarchy accounts for all development outcomes around the world. The argument here, which I discuss in more detail below, is that international inequality is one of a multitude of factors that influences poverty levels around the world. A central argument of this study, however, is that international inequality is a factor that is largely ignored in mainstream development analyses.

The focus in this study on *structural* international inequality means that it is especially important to consider the structure of relations between countries in different positions of the international system. It is worth pointing out that while the notions of position and the different positions, such as core and periphery, are drawn from the underdevelopment approach; the terms 'position', 'core', 'periphery' and 'semi-periphery' are employed in a different way to their use in classical underdevelopment theory. The overly-deterministic approach taken by some underdevelopment theorists meant that countries' positions tended to refer to the nature of these countries relations, their domestic structures, and their levels of development (see Blomstrom and Hettne 1984). Here, countries' positions specifically refers to the manner in which they are incorporated into the structure of international relations between nations, as I explain in greater detail in the next chapter. In particular, I focus on the structure of trade relations, which both shape and reflect structural

inequalities, and is linked to the type of production occuring in different countries. The manner in which peripheral economies are largely based on exporting a limited number of primary commodities, as has been highlighted in the case of Zambia, together with the technological superiority of countries in the core over those in peripheral positions, means that countries in the core can easily substitute goods purchased from the peripheral countries; peripheral countries do not have this option, which has both economic and political consequences (Griffin 1974; Hirschman 1980; Galtung 1971; Wallerstein 1972; Mahutga 2006).[42] The result is that 'core nations enjoy a structural advantage over peripheral nations by limiting their trading alternative and maintaining trade relations that favour the core (Mahutga 2006: 1866). Furthermore, because of the lack of economic diversification, trade between countries within the periphery is limited, and instead, the majority of trade done by the periphery countries is with core or semi-periphery nations (Wallerstein 1974; 2004). This differs from countries in the core and the semi-periphery, where we would expect to see high levels of intra-position trade.[43]

Based on the arguments above, there are specific characteristics associated with the different positions in the international system based on the structure of their trade relations. It is worth pointing out that here states are typically considered as occupying one of these positions, but it is important to find a more systematic way of classifying states. First, countries in the core positions conduct the highest volumes of trade, leaving countries in the periphery to conduct the lowest amounts of trade. Second, we would expect there to be a high level of intra-position trade for the core; whereas we would expect periphery

[42] The importance of the technological change in reinforcing international inequality has been discussed in detail by Griffin (1974).

[43] It is important to point out that a fundamental characteristic of *structural inequality* is the close relationship between economic and political inequalities. This is discussed further below.

countries to conduct more trade with countries in other positions that with other periphery countries. Countries in the semi-periphery positions are likely to have higher intra-position trade and higher levels of trade with countries in other positions than the periphery (but lower than for the core). Third, we would expect most of the periphery's trade to be conducted with the core (see Galtung 1971; Wallerstein 2004).

As such, based on the argument made in this section, we would expect to see a hierarchical international system, whereby some countries occupy positions that are more central in the international system and others occupy more peripheral positions, which is reflected in the pattern of trade relations. The countries in more peripheral positions have a structural advantage over those in more peripheral positions, as I discuss in greater detail below. This means that, in terms of international inequality; countries in more peripheral positions are adversely affected by the unequal structure of the international system than those in more central positions. As such, I expect the following hypothesis to hold:

Hypothesis 1.1: *The international system is characterised by a hierarchical structure.*

This is a descriptive baseline hypothesis, which needs to be supported for the remaining hypotheses developed in this chapter, regarding international inequality, to be viable.

In considering the structural inequality in the international system, an important issue that arises is the extent to which countries are able to move from one position to another. As discussed above, some proponents of underdevelopment theory argued that the hierarchy of the international system was fixed over time, and as such, they claimed that there was little scope for upward mobility of countries in periphery positions (see Frank 1969; Amin

1985).[44] A principal weakness of this view is that in emphasising the importance of the international structure, it denies any agency to developing countries, and as such it has received much criticism for being over-deterministic (see Cox 1981; Blomstrom and Hettne 1984; Greig et al. 2007). Furthermore, as explained above, some countries – specifically the East Asian Tigers – did experience rapid industrialisation and growth, and as such the empirical evidence does not support this pessimistic view of countries being unable to move out of the periphery. Hence, as I have highlighted above, in the approach taken here, I argue that the structure of the international system is not unchanging; countries can move positions – both upward and downward. This more fluid notion of international hierarchy enables this study to move beyond a fundamental weakness of the classical underdevelopment approach.

While I reject the view of an international structure that is wholly fixed over time, the notion of structural inequality is premised on there being stability in the structure of the international system. Changes in the structure of the international system occur gradually over time, rather than in rapid fluctuations from one year to the next. As I discuss in greater detail below, current international inequalities are influencedby the policies of the colonial era. This period led to the emergence of economic and political relations between countries that have to some extent continued over time. Hence, while recognising the potential for structural changes to occur, an important aspect of the argument I make here, is that inequalities between countries do persist over time, which leads to the following hypothesis:

Hypothesis 1.2: *Countries' positions in the international system are stable over time.*

[44] It is important to note that many of those associated with underdevelopment theory, such as Cardoso and Faletto (1979), did not share this view of countries positions being fixed over time.

The stability of countries' positions in the international system can be examined in a number of ways. First, the extent to which countries remain in the same position over a number of years can be examined. Second – and of particular significance – is that stability in the international system would mean that countries would not move more than one position in consecutive years. This would demonstrate that countries' movement in the international system occurs gradually, rather than in rapid and large shifts. Finally, we would expect countries past positions to impact their current positions, and furthermore, that countries' colonial pasts have an impact on their current position, as I discuss in greater detail below. It is worth emphasising that the notion of stability in the international system is very different to the view of an unchanging international system posited by some classical underdevelopment theorists. The former sees change occuring gradually over time, while the latter does not allow for changes in the structure of the international system.

While I focus on trade relations to measure structural inequality between countries in this study, it is important to note that trade ties between countries are linked to a broader set of economic and political relations in the international system. The example of Haiti, provided in the introduction, demonstrates the manner in which the close relationship between economic and political inequalities is a fundamental characteristic of *structural inequality*. Haiti's economic ties with France were shaped by the unequal political relations between the two countries. This unequal political link between the two countries originates in the colonial tie between Haiti and France, which shaped the trade relations between the two countries. Furthermore, in order to secure its independence, Haiti was made to pay a huge financial debt to France, which was largely due to the political and military superiority of France. France's political power over Haiti also enabled it to further shape trade relations

between the countries to its own advantage and to the detriment of Haiti (see Farmer 2003; James 1980). Furthermore, as I discussed in Chapter 1, Haiti's unequal economic relations with the US were also highly influenced by the US' military superiority and through the aid ties between the two countries.

The link between trade relations and other economic relations, such as capital flows, foreign direct investment (FDI), and aid, have been discussed by underdevelopment and structural theorists (see Frank 1969; Dos Santos 1970; Griffin 1978). These theorists also tended to emphasise the manner in which economic relations were linked to relations of political power between states. Furthermore, more recent empirical analyses have also highlighted the interdependence of trade relations with political ties between states (e.g. Pollins 1989a; 1989b; Gowa 1994; Gowa and Mansfield 2004; Rosecrance 1986; 1999; Oneal and Russett 1999; Russet and Oneal 2001; Biglaiser and DeRouen 2009).[45]

The impact of political relations, between states, on economic ties is particularly important when considering global governance and international laws. A central feature of the current trade system, discussed in greater detail below, is the manner in which unequal trade relations between developed and developing nations have been reinforced, in recent times, by international trade laws. More generally, the process of globalisation has included a shift towards rules being established at the global level. However, these international rules are shaped by unequal power relations between states (Hurrell and Woods 1999; Deaton 2004; Payne 2005; Pogge 2008). As Hurrell and Woods (1999: 1) point out:

> …the disparity of power among states is becoming more marked and more visible as an increasing volume of ever more far-reaching rules, rights, and values are being asserted

[45] I discuss this literature in more detail in the next chapter.

> and imposed at the global level…by those countries with the power to shape outcomes and to control international institutions. Less powerful states are, even more than in the past, becoming 'rule takers'.

Therefore, while I focus on trade relations between countries in this study, it is argued that countries' positions in the international system are related to additional economic and political ties between countries, whereby these relations both shape and reflect structural international inequalities. As such, I expect the following hypothesis to hold:

> Hypothesis 1.3: *The structure of economic and political relations between countries is stable over time.*

In other words, based on the argument made in this section, I would expect there to be a clear pattern and link between the different economic and political relations between countries based on their positions in the international system, as the example of Haiti demonstrates.

3.2.2. The Colonial Roots of International Inequality

In examining structural international inequality and its effect on poverty, it is also important to consider how this inequality between countries emerged. In this section, I discuss the colonial origins that gave rise to the unequal structure of the contemporary international system. In doing so, I develop two additional hypotheses that enable me to empirically test the colonial influence on international inequality. These hypotheses will, in addition, help to establish the direction of causality from international inequality to poverty as is posited in this study.

The current structural inequality between countries in the international system has its roots in the colonial era.[46] At first this inequality occurred as a result of the direct transfer of wealth from the colonies to Europe, which benefited the latter at the expense of the former (Fanon 1965; Frank 1969; Hoogvelt 2001).[47] Following this first 'mercantilist' phase of colonialism that occurred between the 1490s and the early 1800s (Hoogvelt 2001: 17); the European colonial powers, over time, took direct political control over the colonies and set up economies and institutions to serve their own interests. As the underdevelopment theorists have emphasised this was done by forcefully incorporating the colonies into the world economy as the producers of primary commodities. In some cases, such as in India under British rule, this meant a colonial policy of deindustrialisation, whereby the country went from producing 24.5 percent of the world's manufactured goods in 1750 to only 1.4 percent in 1913 (Beaudoin 2007: 69).[48] This process strongly influenced the creation of a hierarchical international system in which we see countries occupy different positions and face different levels of structural international inequality. As such, based on this argument I would expect that to some extent countries' current positions in the international system reflect the colonial origins of international inequality, leading to the following hypothesis:

> Hypothesis 2.1: *Former colonies are in more peripheral positions in the international system than countries that are not former colonies.*

In focusing on the colonial origins of contemporary international inequality there may appear to be some contradiction with the earlier discussion of the notion of a more flexible and fluid structure of the international system. As such, it is important to clarify this point.

[46] See McMichael (2000: 8-19) for a broader discussion of legacy of colonialism on development.
[47] A.G. Frank (1969: 46) provides a list of some of those who have demonstrated 'the crucial role played by the underdeveloped countries in financing the capitalization of now developed ones'.
[48] Also see Hoogvelt (2001) for a discussion of how British rule led to deindustrialisation in India.

In highlighting the impact of colonial rule on the creation of an unequal international system, I do not claim that international inequalities are determined solely by countries experience during the colonial era, but that colonial factors are likely to have an influence on structural inequalities in the contemporary global economy. Therefore, while colonial rule is a key factor impacting countries' positions in the international system, there are a number of other factors that also strongly affect international inequality, as I consider in more detail in Chapter 5. Put another way, the argument here is not that "colonialism rules", but rather that that "colonialism matters".

The example of the Democratic Republic of Congo, provided in the last chapter, and its incorporation into the world economy as a supplier of raw materials highlights the manner in which colonialism matters. As discussed the DRC continues to act as a supplier of raw materials to wealthier nations in the international system. However, other former colonies, such as India and Mexico, which were also incorporated into the world economy as suppliers of raw materials have managed to move away from this colonial role and into more central positions in the international system. This has been due to a number of different factors, but of particularly importance is the policy choices of these countries, which has enabled them to move to more central positions in the international system. I discuss some of these policy choices in Chapter 9. The focus on colonial rule in this study does not therefore imply some form of colonial determinism. As highlighted in the previous chapter, there has in recent times been far more attention given to the role of historical processes, particularly colonial rule, on contemporary development largely due to focus on

the role of institutions in promoting development (see Acemoglu and Robinson 2012).[49] By highlighting the role of colonial rule on international inequality, this study aims to contribute to this recent body of research on how historical processes influence contemporary development outcomes.

This recent renewed recent focus on the role of institutions in development, which has led to greater attention being given to the negative consequences of colonialism for development, is worth considering in more detail. As highlighted in the last chapter, previous dominant approaches to development have viewed colonialism as having a positive effect on development (see Rostow 1960), or as being irrelevant for understanding current development and poverty (Sachs 2005). In particular, the work of Acemoglu, Johnson, and Robinson (2001; 2002) analysing the effects of institutional quality on development, has highlighted the manner in which the colonial powers put in place institutions of varying quality in the colonies. At one extreme, the colonial powers set up 'extractive states', where the institutions put in place provided little protection for private property or for checks and balances against government expropriation; and at the other extreme, in places to which Europeans migrated and settled in large numbers, they set up 'Neo-Europes', in which institutions replicating those in Europe were introduced, which guaranteed private property rights and checks against government actions (Acemoglu et al. 2001: 1370).[50] The authors argue that the type of institutions that the European colonial powers set up in the colonies was largely influenced by geographical factors. Specifically, they argue that 'the colonization strategy was influenced by the feasibility of settlements…in places where the

[49] It is worth pointing out that advocates of the argument that institutions are the key determinants of development, who also highlight the role of historic processes in creating these institutions have argued against a deterministic interpretation of this argument (see Rodrik 2004).
[50] The term 'Neo-Europes' was coined by Alfred Crosby (1986).

disease environment was not favourable to European settlement, the cards were stacked against the creation of Neo-Europes, and the formation of the extractive state was more likely' (Acemoglu et al. 2001: 1370).

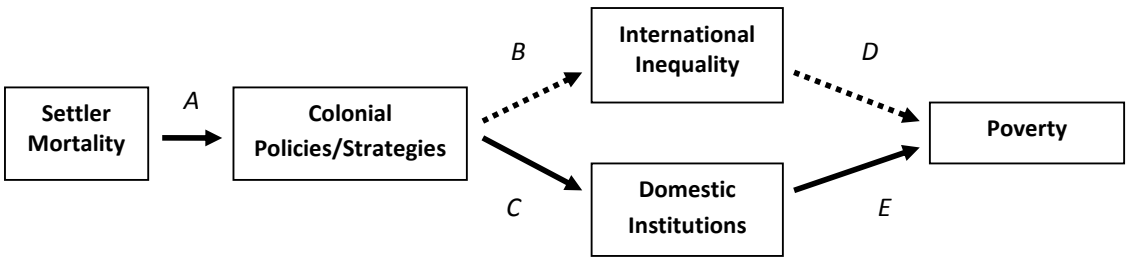
There are a number of similarities between this recent focus on the colonial origins of institutions and the underdevelopment theory literature. Both emphasise the legacy of colonial policy for understanding current differences in development and poverty. In particular, both focus on the negative consequences of the European colonial powers setting up extractive states. However, there are important differences, too. A fundamental difference concerns what aspect of the colonial policy of setting up extractive states has shaped current development. Acemoglu et al. (2002: 1264) point out that 'what is important for our story is not the "plunder" or the direct extraction of resources by the European powers, but the long-run consequences of the institutions that they set up to support the extraction'. While underdevelopment theorists, have also discussed the effect of colonial policy on domestic institutions in detail (see Furtado 1971; Frank 1969; Cardoso and Faletto 1979); the key focus tended to be on the unequal world economy that resulted from colonial policies.

Both of these factors – domestic institutions and international inequality – are important legacies of colonialism. However, insufficient attention has been given to the latter; the manner in which colonial policies have led to the creation of an unequal international system – and the direct effect of this structural international inequality on poverty, which I discuss below. As such, in this study I examine how colonial policies have impact international inequality. The difference between the widely-accepted argument made by

Acemoglu et al. (2001) and the argument I make in this study, drawing on the underdevelopment theory arguments, is shown in Figure 3.1, below.

In the diagram, the causal argument made by Acemoglu et al. (2001) is shown by the arrows A, C, and E. The authors argue that colonial policies were influenced by European settler mortality rates (arrow A). These colonial policies determined the quality of domestic institutions in the colonies, which has a significant effect on the quality of present-day institutions in these former colonies (arrow C). These institutions, in turn, they argue, shape development and poverty (arrow E).

Figure 3.1. Settler Mortality, Colonial Policy, and International Inequality



The argument made here is that *in addition* to the effect that these colonial policies had on domestic institutions, they also shaped the structure of the international system by influencing the economies that were set up in the colonies, and the manner in which these economies were integrated into the international system, as discussed above. This has been

highlighted in the previous chapter with regard to the Democratic Republic of Congo, and the manner in which the country continues to be a supplier of raw materials for industrialised economies. Hence, I put forward that in addition to colonial policies influencing the quality of domestic institutions; they also influenced international inequality, as indicated by arrow B in Figure 3.1. This international inequality has persisted over time, and continues to impact poverty (arrow D), as I discuss below. It is important to emphasise that the argument made here is not that that colonial policies did not impact institutions, but rather than in addition to influencing domestic institutions, they have also influenced structural inequality in the international system.[51]

In order to test this argument, I draw upon a key insight of Acemoglu et al. (2001), namely the manner in which colonial policies were influenced by feasibility of European settlement in the colonies (arrow A in Figure 3.1). If settler mortality rates have influenced colonial policies, and colonial policies have shaped current international inequality; we would expect settler mortality to impact countries' positions in the international system. It is particularly important to note that based on the argument made here, I expect settler mortality to have a direct effect on countries positions in the international system, beyond the effect that settler mortality has on domestic institutions. This argument, leads me to expect the following hypothesis to hold:

[51] It is worth noting that the effect of colonial institutions on current poverty occurs through the impact colonial institutions have on present-day institutions (Acemoglu et al. 2001). Similarly, the argument made here is that the unequal international system set up by the colonial powers impacts current poverty because there has been relative stability in the international system over time – and as such past international inequality affects present-day international inequality, and this current international inequality influences current poverty. This link between past institutions and international inequality and present institutions and international inequality is not indicated in Figure 3.1.

Hypothesis 2.2: *Former colonies where European settlers faced higher mortality rates are in more peripheral positions than former colonies with lower settler mortality rates.*

Specifically, I would expect settler mortality to affect countries' positions directly, and not only through the impact of settler mortality on the quality of domestic institutions. This hypothesis is important because it – along with hypothesis 2.1 – tests the historical roots of international inequality. Subsequently, this analysis allows me to unpack the historical and contemporary causes of poverty. The hypothesis is of particular importance because it provides a test of the causal mechanisms posited in this study.

3.2.3. International Inequality and Poverty

There are a number of ways in which structural international inequality has an effect on poverty, as I have discussed in the previous chapter. Focusing on international trade, I argue that the principal channel through which international inequality has produced and perpetuated poverty has been the manner in which some countries have been incorporated into the international system as suppliers of primary commodities and others as the producers of manufactured products. The price of primary commodities have fallen over time in relation to the price of manufactured goods, which has meant that the more peripheral countries continually have to export a greater volume of primary commodities in order to purchase the same value of manufactured gods (Prebisch 1950; see also Gore 2000;

McMichael 2001; and Kaplinsky 2005).[52] The declining terms of trade over time has meant that wealth has flowed from the periphery to the core (Baran 1968; Frank 1969).

It is important to note that this argument differs significantly from the liberal arguments based on the Ricardian notion of comparative advantage, which proposes that such peripheral countries would stand to gain by focusing on producing primary commodities, because they have a comparative advantage in such production (see Lin 2011). The main criticism of the view that countries should adhere to production in which they have a comparative advantage, is that it fails to consider the negative effects of structural international inequalities. Furthermore, as Emmanuel (1972) argues, the comparative advantage argument fails to consider the different causes of the declining terms of trade between primary commodities and manufactured goods. These include the income inelasticity of demand for primary goods, technological progress leading to the substitution of primary goods with synthetic products, and in particular the manner in which labour rights movement in developed countries had led to higher wages, which are reflected in the price of goods; in the developing world such labour movements did not occur to the same extent (Emmanuel 1972; Prebisch 1950).[53]

The declining terms of trade between primary commodities and manufactured goods has meant low and declining incomes for developing world producers. Furthermore, it has meant increased trade deficits in developing countries often pushing countries into debt (Locke and Ahmadi-Esfahani 1998; Hertz 2002). It is important to note that the declining

[52] The observation that the price of primary commodities tends, over time, to fall in relation to the price of manufactured goods is known as the 'Singer-Prebisch thesis' after Hans Singer and Raul Prebisch who arrived at this finding independently of one another.

[53] See McMichael (2001) and Hoogvelt (2001) for more detailed discussions of the reasons provided for the declining terms of trade for primary commodities in relation to manufactured goods. Chang (2010) has also highlighted the manner in which immigration controls reinforce this wage inequality.

terms of trade is not restricted to developing countries that are dependent on exporting primary goods. As discussed above, some developing countries have managed to industrialise. However, in recent times and linked to the process of globalisation, manufactured goods typically produced by developing countries have faced declining terms of trade relative to the higher-processed manufactured products of the technologically more advanced developed countries (Gore 2000; Kaplinsky 2000).

In addition to the issue of declining terms of trade, the recent literature on global value chains (GVC) analysis has emphasised how the process of globalisation and structural inequalities have led to falling incomes for producers in many countries (see Kaplinsky 2000, 2005; Gereffi et al. 2005; Gereffi and Fernandez-Stark 2011). The GVC analyses have highlighted the manner in which producers must be able to protect themselves from competition using barriers to entry if they are to generate sufficient rents (see Kaplinsky 2005). The process of globalisation has led to greater competition and lower barriers to entry in different markets, particularly in the production of manufactured goods where there has been a move towards trade in sub-components (as opposed to final products). This, in turn, has led to a downward pressure on prices. While some producers – particularly those in more developed economies focusing on higher value-added exports – have been able to guarantee economic rents through constructing barriers to entry in various ways, such as marketing and design (enabling product differentiation), through the use of advanced technology, and intellectual property right laws; other producers – particularly those in developing countries involved in more labour-intensive exports – are unable to construct barriers to entry and as such cannot generate sufficient economic rent. Subsequently, the manner in which these countries are inserted into markets with low

barriers to entry has fuelled a 'race to the bottom', in which they face a situation of 'immiserising growth' with increasing competition and declining incomes (de Boer *et al*. 2012: 38; Kaplinsky 2000).[54] Therefore, the combination of the process of globalisation and structural inequality leads to greater poverty as well as driving further structural inequality between countries. I discuss this in further detail below when considering the effects of globalisation.

It is also important to note that many of the poorest countries have been unable to move away from primary commodity dependence. In addition to the unequal trade relations discussed above, there are a number of further negative consequences of primary commodity dependence for these countries. Firstly, the price of primary commodities tends to be highly volatile, which means primary commodity-dependent countries are vulnerable to large shocks (Collier 2007). Even in cases where the primary commodities exported are of high value (such as oil or precious minerals) the effects on a country can be negative. Economies based on the export of natural resources are also associated with 'Dutch Disease', whereby other export sectors in the country are negatively affected by the stronger currency brought about by exporting valuable resources. This is a significant problem because the export sectors adversely impacted are manufacturing sectors, which are more labour-intensive (as opposed to land-intensive), and hence generate more evenly distributed development (Collier 2007). Furthermore, dependence on natural resources is associated with worse governance (Sachs and Warner 1995b; Auty 2001; Collier 2007), and higher incidence of civil conflict and political instability (Collier and Hoeffler 2002; 2005; Ross 2004).

[54] Kaplinsky (2000: 120) describes 'immiserising growth' as 'a situation where there is increasing economic activity (more output and more employment) but falling economic returns.'

The effect of this structural inequality of international trade between developed and developing nations on poverty has in recent times been reinforced by international trade laws. As Green (2008: 319) points out, there are four particular aspects of international trade laws that adversely impact developing countries – particularly the least developed countries (LDCs) – and as such, directly affect poverty. Firstly, international trade rules have enabled developed nations to continue to use tariff and non-tariff barriers to prevent developing countries from entering markets, in which they may have a comparative advantage (Wade 2003; Bardhan 2006; Pogge 2008; Green 2008). For example, in the manufacturing sector, the average tariff rate that rich countries place on imports from developing countries is four times higher than for imports from other rich countries (Hertel and Martin 2000). The effect of these tariffs for developing country exporters is to limit 'export growth and their rise up the value chain' (Wade 2003: 622).

Secondly, trade rules have allowed developed countries to use agricultural subsidies to lower world prices, thereby preventing developing country agricultural producers from being able to compete with agricultural producers from richer nations (Khor 2005; Charlton and Stiglitz 2005; Diao et al. 2003).[55] This has an especially negative impact on living standards in the developing world as the livelihoods of many people in these countries – particularly the poorest – are linked to agricultural production (see Khor 2005). In addition to facing declining (and often unstable) prices of agricultural exports due to having to compete with subsidised agricultural producers in the developed world, agricultural producers in developing countries also lose market share domestically because of the inflow of artificially cheap imports (or the 'dumping' of exports) into their own countries (Khor

[55] Diao et al (2003) find that protectionism and subsidies by developed nations in the agricultural sector costs developing countries around USD 24 billion annually in lost income. Furthermore, it is worth noting that OECD countries agricultural subsidies amount to around USD 268 billion a year (OECD 2007).

2005; Green 2008). This was highlighted in Chapter 1 with the case of Haiti and the destruction of its domestic rice industry as a result of the inflow of subsidised US rice imports.

Thirdly, international trade laws have forced many developing nations into rapid and comprehensive trade liberalisation. As Ha-Joon Chang (2003) has explained, this runs counter to the historic experience of the richer nations, the majority of which made tactical use of protectionist policies combined with investment in key sectors to develop their manufacturing sectors, before liberalising (see also Rodrik 2001; Wade 2003).[56] As such, current trade laws have placed limits on the 'policy space' of governments of developing countries, particularly the LDCs, to use trade policy to reduce poverty, which industrialised countries did not face (Rodrik 2001; Wade 2003; Chang 2003; Gallagher 2008). This has hindered the ability of the LDCs to move away from primary commodity dependency.[57] Furthermore, rapid trade liberalisation has forced the closure of some firms and producers leading to higher unemployment, since many poorer countries lack sufficient investment for jobs to be created (Stiglitz 2002; see also Charlton and Stiglitz 2005). The case of Zambia's rapid trade liberalisation as a result of structural adjustment policies is an example of this (see Green 2008). A final and often more immediate consequence of rapid trade liberalisation is the loss of government revenues because of the removal of tariffs (Gallagher 2008; George 2010). Governments of developing countries often rely heavily on import tariffs for revenue, and hence the sudden removal of tariffs can have a detrimental effect.[58]

[56] This use of industrial policies can, in particular, be seen with the rapid industrialisation and high growth rates of the East Asian economies in the 1960s onwards (see Amsden 2001; Chang 2003; Wade 2004).

[57] UNCTAD (2010: 16) points out that the greater trade openness of the LDCs has been 'associated with increased commodity dependence and export concentration'.

[58] In some LDCs, governments receive more than half their income from tariff revenues (George 2010; Winters et al. 2004), while the average across LDCs is around a third (Laird et al. 2006). Some, such as Falvey (1994) have argued that the loss of government revenue due to the removal of tariffs on imports can be countered by

As Gallagher (2008: 77) points out, 'slashing tariffs may not only restrict the ability of developing countries to foster new industries so they may integrate into the world economy, it could also prohibit them from obtaining finds to conduct industrial policy and to maintain social programs for the poor'.

The fourth area in which international trade laws have reinforced structural inequalities in the international system is through the *Trade Related Intellectual Property Rights* (TRIPS). Intellectual property laws have meant restricted access to technology for developing countries – or at the least, have made it very expensive for developing countries to access important technology (Wade 2003; Bardhan 2006; Pogge 2008; Gallagher 2008).[59] The inequality between developed and developing countries, in terms of intellectual property rights is demonstrated by the fact that 'developed countries hold 86 percent of all patents in the world and receive 97 percent of all patent royalties' (Gallagher 2008: 69). An important outcome of this has been that TRIPS has increased the flow of rents from developing countries to developed countries (Weisbrot and Baker 2004; Correa 2005; Gallagher 2008). Furthermore, it has increased the difficulty faced by developing countries in their industrial transformation, presenting obstacles to industrialisation that countries did not face prior to the agreement of TRIPS (Wade 2003: 626; Gallagher 2008). Even with increased industrialisation in the developing world, the technological superiority of richer nations – protected by international patents – means that higher levels of processing, associated with higher growth, is concentrated in the developed nations (Mahutga 2006). The combination of an increasingly globalised economy and the type of manufacturing done in the developing

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the increase in imports that result from the removal of tariffs. However, George (2010: 35) points out that while such cases do exist, they are rare, 'and have been accompanied by a rapidly rising trade deficit and serious exchange rate difficulties'.

[59] The World Bank estimates that the transfer of profits from developing countries to developed countries amounts to around $41 billion annually (see Gallagher 2008: 69-70).

world has, in many cases, been harmful due to downward pressure on the prices of these manufactured products, which has led to declining incomes for developing world producers and higher unemployment (Kaplinsky 2005). I discuss this in greater detail in the next section.

While each of these four areas has received significant attention, they tend to be analysed independently. However, the argument made in this study, is that they are all components of the broader structural inequality in the international system. Furthermore, these four areas of current trade, which reinforce structural inequality, are largely a result of international trade laws, as I have discussed above. It is, therefore, worth pointing out once more that a key reason for international rules working against development countries is because they emerge out of the unequal power relations between states (Hurrell and Woods 1999; Deaton 2004; Payne 2005; Pogge 2008).

In the case of international trade negotiations at the WTO, where each member state has one vote, developed nations have used their greater power to influence outcomes of negotiations in a number of ways. For example, at the Doha round of trade negotiations, Bello (2002) has reported that the most powerful nations used a number of tactics to influence outcomes, such as using direct threats against developing countries with which they had trade agreements; using aid as a means to buy off some poorer nations; and entering into talks with some developing nations while excluding others (see also Payne 2005). Furthermore, many developing countries do not have the capacities to influence trade negotiations (see Blackhurst et al. 2000). In cases where international trade laws fail to serve developed nations' interests; they have turned to bilateral and regional trade

agreements to reinforce unequal trade relations (Rodrik 2001; Shadlen 2005; 2008; Green 2008).

Based on the arguments made in this section, I expect countries' positions in the international system to influence the levels of poverty they experience. Therefore, this leads me to the following hypothesis:

> Hypothesis 3: *Countries in more peripheral positions are likely to experience higher poverty than those in more central positions.*

This hypothesis tests one of the central arguments of this study, that international inequality is a major cause of world poverty, as is indicated by arrow D in Figure 3.1. It is especially important to note, therefore, that the argument made here is that the direction of causality in the relationship between countries' positions in the international system and poverty runs primarily from the former to the latter. This is addressed by examining the colonial origins of current international inequality, which help to establish the direction of causality. The issue of reverse causality is also addressed statistically, as I discuss in Chapter 4.

In making the argument that countries' positions in the international system – and therefore, the structural inequalities that these countries face – influences the levels of poverty in countries, it is important to note that the argument here is not that structural international inequalities are the only determinant of the poverty levels a country faces. In this regard, the argument here differs significantly from that of much of the underdevelopment theory literature. The underdevelopment theory studies have tended to view a large fixed international order as exclusively determining levels of poverty and

wealth around the world (see Frank 1969; Dos Santos 1970). This has led to justified criticism of the approach on the ground that it is overly deterministic (see Blomstrom and Hettne 1984; Greig et al. 2007). In making the argument that international inequality influences poverty in this study, I do not argue that this is the sole determinant of poverty, but rather that it is one of a multitude of factors that influence poverty around the world. However, the influence of international inequality has tended to be overlooked in the mainstream development literature.

3.2.4. Globalisation

An important shortcoming of classical underdevelopment theory is that underdevelopment theorists often failed to account for, or even consider, changes in the structure of the international system (Cox 1981; Blomstrom and Hettne 1984). An important way in which this study moves beyond the underdevelopment approach is by considering the impact of changes in the structure of the international system, particularly with regard to the process of *globalisation*. Woods (2000: 1) has defined globalisation as the 'increase in trade, capital movements, investments and people across borders'. A key feature of the process of globalisation has been the greater 'interconnectedness' of national economies into a global system (Held and McGrew 1993; Rodrik 2007). In other words, the process of globalisation has led to the network of relations between countries in the international system becoming more dense. In considering the relationship between structural international inequality – based on countries' positions in the international system – and poverty, it is important to consider how the process of globalisation affects this relationship. This is because the central argument I have made for the necessity to consider the effect of international

inequalities on poverty is because countries are connected to one another in an international system; as the process of globalisation can be seen to have increased – both in volume and in scope – the connections between countries, it is necessary to consider how this process of increased interconnectedness has impacted the relationship between international inequality and poverty.

There has been much debate over the consequences of globalisation for international inequality (see see Wade 2007; Milanovic 2005; Sala-i-Martin 2002; Wolf 2004). Based, in part, on the rapid industrialisation of developing countries since the 1960s and 1970s, some have argued the process of globalisation has led to a decline in the importance of states and state-boundaries (e.g. Ohmae 1995). Held et al. (1999) have labelled this argument the 'hyperglobalist' view. From the hyperglobalist perspective, the process of globalisation has led to inequalities between states no longer being significant; the focus should be on *global* inequality instead of *international* inequality.[60] Others, however, have argued that the process of globalisation has reproduced structural international inequality (Galbraith 2002; Arrighi et al. 2003; Farmer 2005).

There has also been much debate on the effects of globalisation on poverty.[61] Some have argued that globalisation has had an unconditionally positive effect on reducing poverty (see World Bank 2002; Wolf 2004; Bhagwati 2004). From this perspective, which as Kaplinsky (2005) explains, can be described as the 'residual' view; poverty is the result of the insufficient participation of some countries in the globalised economy (see World Bank 2002: 6). Therefore, based on this view, in order to reduce poverty, it is argued that *more*

[60] See Milanovic (2005) for a discussion of the difference between global inequality and international inequality.
[61] See Wade (2004) for an overview of this debate.

globalisation is required. In other words, from this perspective, as the world becomes more globalised, poverty levels will inevitably fall, and hence, globalisation has an unequivocally positive effect on poverty (see Kaplinsky 2005).

In this study, I suggest that globalisation has had a more varied impact on poverty. In doing so, I draw on arguments made by scholars associated with 'global value chains analysis', which like underdevelopment theory, has emphasised the declining terms of trade faced by developing country producers (see Kaplinsky 2000; 2005; Gereffi et al. 2004). This perspective, the 'relational' view, argues that the process of globalisation has led to developing countries facing a 'win-lose' situation, whereby some countries have been able to benefit from greater incorporation into the globalised economy; while greater incorporation has led to detrimental consequences for other countries, particularly with regard to poverty (Kaplinsky 2005; Krugman and Venables 1995). This win-lose situation can be demonstrated by the examples of Haiti and Vietnam. As Rodrik (2001) highlights, the trade liberalisation associated with globalisation has had a highly negative impact on Haiti's economy; while increased integration into the globalised economy has enabled Vietnam to achieve high growth and poverty reduction since the mid-1980s. The key difference between the two countries has been that the Vietnamese government has managed to achieve greater integration into the world economy while providing some protection for domestic producers against global competition; whereas in Haiti, domestic production collapsed in the face of this higher competition (Rodrik 2001).

As Kaplinsky (2000; 2005) explains, in order for producers to maintain high and sustainable incomes, it is necessary for them to protect themselves from competition using barriers to

entry.[62] The process of globalisation has led to greater competition and lower barriers to entry, particularly in the production of manufactured goods where there has been a move towards trade in sub-components (as opposed to final products). This, in turn, has led to a downward pressure on prices. Developed countries have been able to guarantee economic rents through constructing barriers to entry in areas such as marketing and design, which enables product differentiation, and through the use of advanced technology (Kaplinsky 2005). Therefore, it is not surprising 'that the high income countries in general (and the US in particular) have placed so much emphasis on intellectual property rights in recent years' (Kaplinsky 2000: 127). The manner in which high-income countries have been able to guarantee profits, despite the increased competition resulting from globalisation, provides an explanation for the declining terms of trade that developing country manufactures face relative to developed country manufacturing products.

These two perspectives – the residual view and the relational view – of the effects of globalisation on poverty can, I propose, be framed in terms of international inequality. Based on the relational view, globalisation has increased competition leading to a downward pressure on prices. While producers from the more developed nations have been able to continue to generate profits (through constructing barriers to entry); many producers from developing countries have been faced with lower and declining incomes, which in turn have had a negative effect on poverty. As such, the process of globalisation has increased the effects of international inequality on poverty. Based on this argument, I would expect the following hypothesis to hold:

[62] Kaplinsky (2005: 53) draws on a 'theory of rent', in which scarcity is seen to provide the bases for high and sustainable incomes, and producers are only able to maintain high incomes if 'they are able to protect themselves from competition by constructing, and/or taking advantage of, barriers to entry'.

Hypothesis 4.1: *International inequalities increase domestic poverty and this effect is stronger with increasing levels of globalisation.*

This hypothesis, based on the 'relational' view of globalisation and poverty, builds on hypothesis 3 by considering how globalisation has affected the relationship between international inequality and poverty posited in hypothesis 3. From the alternate perspective, that poverty is residual to globalisation, we would expect the effects of international inequality on poverty to decrease – or for international inequality to have no effect on poverty. We would also see the effects of international inequality on poverty decrease as globalisation increases, based on the hyperglobalist arguments.

It is, however, important to add a caveat; if the above hypothesis holds, this only refutes the 'residual' argument, if we also establish that the countries occupying peripheral positions are incorporated into the globalised world economy, and that these countries are not simply those that have been 'left behind' from the process of globalisation (World Bank 2002: 4). As such, this leads to the following hypothesis:

Hypothesis 4.2: *Periphery countries' integration into the international system increases as globalisation increases.*

Therefore, based on the relational view of globalisation and poverty, I expect both of these hypotheses (4.1 and 4.2) to hold.

3.3. Inequality Within Countries

In this section, I consider the relationship between *domestic inequality* and *poverty*. The analysis of the effects of domestic inequality on poverty in this study focuses on the effects of economic inequality, and specifically income inequality. However, in focusing on the effects of income inequality on poverty, I posit that income inequality impacts poverty, largely, because of the relationship between economic and political inequalities; high levels of economic inequality enable some groups to influence policies in a country more than others. As a result, this leads to policies that favour the wealthier in society over the poorer.

The issue of domestic inequality – or inequality *within* countries – has in the past received significant attention in the development literature. Much of this focus has been on the relationship between income inequality and economic growth.[63] However, until relatively recently, domestic inequality has tended to be overlooked as a cause of poverty. One reason is that the influential work of Simon Kuznets (1955) linking inequality to stages of development has been used by some to argue that addressing inequality through redistribution would hinder economic growth (e.g. Kaldor 1957). Another reason is that analyses of the relationship between income inequality and per capita national income have found no real connection between the two (see Kanbur and Squire 2001). Perhaps the most important reason for domestic inequality being overlooked as a cause of poverty has been the rise of neoliberalism, which meant that inequality was forced off the mainstream development agenda (see Wade 2007).

In recent times, there has been renewed attention given to the effects of domestic inequality. Much of the focus has centred on the issue of domestic inequality and economic growth (see Banerjee and Duflo 2003). A number of scholars have argued that high

[63] See Fields (2001) for a review of this literature.

inequality restricts growth (Deininger and Squire 1998; Persson and Tabellini 1994; Alesina and Rodrik 1994). It is also argued that high levels of domestic inequality limit the effect of economic growth on poverty reduction (Ravallion 1997).[64] I argue here, however, that beyond economic growth, higher levels of domestic inequality impact poverty primarily because of the effects of domestic inequality on policy outcomes. Specifically, the argument made here is that higher domestic inequality leads to policies which benefit the wealthy, while adversely impacting the poorer in society.

3.3.1. Domestic Inequality and Poverty

In this study, I argue that domestic inequality affects the level of poverty in a country. The principal channel through which domestic inequality has produced and perpetuated poverty is through the effect economic inequalities shape political processes and policy outcomes in a country (see Galtung 1969; Wade 2007; Nel 2006; Rao 2006). Specifically, the argument made here is that high levels of inequality lead to policies that reproduce exploitative relations between richer and poorer members of society, and restrict economic opportunities to the richer echelons of society, while denying these opportunities to those on lower incomes; a process that forces some groups into poverty. As Payne and Phillips (2010: 162) describe, 'socioeconomic inequality in most highly unequal countries is tightly attached to socio-political inequalities of influence, participation, access to justice, and so on, all skewed heavily towards the economically privileged elites in ways which limit the opportunities and choices available to people in particular sections of society'. The result of

[64] The negative effects of inequality on health (Wilkinson 1996; Farmer 2001), and the manner in which inequality can waste talent and reduce social capital in a society have also been highlighted (Green 2008). I discuss the literature on the relationship between domestic inequality and health in greater detail in Chapter 6.

this relationship between economic inequality and the inequality of political influence is that in highly unequal societies, the allocation of resources is more skewed to the advantage of the wealthier in society, because they are framed by the wealthier (Wade 2007: 117; see also Galtung 1969: 171).

In arguing that economic inequality affects poverty through its effect on political inequalities and policy outcomes, I draw on arguments made recently in the context of *inequality traps* (Rao 2006; Bourguignon et al. 2007; see also World Bank 2006). Inequality traps are defined as 'persistent differences in power, wealth and status between socio-economic groups, that are sustained over time by economic, political and socio-cultural mechanisms and institutions'. These inequality traps are seen as an underlying cause of poverty (Rao 2006). The focus on the interaction of economic and political inequalities as a cause of poverty can also be seen in Mosse's (2010: 1157) *relational approach to poverty*, in which persistent poverty is considered to be 'the consequence of historically developed economic and political relations'.[65] Fundamental to both of these approaches is the manner in which high levels of economic inequality enable the rich to shape public policy to their advantage because richer members of society are able to exert power over poorer individuals. As Mosse (2010: 1158) explains, 'wealth in people also means power over people, so that people who are poor are part of others' social capital and engage in life on adverse terms' (see also Benabou 2000; Ferrera 2001; Goodin and Dryzek 1980; Wood 2003).

There are a number of channels through which income inequality can lead to policy outcomes which serve the interests of the wealthy over those with lower incomes. Economic inequality can impact the policy process as a result of vote capture through

[65] It is important to note that the concept of 'inequality traps' and the 'relational approach' to poverty, both draw on Tilly's (1998) notion of *durable inequalities* (see Rao 2006: 10; and Mosse 2010: 1162-1164).

clientelism, which enables the wealthier to gain political support from the less wealthy in return for economic resources (Breman 1974; Clapham 1982; Eade 1997; Robinson and Verdier 2002; Karl 2002; Wood 2003). Inequality also shapes policy outcomes because greater access to resources allows the rich to prevail in open disputes (Goodin and Dryzek 1980; Glaeser et al. 2003). Furthermore, this can mean that the rich are able to prevent issues from even being discussed (Bachrach and Baratz 1970; Solt 2008; Mosse 2010). Finally, these factors can mean that because poorer members of society who are unable to succeed in political contests, or even in having issues placed on the agenda, abandon their attempts to impact policy (Lukes 2005; Mosse 2010).

The inequalities of power and wealth mean that those with lower incomes lack sufficient representation to affect the social change necessary for poverty reduction. As such, while the rich benefit from greater access to power, the poor are disenfranchised, as 'they are simply too weak economically and politically to demand pro-poor policies' (Karl 2002: 18). This is confirmed by Solt (2008: 48) who finds that within democracies, 'economic inequality powerfully depresses political interest, discussion of politics, and participation in elections among all but the most affluent and this negative effect increases with declining relative income'. The result is that in countries with high levels of inequality, public policies and public spending favour the wealthy over the poor (see Birdsall and James 1993; Karl 2002). This is demonstrated by low levels of investment in education in countries whether there are high levels of inequality (Dréze and Sen 1995; Bouguignon et al. 2007; Birdsall and James 1993; Birdsall 1996; de Ferranti et al. 2003).[66] Similarly, high inequality is linked to underinvestment in health provision (Birdsall and James 1993; Kawachi and Kennedy 1999;

[66] For example, the high levels of inequality in India have been linked to an underinvestment in basic education in India (see Dréze and Sen 1995; Weiner 1991)

Dréze and Sen 1995; Wilkinson 1996). This is further demonstrated by the manner in which tax policies in countries with high levels of inequality tend to lead to wealthier people paying extremely low levels of tax (Karl 2002; de Ferranti et al. 2003).[67]

The argument that economic inequality impacts poverty through its effect on politics and policies, differs significantly from the more widespread approach taken by those that focus on the relationship between inequality and growth, which is based on the 'median-voter' hypothesis of income redistribution (see Alesina and Rodrik 1994; Persson and Tabellini 1994; Milanovic 2000).[68] The median-voter approach states that higher inequality leads to lower economic growth because *higher* income inequality leads to *higher* redistribution, and this leads to more distortionary taxation, which reduces economic growth (Alesina and Rodrik 1994).[69] This differs substantially from the approach taken here, where I suggest that higher inequality has led to policies benefitting wealthier members of society rather than being redistributive. This difference is largely because the median-voter model assumes that 'political power is relatively egalitarian', as Karl (2002: 4) points out, which ignores the effect of income inequality on political inequality. It is through the effect of income inequality on political inequality that domestic inequality impacts poverty.

A recent study by Palma (2011) provides some support for the approach taken here over the median-voter model. Palma looks in detail at the distribution of income within nations and finds that within-country income distribution across the world demonstrates a pattern of

[67] Karl (2002: 17) points out that the relationship between the high levels of economic inequality and political influence in Latin America is demonstrated 'by the fact that taxation of private assets has never been a major part of government revenue in Latin America.'

[68] The median-voter hypothesis is based on the argument that in more unequal societies if individuals are ordered according to their market incomes, the income of the median voter will be lower than the mean income level. As such, the median voter, whose vote is decisive, will gain from more redistribution, and as such will vote to introduce higher redistribution (Milanovic 2000).

[69] Milanovic (2000) finds support for the median-voter hypothesis of income redistribution in his empirical research. However, this is based on a study of 24 industrialised countries, which includes no developing countries.

'homogenous middles' and 'heterogeneous tails' (Palma 2011: 122). He finds that the share of national income going to the richest and the poorest varies across countries; however, the share of national income going to those in the middle is very similar across countries around the world.[70] As such, based on Palma's findings, we would expect the 'median-voter' in countries across the world to actually have a very similar relative income share, regardless of overall national inequality levels. Given that differences in income inequality levels are largely driven by the share of the richest and poorest in society, I therefore posit that this evidence is more consistent with the approach taken here regarding the relationship between income and political inequalities than the median-voter hypothesis.

As such, based on the manner in which high levels of inequality shape policy outcomes, I expect the following hypothesis to hold:

> Hypothesis 5: *Countries with higher domestic inequality levels experience higher poverty than those with lower domestic inequality.*

Specifically, based on the arguments made in this section, I make the claim that higher domestic inequality is associated with higher poverty irrespective of the overall levels of economic growth in a country.

In arguing that the principal way in which domestic inequality affects poverty is through the effect of domestic inequality on policy outcomes, we would expect there to be important differences in the effect of economic inequality on the policy process in different political systems. Specifically, domestic inequality is more likely to affect the policy process in a democratic system than in a non-democratic system. As I have discussed in the previous

[70] Palma (2011: 98-104) defines the rich as the richest expenditure decile in a country and the poor as the poorest four expenditure deciles. The middle is made up of deciles 5-9. Palma's finding of 'homogenous middles vs. heterogeneous tails' is based on World Bank data for 1985 and 2005.

chapter, this is because in democracies, the public is able to influence policy through various channels, which is typically not the case in non-democracies (Sen 1981; 1999). Both the rich and poor in society are more likely to be able to influence policy in a democracy than in a non-democracy, where governments are typically unaccountable to the public (irrespective of their income level). As such, the argument that economic inequalities influence policy is likely to be more applicable to a democracy than a non-democracy. In effect, the argument made here is that the outcome of the relationship between high levels of economic inequality and high levels of political inequality is to 'subvert democracy' (Karl 2002: 5). Therefore, I can further test the process through which domestic inequality impacts poverty by analysing whether we see domestic inequality have a greater effect on poverty in democracies than in non-democracies. This leads me to the following hypothesis:

> Hypothesis 6: *The effect of higher domestic inequality increasing poverty levels is stronger in democracies than in non-democracies.*

Again, based on the arguments made in this section, I would expect this to be the case controlling for levels of economic growth, and other country characteristics associated with poverty.

3.4. The Interaction of International and Domestic Inequality

In the sections above, I have laid out the theoretical arguments for how international inequality and domestic inequality affect poverty. However, between-country inequality and within-country inequality do not occur in isolation from one another. Therefore, it is necessary to consider how they are connected, and the effect of the relationship on

poverty. A significant weakness of the classical underdevelopment approach, which has been highlighted previously, is the tendency to view development outcomes as being shaped exlusively by international factors. This has led to much criticism of the failure of underdevelopment theory to adequately consider the role of domestic factors in influencing development outcomes (see Blomstrom and Hettne 1984; Warren 1973; Leys 1977). In considering the interaction of international and domestic inequality, this study moves beyond the classical underdevelopment view of development as an extrnally-driven process. It also enables the study to move beyond the current mainstream development perspective, which views poverty as resulting solely from domestic factors, ignoring the broader international context, as I have highlighted in Chapter 2. The focus here is on considering how the impact of domestic factors on poverty vary according to the different international contexts countries face, and vice-versa.

In this section, I provide a framework for analysing the relationship between international and domestic inequality, specifically focusing on how the interaction between the two impacts poverty. The discussion in the previous sections generates an expectation that the main effects of international inequality and domestic inequality on poverty to occur through different channels; the former primarily – though not exclusively – affects poverty through the availability of resources to a country, while the latter impacts poverty through the distribution of resources within a country. As such, I argue that domestic inequality is likely to have a greater impact on poverty in countries that occupy more central positions in the international system than in those that occupy more peripheral positions.

3.4.1. The Relationship between International and Domestic Inequality

The relationship between inequalities between countries and inequalities within countries has largely been under-analysed (Pieterse 2002: 1029). A widely held view on the relationship between the two, particularly from a structural perspective, is that international and domestic inequalities are endogenously related. According to the underdevelopment theory approaches, the high level of inequality within developing or peripheral countries is inherently tied to the unequal structure of the international system. As such, a key characteristic of the unequal international system is the manner in which countries in the core have low levels of inequality while those in the periphery have extremely high domestic inequality. Some, such as Frank (1969), argued this this was because international inequalities produced domestic inequality (see also Sunkel 1972).[71] However, a more widely held view by those associated with underdevelopment theory, was that the relationship between international and domestic inequalities is mutually reinforcing (Baran 1968; Furtado 1971; Cardoso and Faletto 1979). Central to this argument is the role of political and economic elites in poorer nations, termed the 'comprador class' (Baran 1968), in helping to perpetuate the unequal international system.[72]

The view of international and domestic inequality being endogenously related through local elites in the developing world is expressed by Cardoso and Faletto (1979: xvi), who argue that the relationship between external and international forces forms a 'complex whole whose structural links are not based on mere external forms of exploitation and coercion, but are rooted in coincidences of interests between local dominant classes and international

[71] Frank (1969: 6) argued that the world economy was based on a *metropolis-satellite* model, which corresponds to a core-periphery divide, and that 'a whole chain of constellations of metropoles and satellites relates all parts of the whole system from its metropolitan center in Europe or the United States to the farthest outpost in the Latin American countryside.'

[72] See also Frantz Fanon's (1965: 119-165) description of the 'national middle class', which he argues took power at the end of colonial rule in the underdeveloped countries, to become an 'intermediary' between former colonial powers and foreign firms, and the underdeveloped nations.

ones'. From the underdevelopment theory perspective, poverty is principally a consequence of this mutually reinforcing relationship between international and domestic inequalities. In other words, the effects of international inequality and domestic inequality on poverty occur largely through the same channel.

This view of the strong intrinsic link between international and domestic inequalities is demonstrated by other scholars. In highlighting the importance of international inequalities for development outcomes, Pogge (2001; 2008), also focuses on the manner in which the unequal global order enables elites to maintain their power in developing countries, and the manner in which these elites also reinforce the unequal global order. A similar view is also expressed by Pieterse (2006: 1029) who argues that 'global inequality, then, tends to sustain power structures and inequality within countries overtly as well as covertly and helps privileged strata to maintain their status.'

Yet, while the unequal international system may certainly increase the likelihood of there being high levels of domestic inequality; there are a number of reasons to question the deterministic view that international inequality and domestic inequality necessarily occur together. Firstly, such an approach tends to ignore the differences in levels of inequality between developing countries; it also ignores the significant differences in domestic inequality between wealthier countries (see World Bank 2006: 39).[73] Furthermore, this approach generally disregards the manner in which inequalities have been challenged in the developing world and social reforms have been implemented (see Green 2008; Barraclough 1999; Houtzager and Moore 2003). Consequently, it ignores the changes that have occurred

[73] For example, the Gini level for the Central African Republic exceeds 60 per cent, while for Niger it is a little over 30 per cent. Similarly, the Gini level for the United States is around 40 per cent, while for Finland it is around 25 per cent (World Bank 2006: 39).

in inequality levels in the developing world, for example the recent decline in income inequality in Latin America, a region known for high levels of inequality (de Ferranti et al. 2003; Birdsall et al. 2010). The more specific problem with a deterministic view of the relationship between international and domestic inequalities is that based on this view we would expect these domestic differences and changes, we would expect there to be changes in countries' positions in the international system. However, such an approach implies that governments of the developing world are able to influence international rules and agreements to the same extent of governments of the developed world, which contradicts the argument made earlier. For example, if a government that came to power in a poorer country were to implement social reforms, such as land redistribution; we would expect this to lead to lower levels of domestic inequality. However, given that many of the structural constraints this country faces at the international level may be due to the country being unable to compete with subsidised exports from richer nations; or being prevented from gaining access to developed country markets; or lacking access to technology; and so forth; there is no reason why the change in domestic inequality will have much impact on international inequality.

This is also the case, when we consider changes in international inequality. A country may be able to change its international position because it has been able to enter new markets or develop new technology; however, this may not lead to a reduction in the overall levels of domestic inequality. For example, India's recent emergence as an economic and political power at the international level has occurred while domestic inequality has increased (see

Dréze and Sen 2011). As such, there is little reason to assume that international inequality and domestic inequality go hand-in-hand, or that they affect poverty in the same way.[74]

3.4.2. Poverty and the Interaction of Inequalities

I posit – based on the discussion of international and domestic inequality – that international inequality and domestic inequality largely affect poverty through different channels. The principal way in which international inequality produces poverty is through its affect on the *availability* of resources to a country. As I have discussed above, the primary mechanism through which structural international inequality affects poverty is through the manner in which resources have flowed from countries in more peripheral positions to those in more central positions. The effect of domestic inequality occurs largely through its affect on the policy outcomes, which shape the *distribution* of resources within a country. It is important to point out that that international inequality does affect distribution of resources within a country, as I have argued above. Specifically, international inequalities impact the sector composition of production within a country, which in turn have distributional effects within a country. However, I argue that the primary channel through which international inequality impacts poverty is through shaping the availability of resources to a country. [75]

[74] The view that international and domestic inequality are endogenously related – particularly the view that international inequality shapes the domestic structure - has led to an important criticism of dependency and other underdevelopment theories regarding the over-deterministic manner in which external factors were viewed as shaping poorer countries' internal structures in these approaches, which has meant domestic politics and changes have often been neglected in underdevelopment approaches (see Cox 1981; Blomstrom and Hettne 1984).

[75] This distinction between resource availability and resource distribution at the country level is similar to the distinction made by Sen regarding famines, between food *availability* and *direct entitlement* to food (Sen 1981: 165). While Sen argues that it is the latter that explains famine rather than former, it should be noted that the

Based on this argument that international inequality and domestic inequality affect poverty levels largely through different channels, it is suggested that the impact of domestic inequality on poverty will vary depending on the country's positions in the international system. Specifically, I suggest that poverty in countries that are in the periphery is likely to be in large part due to the insufficient resources available to the country, as a result of the structural inequalities the country faces internationally. However, this is not the case for countries in the core. In these cases poverty is unlikely to be a result of there being insufficient resources available; instead, poverty is more likely to be the result of the unequal distribution of resources within a country.[76]

Returning to the examples of Zambia and Mexico provided in the introduction, the argument made here is that while domestic inequality has a significant effect on Mexico's poverty levels; it is not expected to have as large an impact on poverty in Zambia. This is because poverty is Zambia is in large part influenced by the country's peripheral position in the international system and the structural international inequality the country subsequently faces. This international inequality significantly limits the resources available to Zambia, which in turn affects the level of poverty experienced in the country. Hence, the distribution of resources within Zambia will have less of an effect in the country. Mexico, however, is not in a peripheral position in the international system and faces far fewer structural international inequalities than Zambia does because it is more central in the international system.[77] Therefore, Mexico does not have the same lack of resources that afflicts Zambia. Poverty in Mexico, therefore, is not significantly impacted by its position in

argument here concerns poverty rather than the more extreme situation of famine. See also Dréze and Sen (1995).

[76] Sumner (2012) discusses this issue in detail, in asking 'is global poverty becoming an issue of national inequality?' based on the majority of poor people living in middle-income countries.

[77] Mexico and Zambia's positions in the international system based on network measure used in this study are provided in Appendix A.

the international system, but instead is far more related to the distribution of resources within the country. As I have highlighted in Chapter 1, the high levels of inequality in Mexico mean that the political process favours the wealthier in the country, further skewing the allocation of resources in the country towards the richer and away from other groups. Hence, poverty is far more linked to domestic inequality in Mexico than to its position in the international system.

Redistribution within countries is therefore likely to have a greater effect on poverty in countries occupying more central positions, such as Mexico, as the necessary resources are available to these countries. However, in more periphery countries, such as Zambia, where countries' may have insufficient access to the required resources; domestic redistributive policies will have less of an effect on reducing poverty. This argument leads to the following hypothesis:

> Hypothesis 7: *The effect of domestic inequality on poverty is higher in countries in more central positions than in more peripheral countries.*

The hypothesis posits that the effect of domestic inequality on poverty is conditioned by the levels of international inequality a country faces.

3.5. Concluding Remarks

In this chapter I have laid out the theoretical argument on the relationship between inequalities between and within countries on poverty. I propose that the relationship between inequality and poverty occurs through two principal channels: exploitation and opportunity-hoarding. The relationship between inequality and poverty occurs at the

international level and the domestic level. In considering the relationship between structural inequalities at the international level and poverty, I focus specifically on trade relations between countries, drawing on underdevelopment theory arguments and more structural analyses of development focusing on the process of globalisation. At the domestic level, I argue that the key channel through which domestic inequality affects poverty is through the effect inequality has on the policy process. Higher levels of inequality lead to policy outcomes that favour wealthier members of society over the poorer; forcing some in society into poverty. I also consider the relationship between international and domestic inequality, and the effect this relationship has on poverty. I posit that domestic inequality has a larger impact on countries closer to the core of the international system than in the periphery. In discussing the theoretical argument of this study, I have developed a number of hypotheses, which are listed below in Table 3.1 with a brief discussion. The hypotheses are empirically examined in Chapters 5-8. In the next chapter, I discuss the research design, methodological approach, and data used to conduct this analysis.

Table 3.1. List of Hypotheses

Hypothesis	Description
1. Structure of the International System	
1.1. The international system is characterised by a hierarchical structure.	This is a descriptive baseline hypothesis, which needs to be supported for the remaining hypotheses to be viable. The hypothesis is tested by using *social network analysis* on international trade networks between 1980 and 2007 to place countries into four hierarchical positions (see Chapter 4 for discussion). International trade networks are used as a proxy for the international system. The analysis considers whether a clear pattern of different countries in the different positions is observed.
1.2. Countries' positions in the international system are stable over time.	This is a further baseline hypothesis. While countries'positions are not expected to be wholly fixed, we would expect the structure of the international system to be stable. The hypothesis is operationalised in the following ways: • Considering whether, in general, countries tend to be in the same positions over time • Ensuring that no country moves more than one position in consecutive years • Analysing the effects of countries'past position on their current position using regression analysis. If each of these three conditions is met, this would demonstrate that countries' positions in the international system are stable.
1.3. The structure of economic and political relations between countries is stable over time.	This study treats trade relations as a political and economic tie (see Chapter 3). It is based on this argument that trade networks are used as a proxy for the international system, and countries' positions in trade networks are used as a measure of international inequality.This hypothesis tests this argument by assessing whether additional economic and political relations between countries in the four positions demonstrate a stable structure. Specifically, I look at *aid flows*, *UN General Assembly voting patterns*, *troop deployments*, and *arms transfers*, in addition to *trade flows*. B*lock models* are used to examine average values of ties between and within the four positions.
2. Origins of the Unequal International System	
2.1. Former colonies are in more peripheral position in the international system than countries that are not former colonies.	This hypothesis tests the theoretical argument made in this dissertation, namely the current structural inequality in the international system is a legacy of the colonial era. Specifically, this is based on the argument that colonial rule led to the creation of a world economy characterised by an *international division of labour* (Prebisch 1950; Frank 1969; Wallerstein 2004).

2.2. Former colonies where European settlers faced higher mortality rates are in more peripheral positions than former colonies with lower settler mortality rates.	This hypothesis further tests the colonial legacy argument. Drawing on Acemoglu et al.'s (2001; 2002) insight that the colonial powers' decision on whether to set up extractive economies in different colonies was strongly influenced by European settler mortality rate. The effect of settler mortality rates on countries' positions in trade networks is examined using a regression, and controlling for the effect of domestic institutions.
3. International Inequality and Poverty	
3. Countries in more peripheral positions experience higher poverty than those in more central positions.	This is a central hypothesis in this thesis testing the relationship between international inequality (measured by countries' positions in trade networks) and poverty (measured using infant mortality rates) using a multivariate regression analysis.
4.1. International inequalities increase domestic poverty and this effect is stronger with increasing levels of globalisation.	This hypothesis examines how changes in the structure of the international system resulting from the process of globalisation impact the relationship between international inequality and poverty. This hypothesis is drawn from the recent debate on whether the relationship between globalisation and poverty is 'relational' or whether it is 'residual' (see Kaplinsky 2005; World Bank 2002). Globalisation, here, is measured using an additional social network analysis measure, *network density*, which measures the level of interconnectivity of the network. The hypothesis is tested using a regression analysis with the interaction term, *international inequality x globalisation*.
4.2. Periphery countries' integration into the international system increases as globalization increases.	In considering the relationship between globalisation, international inequality, and poverty, it is also necessary to examine how the process of globalisation, measured by the density of trade networks, affects how countries in different positions are incorporated into the network. Specifically, this hypothesis examines the incorporation of periphery countries into the network in comparison to countries in other positions.
4. Domestic Inequality and Poverty	
5. Countries with higher domestic inequality levels experience higher poverty than those with lower domestic inequality.	This is another central hypothesis in this thesis, which examines whether higher levels of domestic inequality are associated with higher poverty levels, controlling for other factors. Domestic inequality is measured by considering income inequality levels, using the recent SWIID dataset (Solt 2009). This hypothesis is tested using a regression analysis on poverty, measured by infant mortality rates.
6. The effect of higher domestic inequality increasing poverty levels is stronger in democracies than in non-democracies.	This hypothesis considers the process through which domestic inequality impacts poverty. It is argued that domestic inequality affects poverty primarily through the impact it has on enabling elites to have greater influence on shaping policies in a country (see Rao 2006; Wade 2007). Based on this argument, domestic inequality should have a greater impact on poverty in democracies, where the public has a greater influence on policy than in non-democracies (see Sen 1981; 1999). This is tested using a regression analysis with an interaction term, *domestic inequality x democracy*.
7. The effect of domestic inequality on poverty is higher in countries in more central positions than in more peripheral countries.	A key argument of this thesis is that the combination of external and internal factors produces and perpetuates poverty. As the principal channel through which international inequality impacts poverty is through the availability of resources to countries, while domestic inequality impacts poverty primarily through the distribution of resources within a country; it is proposed that domestic inequality has a greater impact on poverty in countries in more central positions than in those more peripheral. This is tested using a regression analysis with the interaction term, *international inequality x domestic inequality*.

4. Data and Methodology

In this chapter I discuss the data and methodology used to conduct the analysis in Chapters 5-8. The analysis uses a quantitative approach and focuses on investigating the effects of inequality between and within countries on poverty. As such, in this chapter I present the data, operationalisation of variables, and methodology used in this thesis. The chapter is structured as follows. I begin by presenting a brief overview of the methodological approach used in the analysis. I then discuss the structural measure of international inequality employed in this study, which is based on the use of social network analysis (SNA) to calculate countries positions in international trade networks. The third section considers the measurement of poverty, the principal dependent variable in this analysis. In the fourth section, I discuss the methodology used in this study, which is centred on the use of regression analysis to analyse the effects of international and domestic inequalities on poverty. In the fifth section I discuss how variables included in this study are operationalised, together with the data used. The sixth section provides the different regression models used.

4.1. Overview of Methodology

The principal objective of this study is to examine the effects of international inequality and domestic inequality on poverty. To do this I conduct a quantitative analysis of poverty

between 1980 and 2007 for countries in the international system.[78] As such, this study employs country-year units of observation. As I have highlighted in the previous chapter, there are some who question whether the state remains the principal actor in international politics (see Payne 2005: 32-36). The state is the unit of analysis in this study for two reasons. The first is for methodological reasons; we do not as yet have satisfactory data at the sub-national level to enable a quantitative analysis of poverty around the world. The second reason, which Payne (2005: 35) explains, is that while global shifts have altered our understanding of the state; the state is still the key political actor on the global stage, and hence, 'should remain at the centre of our enquiries.'[79] It is, however, important to note that focusing exclusively on countries in this analysis also has a number of important drawbacks. I discuss in detail the limitations of employing a state level analysis in Chapter 9.

The analysis uses a structural measure of international inequality, based on the application of social network analysis (SNA) to calculate countries' positions in international trade networks for each year of analysis. I discuss the use of SNA in section 4.2 below. In order to test the conditional hypotheses I have laid out in Chapter 3, I also include a number of interaction terms in the regression analysis. An ordinary least squares (OLS) estimator is used to conduct the main regression analysis of the effects of international and domestic inequality on poverty. I also use time and country fixed effects to test the robustness of the results, which are discussed below. In Chapter 5, I also use an *ordered logit* (ologit) model when considering the determinants of countries' network positions. This is discussed in greater detail in Chapter 5. In the remainder of this section, I provide a non-technical discussion of method used to conduct the regression analysis.

[78] I discuss the countries included in the analysis, and the years they are included, in section 4.5 below.
[79] The issue of moving beyond a state-centred analysis through the use of case studies and/or sub-national geo-coded data is discussed in Chapter 9 in the discussion of future research directions.

4.1.1. OLS

In this study an ordinary least squares estimator is used with pooled time-series cross-sectional (TSCS) data. I use OLS because this analysis is centred on a linear regression model and, given the associated assumptions hold, OLS provides the best, linear, unbiased (BLUE) estimators.[80] Furthermore, OLS yields estimators that are relatively straightforward to interpret. One of the key assumptions of the OLS estimator is that the average of the error term is zero, in other words, the error term should be homoskedastic. The violation of this assumption could mean that the error term is correlated with one of the independent variables and lead to the OLS estimator no longer being efficient. In addition to heteroskedasticity, one particular issue that may arise when using time series data is that there may be substantial autocorrelation in the error term. In fact, in the case of international inequality, I discussed in Chapter 3 that countries' positions over time are expected to be relatively stable. As such, this would imply that there is a likelihood of autocorrelation with international inequality, which would violate OLS assumptions. In order to address potential heteroskedasticity and autocorrelation, I use *heteroskedasticity and autocorrelation-consistent standard errors*. Specifically, I use *robust country-clustered standard errors* with OLS to conduct the regression analysis (see Rogers 1993).

A further issue to consider is whether there is significant correlation in the standard error term produced by each country across the panel. In other words, is there a relationship between countries' positions in the international system or between their levels of domestic inequality? In order to address potential contemporaneous correlation of error terms, I also

[80] 'Best' here refers to the estimator with the lowest standard error.

conduct the analysis using OLS with *panel-corrected standard errors* (PCSE) (Beck and Katz 1995). The OLS with PCSE regression analysis is used to confirm the robustness of my findings.

4.1.2. Fixed Effects

A potential problem that arises in the TSCS regression analyses conducted is that of omitted-variable bias, whereby the analysis fails to include a variable that has an effect on poverty. This is particularly important to consider in longitudinal analysis because OLS regression models tend to treat the effect of differences in the independent variable – say domestic inequality – on the dependent variable, poverty, as independent observations, regardless of whether these differences are between two countries in a particular year, or within the same country at difference points in time. The issue that arises is that there may be a country-specific factor that accounts for changes in both domestic inequality and poverty over time. In the analysis I use a number of country control variables, which I discuss below, to try and control for the effects of other country-specific factors. However, one potentially problem is that there are non-observable factors, or variables that cannot be appropriately measured, that have an effect on poverty, which I have not controlled for. These unobservable factors may impact changes in poverty and the key independent variables, international and domestic inequalities, over time.

The most widely used approach to address this issue is to conduct a regression analysis using a *fixed effects* estimator (see Clark and Linzer 2012).[81] The fixed effects model uses dummy variables to control for each of the countries included in the analysis. This effectively means that only changes that occur within countries over time are considered in the regression analysis. Furthermore, a two-way fixed effects model can be used to control for country-specific effects and time-specific fixed effects, where time fixed effects control for each year of the analysis. This effectively controls for the effects of changes in poverty that occurred in a specific year that are common to all countries.

In this study, I use both country and time fixed effects to confirm the robustness of the OLS findings. This enables me to check whether changes that occur over time in countries' positions in the international system, or in levels of domestic inequality have an effect on poverty. In this study I use countries' infant mortality rate as a measure of poverty, as I discuss in more detail below. Ross (2006) has argued that studies that use health indicators, such as infant mortality rate, to measure poverty, have tended to neglect the issue of exogenous global health trends, whereby from the 1970s onwards, there has been a significant global improvement in infant mortality rate as a result of the spread of low-cost interventions. As such, he argues that unless general trends are accounted for, the reduction in mortality rates due to the general health trends may incorrectly be attributed to other variables, such as democracy, which has also experience an upward trend during this time (Ross 2006: 863).

However, there are some major drawbacks of using a fixed effects estimator. Principal among these is that fixed effects models are highly inefficient (Beck and Katz 2001; Clark

[81] See Wooldridge (2006) and Stock and Watson (2010) for a more detailed discussion of the fixed effects estimator.

and Linzer 2012). In other words a lot of important information is discarded when using fixed effects. For example, if domestic inequality does have an impact on poverty, but differences in levels of domestic inequality between two countries are also linked to a factor that does not change in the 28 years considered in this analysis; the results of the fixed effects analysis will show that domestic inequality has no impact on poverty, even if differences in poverty between the countries are partly due to differences in domestic inequality levels. As such, a lot of important information is lost when using a fixed effects model. Specifically, when using fixed effects models we no longer consider cross-sectional variation in explaining differences in the dependent variable poverty; these cross-sectional differences however may be very important for understanding the causes of poverty.

A specific problem of the fixed effects model is that it tends to reduce or even eliminate the significance of variables that change very little or not at all over time and to produce unreliable results (Ross 2006; Clark and Linzer 2012). This is especially important for this analysis, as we would not expect there to be large differences in international inequality and domestic inequality over the 28 years considered here. As such, while fixed effects models are used to test the robustness of the findings by eliminating any potential omitted variable bias, it is important to consider the limitations of the fixed effect model, when conducting the analysis. Furthermore, I do not use clustered standard errors when conducting the fixed analysis because the size of the clusters used in this study highly unbalanced (countries in the analysis are included for different years), and this can lead to bias (Kézdi 2004).

4.1.3. Addressing Potential Endogeneity

A methodological issue that arises in this study is that of endogeneity. This is particularly relevant in examining the effects of international inequality on poverty. I use infant mortality rate (IMR) to measure poverty in this study (discussed below), and as such there is no direct issue of endogeneity, as we would not expect infant mortality rate to directly affect international inequality. However, the issue of endogeneity arises when considering the relationship between international inequality and national income. The discussion in the previous chapter on the relationship between international inequality and poverty suggests that that the principal channel through which international inequality impacts poverty is through its affect on national income. Yet, I would also expect the direction of this relationship to hold in the reverse direction, whereby national income levels affect international inequality. Hence, it is important to establish that direction of causality is from international inequality to poverty as has been argued in the previous chapter.

There are four tests that are conducted to provide support for the argument that international inequality leads to poverty. The first way of dealing with reverse-causality is to lag the independent variable in order to make use of the temporal sequence of cause and effect. However, there are significant limitations to this approach, as past international inequality is likely to be affected by past national income and vice-versa. As such, this provides a necessary but not sufficient condition for testing the direction of causality. The second test focuses on demonstrating that international inequality has an effect on the dependent variable, poverty (measured by infant mortality rate), even when controlling for country's national income. Based on the theory laid out in the previous chapter, while the principal channel through which international inequality affects poverty is through its effect on the availability of resources; a key aspect of structural inequality in the international

system is the different types of production occurring in different countries, which have distributional effects which impact poverty. For example, there are differences between those countries reliant on exporting primary commodities and those that produce manufactures, and differences between those countries that produce higher value-added and technologically advanced produces and those producing lower value-added manufactures. The different type of production taking place in a country has different consequences for development, as discussed in the previous section. Of particular importance is the effect on the distribution of resources within a country. Furthermore, the type of production that occurs is, as I have argued, a function of countries' positions in the world economy. As such, based on this argument, I would expect international inequality to have an impact on poverty, even when national income levels are controlled for.

The third way in which the direction of causality is established in this study – from international inequality to poverty – is to empirically analyse the broader theoretical argument being made with regard to the origins of current international inequality. As I have discussed in Chapter 3, the argument made in this study is that current international inequality has been strongly influenced by colonial rule, and by the policies of colonial powers. Therefore, by testing this argument, and establishing that countries' current positions in the international system are strongly affected by colonial variables (discussed below) – even when controlling for countries' national income levels; the analysis can provide support for the argument laid out in Chapter 3, and the direction of causality posited in this argument.

The final method I used to address potential endogeneity between countries' positions in the international system (international inequality) and national income levels is by

employing a simultaneous equations model. I use a two-stage least square (2SLS) and three-stage least square (3SLS) approach, in which international inequality and countries' per capita GDP levels are endogenised, and are explained as a function of exogenous instrumental variables. The instrumental variables used in the model are largely the same as the independent variables used in the OLS model for poverty and the ologit/OLS model for countries' positions, discussed below. A discussion of the method used, along with the results of the 2SLS and 3SLS regression models, is provided in Appendix C.

4.2. A Structural Measure of International Inequality

In this section, I discuss the measure of international inequality used in this study. Inequality between countries impacts poverty because countries are connected through various economic and political relations in an unequal world structure. Therefore, in order to analyse the impact of international inequality on poverty, it is necessary to use a structural measure of international inequality. I do this by using *social network analysis* (SNA) to measure countries' positions within international trade networks.

Such an approach ensures that this study moves beyond the 'methodological nationalism' that has dominated poverty analyses, whereby economic outcomes within countries are attributed to domestic national factors alone, while the external international context is largely ignored (Gore 2000).

4.2.1. Social Network Analysis

Social network analysis is methodological approach which examines ties between actors (or nodes), and the structures created by these ties. This focus on relations between different actors in addition to the attributes of actors is an important difference from standard quantitative approaches, which tend to focus solely on the attributes of the actors (Wasserman and Faust, 1994; Scott, 2000; Maoz, 2011). There are three principles, which lie at the core of SNA:

> Nodes and their behaviours are mutually dependent, not autonomous; ties between nodes can be channels for transmission of both material (for example, weapons, money, or disease) and non-material products (for example, information, beliefs, and norms); and persistent patterns of association among nodes create structures that can define, enable, or restrict the behaviour of nodes (Hafner-Burton et al. 2009: 562).[82]

Based on these principles, SNA enables the measurement and analysis of structures, providing a structural measure of transnational processes, such as inequality, dependence and power in the international system.

Despite offering important tools to measure structural elements of the international system, SNA has only systematically been used to address key areas of international relations since the late 1990s/early 2000s (Hafner-Burton et al. 2009; Maoz 2010). Prior to this, SNA has been used in international relations studies; however, in the majority of cases these studies have not has a major influence on mainstream international relations theory. The reluctance to use SNA in the study of international relations and international politics, despite it being widely applied to other fields, such as sociology and the behavioural sciences, may in part have been due to the lack of necessary data to conduct meaningful studies of international

[82] These principles are discussed in more detail by Wasserman and Faust (1994: 4).

relations using SNA (Maoz 2010). There has, however, in recent years been a concerted effort to address this, and to draw attention to the potential benefits social network analysis can bring to the study of the international system (see Hafner-Burton et al. 2009; Maoz 2010). This has seen an ever-increasing application of SNA to different areas of international relations.[83] Social network analysis has been applied to a number of areas of international relations studies. It has been used to study transaction flows in the international system (Brams 1966; 1969); transnational activist networks (Keck and Sikkink 1998); nuclear and ballistic missiles networks (Montgomery 2006); and terrorist networks (Krebs 2002; Kenney 2007). The analysis of countries' positions in international networks has also been used to analyse the impact of power in the international system on conflict between states (Hafner-Burton and Montgomery 2006; Maoz et al. 2006; Maoz 2010). The most relevant body of literature for this study, however, have been the attempts apply social network analysis to world systems analysis, which I discuss in more detail below.

4.2.2. International Trade Networks

As I have explained previously, international inequality affects development outcomes because countries are connected to one another by various economic and political ties in the international system. Hence, in examining the effects of international inequality on poverty, I use a structural measure of international inequality, which focuses on relations between countries, the structures created by these relations, and countries' position in these structures. I focus on examining countries' positions in international trade networks,

[83] As demonstrated by the publication of the first book which analyses international relations using SNA (see Maoz 2010).

which I suggest provide a good proxy for countries' positions in the international system. Therefore, in using countries' position in international trade networks to measure structural international inequality, I take a 'networks as structure' approach here (Hafner-Burton and Montgomery 2009).

I use trade networks to analyse structural inequality in the international system because trade is the fundamental relation between countries in the international system. As Payne (2005: 167) points out, trade constitutes a country's 'most obvious point of contact, and, by extension, competition with other countries.' Furthermore, as I have discussed in Chapter 3, the roots of current structural inequality in the international system lie, to a large extent, in the unequal trade relations between countries set up during the colonial era. Hence, I argue trade networks provide the most suitable means of analysing the structure of the international system.

It is important to note that in arguing trade relations are central to countries' interactions in the international system, I do not imply that trade ties are the only important relations between countries. Structural inequalities between countries are manifested and reproduced in other economic and political ties between countries. As discussed, in the previous chapter, however, inequalities in trade relations are linked to structural inequalities in other ties between countries. This is a point that has been made by underdevelopment theorists, who highlight the relationship between different economic and political relations (see Dos Santos 1970; Frank 1969).

Recent empirical studies also indicate that there is a relationship between different economic and political ties between countries. For example, studies have demonstrated the link between trade relations and political/security ties (Pollins1989a; 1989b; Gowa 1994;

Gowa and Mansfield 2004; Rosecrance 1986; 1999; Oneal and Russett 1999; Russet and Oneal 2001; Biglaiser and DeRouen 2009). A number of studies also highlight the link between trade flows and FDI flows (Jensen 2003; 2006; Biglaiser and DeRouen 2007; Büthe and Milner 2008), and trade and aid relations (Morrissey et al. 1992; McGillivray and Morrissey 1998). Therefore, while a limitation of using measure of international structural inequality based on trade relations is that it does not incorporate the full range of interactions between countries; it still provides a good indicator of structural inequality in the international system, based on the relationship between trade and other international relations. Furthermore, in Chapter 5, I test hypothesis 1.3, which considers the extent to which other economic and political ties between countries correlate over time, in terms of the flows between different the different positions in the international system that have been calculated using trade networks. This is done by creating *block models* of alternative economic and political networks, as I discuss in Section 4.5.8, below. Specifically, I consider aid flows, troop deployment, arms transfers, and similarity of UN General Assembly voting.

4.2.3. Network Position and Structural Inequality

I use social network analysis, specifically positional analysis within SNA, to calculate countries' positions in trade networks for each year between 1980 and 2007, which is used as a measure of international inequality. The aim of positional analysis in SNA is to 'partition actors into mutually exclusive classes of equivalent actors who have similar relations patterns' (Borgatti and Everett 1992: 3). As such, actors that occupy the same position are connected in very similar ways to equivalent others in the network (Scott 2000). A country's position in international trade networks reflects the manner in which it is incorporated into

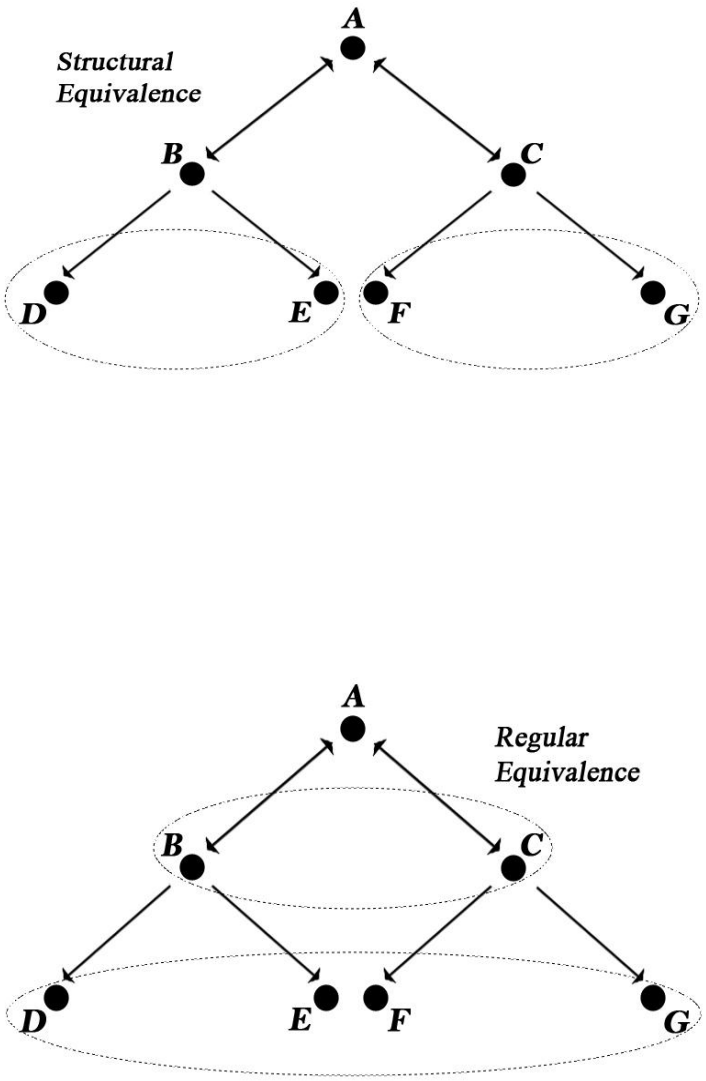
the world economy. Here, the concept of *regular equivalence* is used to measure countries' network positions (White and Reitz 1983; Borgatti and Everett 1989). Actors are considered regularly equivalent if they have identical ties to and from equivalent, but not necessarily the same, actors in the network (Wasserman and Faust 1994). This means that a country's position, based on the concept of regular equivalence, is determined both by its direct ties and its indirect ties. As such, a measure of inequality based on the concept of regular equivalence provides a *structural* measure of international inequality, as it reflects the manner in which changes in the structure of the international system can impact the levels of inequality a country faces internationally.

This differs significantly from a traditional approach of analysing dyadic relations between pairs of countries, which fails to consider both the complete set of relations that a country simultaneously has, and the effect that other countries in the system have on a particular country. For example, Country A and Country B may have similar trade ties with Country C; however, if Country A trades exclusively with Country C, while Country B has a number of trade partners; then the nature of Country A's trade relation with Country C is actually very different to the relationship between Country B and Country C. A network measure is able to reflect this difference, while a focus on dyadic relations does not. The approach taken here also differs from alternative network concepts of position, such as the widely used *structural equivalence*, where actors are only considered equivalent if they are connected to the exact same actors (Burt 1976). As a result, when using structural equivalence, it is only countries' direct relations which impact their network positions – and hence, this is not a structural measure of international inequality (Maoz 2011). Figure 4.1, below, demonstrates

the difference between regular equivalence and structural equivalence, using a simple network.

When using the network concept of structural equivalence (demonstrated in the top network), the nodes D and E are considered equivalent to one another, and the nodes F and G are also equivalent to one another. No other nodes are structurally equivalent. When

Figure 4.1. Structural Equivalence and Regular Equivalence



using the concept of regular equivalence (demonstrated by the bottom network), the nodes B and C are equivalent, and the nodes D, E, F, and G are all equivalent to one another. What is important to note is that if the nodes A and B no longer have a tie connecting them, this not only means that B and C are no longer equivalence; it also means that D and E are not long equivalent to F and G. As such, the node D position in the network, based on the

concept of regular equivalence, is affected by a change in an indirect tie. This is not the case when we use structural equivalence, where only D's direct ties can impact its position in the network.

There are two key stages in calculating countries' positions in international trade networks for each year of analysis. The first is to measure the level of regular equivalence between each pair of countries, which determines the level of similarity between each pair of countries in the network. The second stage is to cluster countries into positions based on their equivalence scores. I use the UCINET 6 software (Borgatti et al. 2002) to conduct both of these steps here.

In order to conduct the first stage of calculating countries' network positions, I use the *REGE* algorithm (White and Reitz 1985; see also Wasserman and Faust 1994). The algorithm employs an iterative procedure in which estimates of the level of regular equivalence between pairs of countries are adjusted based on the equivalences of the countries adjacent to and from members of the pair. The measure of regular equivalence produced by the REGE algorithm is specified, following White and Reitz (1985) and Wasserman and Faust (1994), as follows:

$$M_{ij}^{t+1} = \frac{\sum_{k=1}^{g} max_{m=1}^{g} \sum_{r=1}^{R} M_{km}^{t} ({}_{ijr}M_{kmr}^{t} + {}_{jir}M_{kmr}^{t})}{\sum_{k=1}^{g} max_{m}^{*} \sum_{r=1}^{R} ({}_{ijr}Max_{kmr} + {}_{jir}Max_{kmr})}$$

In this equation, M_{ij}^{t+1}represents the regular equivalence between countries *i* and *j* at iteration *t +1* based on the trade network.[84] The denominator is the maximum possible

[84] The trade relations between countries are denoted X_r, whereby in the above equation, ${}_{ijr}M_{kmr}$ represents how well *i*'s ties with a country *k*, correspond with *j*'s ties with some country *m* on X_r. This can be quantified by ${}_{ijr}M_{kmr} = min(x_{ikr,}, x_{jmr}) + min(x_{kir}, x_{mjr})$.

value that could be obtained if all of *i*'s ties to and from all other countries, denoted by *k*, perfectly matched all of *j*'s ties to and from all other countries, denoted *m* – and if *i*'s and *j*'s alters, *k* and *m*, were themselves regularly equivalent. The numerator selects the optimal matching of the ties between *j* and *m*, for *i*'s ties with *k*, which is weighted by the regular equivalence of *k* and *m* from the previous iteration. Therefore, the *REGE* algorithm finds the best possible matching of ties between *i* and all other actors, with ties between *j* and all other actors, weighted by the equivalence of the others actors, and divides this by the maximum possible value of the numerator (Mahutga 2006: 1870). As such, the regular equivalence valueM_{ij} is a function of how well *i*'s ties with other actors can be matched by *j*'s ties with all other actors, and vice versa. The equivalences of each pair of actors are revised after each iteration (see Wasserman and Faust 1994: 477-478). In general, three iterations are seen as sufficient (Faust 1988). The *REGE* algorithm is applied to measure the level of equivalence between each pair of countries in the network, with 0 indicating that two countries are maximally dissimilar and 1 indicating that two countries are perfectly regularly equivalent.

The second stage of the positional analysis is to use these regular equivalence scores to place countries into the different positions. I do this using the *hierarchical clustering* procedure (Johnson 1967). The hierarchical clustering procedure places the different countries into subsets based on the similarity of the regular equivalence in the network. This is done by setting a threshold value, α, whereby actors are considered regularly equivalent if their regular equivalence score is greater or equal to the threshold value. In other words for two countries *i* and *j*, with regular equivalence $M_{ij,}$ each subset should contain countries for which $M_{ij} \geq \alpha$ (Wasserman and Faust 1994). A number of alternative methods of conducting

this hierarchical clustering can be used. In this analysis, the *complete link* method of hierarchical clustering is used, as it 'gives more homogenous and stable clusters than alternative methods' (Wasserman and Faust 1994: 381). Complete link hierarchical clustering produces groups in which all of the pairs of countries are no less similar than the criterion value. The procedure uses sequentially less restrictive values of α to produce the clusters.

An important point to note with regard to the hierarchical clustering procedure is that it requires the number of groups – or positions – that the countries are to be placed in to be set a priori. In this analysis, countries have been partitioned into four mutually exclusive positions for both theoretical and methodological reasons. There has been much discussion in the world-systems literature on the number of hierarchical positions in the world system. Traditionally, theorists such as Wallerstein (1974, 1979, 1980) have posited a threefold division of the world into core, semi-periphery and periphery. However, there has been some debate over the number over whether the number of positions that the semi-periphery – the middle sector in the world system between core and periphery both economically and politically (Wallerstein, 1979: 69) – consists of (see Blanton 1999). Having calculated 3-, 4-, and 5-fold partitions of the network, I follow Van Rossem (1996) in using a fourfold partition. There are a number of reasons for this decision. First, a fourfold partition enables significant variation in the independent variable. Second, upon inspection the fourfold partition made the most substantive sense. That is to say, cross-checking the partition memberships against the World Bank's income categories (which also is also based on a fourfold partition) suggested that the fourfold organisation was the most plausible in

terms of the internal coherence of the state groupings and the differences between the four partitions.

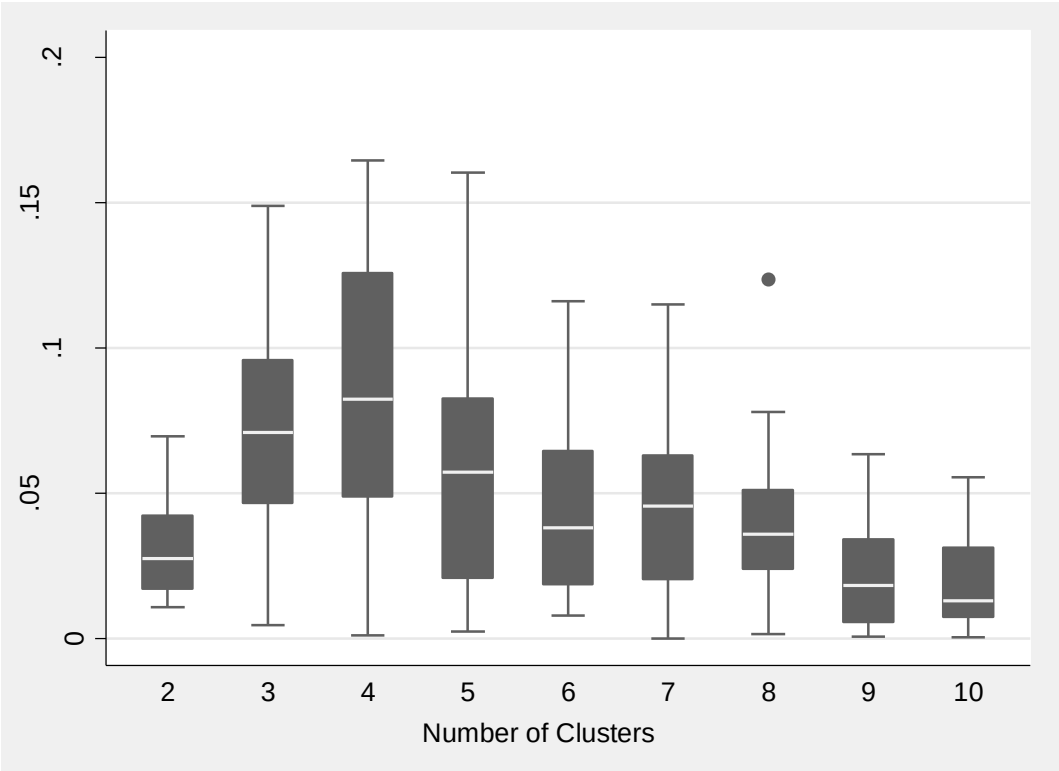


Figure 4.2. Additional Regular Equivalence by Cluster

I also allowed the output from the hierarchical clustering to guide this choice (see also Braithwaite et al. 2012). The measure of regular equivalence produced is between 0 and 1, where a score of 1 indicates strict regular equivalence. The hierarchical clustering output indicates the level at which a pair of actors are aggregated to produce a new cluster. Therefore, we can check to see how much additional regular equivalence is "gained" with each additional split. This is depicted in Figure 4.1, above, which shows the overall increase in the regular equivalence scores at which the cluster was made, and the magnitude of jump from N-1 clusters to N clusters. As the figure suggests, going from two to three clusters improves the fit, but not as much as the decision to move from three to four clusters. As

such, I adopt a fourfold partition of regular equivalence scores derived from the international trade network.

The hierarchy of these positions is determined by the average level of trade that takes place between countries within the same group; countries in position 1 (the core) have the intra-position average trade levels, while position 4 (the periphery) has the lowest intra-position average trade. This reflects the underdevelopment arguments I laid out in the previous chapter, in which the a key characteristic of the core is a high level of internal trade, while a significant characteristic of the periphery is the absence of trade between countries occupying this position (see Galtung 1971). I use the labels 'core', 'upper semi-periphery', 'lower semi-periphery', and 'periphery'; and 'Position 1', 'Position 2', 'Position 3', and 'Position 4', to refer to these positions interchangeably. What is important to note is that Position 1 corresponds to the core, Position 2 corresponds to the upper semi-periphery, Position 3 corresponds to the lower semi-periphery, and Position 4 refers to periphery. Therefore, when I refer to higher international inequality, I refer to a move from a more central position to a more peripheral position; based on the argument that countries in periphery 'face higher international inequality' than those in the core.

As I have demonstrated above, the use of network position to measure structural inequality in the international system is supported by arguments made by underdevelopment and structural theorists, as the pattern of trade relations between countries in different positions is seen to be shaped by – and to further reinforce – structural inequality. The suitability of SNA is further demonstrated by its use in calculating countries' positions in trade networks in a number of studies based on a world-systems approach (e.g. Snyder and Kick 1979; Nemeth and Smith 1985; Van Rossem 1996; Blanton 1999; Kick and Davis 2001;

Mahutga 2006). However, the approach taken here to measuring and analysing the effects of network position differs from the studies in a number of important ways. The majority of these studies use the concept of *structural equivalence* to measure network position. As a number of scholars have pointed out this is inappropriate for analysing structure and position in the international system (for reasons discussed above), and as such, this casts doubts over the validity of these studies (Borgatti and Everett 1992; Smith and White 1992; Van Rossem 1996). Another key difference is that these studies tend to be cross-sectional studies, based on single observation data, or they used averaged data for a time period consisting of a number of years. As a result, the impacts of changes in network position, and the consequences of these changes, are likely to be overlooked – particularly, as such changes may occur in a short period of time (Maoz 2011). Furthermore, as Maoz (2011) explains, the practice of using averaged data over extended time periods to conduct an OLS regression of the impact of position on economic growth, as a number of these studies do, distorts the pooled times-series cross-sectional data.

4.3. Measuring Poverty

There is much debate over how we should measure poverty (see Townsend 1993; Lister 2004). This is not particularly surprising given that there is still little agreement on the definition of poverty (see Ruggeri Laderchi et al. 2003). Much of the debate on the measurement of poverty is centred on which indicators should be used to measure poverty, particularly with regard to income and non-income indicators of poverty (Lister 2004; Nolan and Whelan 1996: Deaton 2006; Sumner 2007). A number of studies use national income as a measure of poverty (e.g. Collier and Hoeffler 2000; Dollar and Kraay 2004). However, such

an approach ignores the widespread criticism that GDP per capita does not capture distribution within countries, and hence does not provide an accurate measure of poverty (Sen 1976; 1979). Furthermore, alternative measures of income poverty such as the World Bank's $1.25/day poverty headcount are both sparse and unreliable (see Reddy and Pogge 2005). Furthermore, income-based measures have been criticised because they do not accurately capture other dimensions of poverty (Nolan and Whelan 1996; Deaton 2006; Sumner 2007). This is particularly important given that poverty is now widely understood in terms of the opportunities that individuals have (see Lister 2004; Sen 1999).

As this study uses a pooled time-series cross-section analysis, there are two particular properties of a measure of poverty that are important. The first is that the measure provides an accurate reflection of poverty levels, which is comparable across countries. The second is that there is a high level of data coverage. Based on these criteria, I use annual infant mortality rate (IMR) data as the principal measure of poverty in this analysis. The IMR data has a high level of coverage, in addition to data being available for each country over a long period of time (Abouharb and Kimball, 2007). Infant mortality rates have long been identified as measure of poverty because it is closely correlated with other measures of poverty (see de Sherbinin 2008; Deaton 1999; 2001; Wilkinson 1996; Ross 2006).[85] A number of studies analysing poverty have used, or advocated the use of, IMR as a measure of poverty (see Desai 1991; Dasgupta 1993; de Sherbinin 2008; Moser and Ichida 2001; Reddy and Pogge 2005; Ross 2006; Sen 1998; 1999). Furthermore, the use of IMR as a measure of poverty is supported by its inclusion as a Millennium Development Goal.

[85] In section 4.5 below I conduct a pairwise correlation between ten widely-used indicators of poverty to confirm the close correlation between IMR and alternative measures of poverty.

It is important to note that the use of IMR as the principal measure of poverty in this study also has limitations. The first is that while infant mortality rate is certainly an important dimension of poverty, it is still a single dimension of poverty. There has been much focus in recent times on the multi-dimensionality of poverty (see Lister 2004). This has led to efforts to capture this multi-dimensionality in measures of poverty, most notably with the *Multidimensional Poverty Index* (MPI) (see Alkire and Santos 2010). The main limitation with such multi-dimensional poverty measures, though, is the lack of data availability, which prevents the use of these measures in time-series cross-sectional analysis. As such, an important limitation of the use of IMR as the main measure of poverty in this study is that the analysis does not fully consider changes in other dimensions of poverty (e.g. income and education). A second limitation of the use of IMR as a measure of poverty is that it does not measure poverty through aggregating individuals that experience deprivation in the way that the poverty headcount measure aggregates the number of people living below a certain income threshold as a proportion of the population. The main reason for using IMR to measure poverty, however, is that this measure more accurately reflects differences between countries in terms of their levels of poverty, and it reflects changes in poverty within countries over time. Other measures, such as the income-based measures of poverty received much criticism for failing to accuarately do this (see Reddy and Pogge 2005).

4.4. Countries Included in Analysis

As the main analysis conducted in this study is based on country-year observations, it is necessary to discuss the countries included in this study. The decision over which countries

to include in the analysis is particularly important, given that a key component of the study is the use of social network analysis to work out countries' positions in international trade networks, where the decision over which states are included and excluded can impact the results of the network analysis. As I discuss in more detail below, I use international trade networks here as a proxy for the international system, and as such I attempt to model the international system closely in this study by including the maximum possible number of independent states for each year.

There is much debate over which states can be counted as independent in any given year (see Gleditsch and Ward 1999). In this study, I use the criterion put forward by Kristian Gleditsch and Michael Ward (1999) to determine which states are included in the analysis for each year. Gleditsch and Ward (1999: 398) put forward three conditions for a state to be considered an independent polity: first, the state must have 'relatively autonomous administration over some territory; second, the state should be 'considered a distinct entity by local actors or the state it is dependent on'; and third, the population of the state should be greater than 250,000. In order to ensure that the data used in this study is available and comparable for each country; I include these states in the analysis for the first full year that it is independent between 1980 and 2007. The full list of countries included in the analysis together with the years for which they are included is provided in Table 4.1, below.

Based on this criterion two countries that became independent after 1999 that should be included in the analysis are East Timor and Montenegro, which should be included in 2003 and 2007, respectively (see Gleditsch and Ward 2008). I do not include these countries in the analysis because of the insufficient data available for both of these countries.

4.5. Data and Operationalisation

In this section, I discuss the variables included in the analysis and the data used to measure these variables. The summary statistics and data sources for the main variables used in this study are presented in Table 4.3. The data matrix is constructed using the EUGene software package v3.204 (Bennett and Stam 2000) and is, in large part, populated using data drawn from the Quality of Government (QoG) database (Teorell et al. 2011).

This section begins by with a brief discussion of the data used to measure the dependent variable of this analysis, poverty. In the second section I consider the data used to measure the main independent variables, which are international inequality, domestic inequality, and globalisation. As I have explained above, I also use interaction terms in this analysis, which I discuss in the third section. I then describe the country control variables used in this analysis and the data used to measure these country controls. Finally, I discuss the additional networks that I analyse in Chapter 5, and the data sources for these networks.

Table 4.1. Countries included in Analysis

Afghanistan 1980-2007	Denmark 1980-2007	Latvia 1992-2007	Russia/USSR 1980-2007
Albania 1980-2007	Djibouti 1980-2007	Lebanon 1980-2007	Rwanda 1980-2007
Algeria 1980-2007	Dominican Republic 1980-2007	Lesotho 1980-2007	Saudi Arabia 1980-2007
Angola 1980-2007	East Germany 1980-1989	Libya 1980-2007	Senegal 1980-2007
Argentina 1980-2007	Ecuador 1980-2007	Liberia 1980-2007	Sierra Leone 1980-2007
Armenia 1992-2007	Egypt 1980-2007	Lithuania 1992-2007	Singapore 1980-2007
Australia 1980-2007	El Salvador 1980-2007	Luxembourg 1980-2007	Slovakia 1993-2007
Austria 1980-2007	Equatorial Guinea 1980-2007	Macedonia 1992-2007	Slovenia 1992-2007
Azerbaijan 1992-2007	Eritrea 1994-2007	Madagascar 1980-2007	Solomon Islands 1980-2007
Bahamas 1980-2007	Estonia 1992-2007	Malawi 1980-2007	Somalia 1980-2007
Bahrain 1980-2007	Ethiopia 1980-2007	Malaysia 1980-2007	South Africa 1980-2007
Bangladesh 1980-2007	Fiji 1980-2007	Maldives 1980-2007	South Korea 1980-2007
Barbados 1980-2007	Finland 1980-2007	Mali 1980-2007	South Yemen 1980-1989
Belarus 1992-2007	France 1980-2007	Malta 1980-2007	Spain 1980-2007
Belgium 1980-2007	Gabon 1980-2007	Mauritania 1980-2007	Sri Lanka 1980-2007
Belize 1982-2007	Gambia 1980-2007	Mauritius 1980-2007	Sudan 1980-2007
Benin 1980-2007	Georgia 1992-2007	Mexico 1980-2007	Suriname 1980-2007
Bhutan 1980-2007	Germany 1990-2007	Moldova 1992-2007	Swaziland 1980-2007
Bolivia 1980-2007	Ghana 1980-2007	Mongolia 1980-2007	Sweden 1980-2007
Bosnia & Herzegovina 1993-2007	Greece 1980-2007	Morocco 1980-2007	Switzerland 1980-2007
Botswana 1980-2007	Guatemala 1980-2007	Mozambique 1980-2007	Syria 1980-2007
Brazil 1980-2007	Guinea 1980-2007	Myanmar 1980-2007	Taiwan 1980-2007
Brunei 1984-2007	Guinea-Bissau 1980-2007	Namibia 1991-2007	Tajikistan 1992-2007
Bulgaria 1980-2007	Guyana 1980-2007	Nepal 1980-2007	Tanzania 1980-2007
Burundi 1980-2007	Haiti 1980-2007	Netherlands 1980-2007	Thailand 1980-2007
Cambodia 1980-2007	Honduras 1980-2007	New Zealand 1980-2007	Togo 1980-2007
Cameroon 1980-2007	Hungary 1980-2007	Nicaragua 1980-2007	Trinidad and Tobago 1980-2007
Canada 1980-2007	Iceland 1980-2007	Niger 1980-2007	Tunisia 1980-2007
Cape Verde 1980-2007	India 1980-2007	Nigeria 1980-2007	Turkey 1980-2007
Central African Republic 1980-2007	Indonesia 1980-2007	North Korea 1980-2007	Turkmenistan 1992-2007
Chad 1980-2007	Iran 1980-2007	North Yemen 1980-1989	UAE 1980-1007
Chile 1980-2007	Iraq 1980-2007	Norway 1980-2007	Uganda 1980-2007
China 1980-2007	Ireland 1980-2007	Oman 1980-2007	Ukraine 1992-2007
Colombia 1980-2007	Israel 1980-2007	Pakistan 1980-2007	United Kingdom 1980-2007
Comoros 1980-2007	Italy 1980-2007	Panama 1980-2007	Uruguay 1980-2007
Congo 1980-2007	Jamaica 1980-2007	Papua New Guinea 1980-2007	USA 1980-2007
Costa Rica 1980-2007	Japan 1980-2007	Paraguay 1980-2007	Uzbekistan 1992-2007
Croatia 1992-2007	Jordan 1980-2007	Peru 1980-2007	Venezuela 1980-2007
Cuba 1980-2007	Kazakhstan 1992-2007	Philippines 1980-2007	Yemen 1990-2007
Cyprus 1980-2007	Kenya 1980-2007	Poland 1980-2007	Yugoslavia/Serbia 1980-2007
Czechoslovakia 1980-1992	Kuwait 1980-2007	Portugal 1980-2007	Zambia 1980-1007
Czech Republic 1993-2007	Kyrgyzstan 1992-2007	Qatar 1980-2007	Zimbabwe 1980-2007
DR Congo 1980-2007	Laos 1980-2007	Romania 1980-2007	

4.5.1. Poverty

The dependent variable analysed in this study is *poverty*. As I have explained above, in this analysis I use countries' infant mortality rate (IMR) as a proxy measure for poverty. The IMR data used here is taken from Abouharb and Kimball's (2007) 'Infant Mortality Rate Dataset', which is compiled by the authors accessing more than fifty data sources.[86] The dataset provides annual data summarising the number of infants per 1000 live births that die before reaching the age of 1, up to 2007.[87] An important advantage of using IMR to measure poverty is that there is data available for every state in the international system for each of the year of the time period considered in this analysis. Furthermore, unlike income-based measures of poverty, the IMR data is not affected by issues related to international conversion, or distortions based on inflation and exchange rate fluctuations (Abouharb and Kimball 2007: 747; see also Deaton 2006). The natural logarithm of IMR is used as the dependent variable. I conduct additional robustness checks using GDP per capita, using data taken from the World Bank's *World Development Indicators* (WDI).

In order to confirm the appropriateness of IMR as a measure of poverty; I conduct pairwise correlations between ten different and widely-used indicators of poverty, which are presented in Table 4.2 below.[88] All of the correlations are statistically significant at the 99 percent confidence interval. The table also displays the total number of observations for each indicator, based on the time period (1980-2007) considered here, and the countries

[86] I am grateful to Rodwan Abouharb for providing me with an updated version of the dataset.
[87] This measure excludes stillbirths.
[88] The data for IMR is taken from Abouharb and Kimball (2007) as I discuss below. Data for GDP per capita, both income poverty measures, life expectancy at birth, proportion of population with access to improved water source, and malnourishment prevalence are all taken from the World Bank's *World Development Indicators*. The Human Development Index is taken from the United Nations Development Programme data. The maternal mortality rate data is taken from the University of Washington's Institute for Health Metrics and Evaluation (see Hogan et al. 2010). Finally, data on the proportion of a country that is literate is taken from Vanhanen (2003).

Table 4.2. Pairwise Correlation of Poverty Indicators

	Infant Mortality Rate	GDP per Capita	Income Poverty ($1.25/day)	Income Poverty ($2/day)	Life Expectancy	Maternal Mortality Rate	Literacy	Human Development Index	Improved Water Source	Malnourishment
Infant Mortality Rate	1.000									
GDP per Capita	-0.571	1.000								
Income Poverty ($1.25/day)	0.759	-0.659	1.000							
Income Poverty ($2/day)	0.771	-0.752	0.963	1.000						
Life Expectancy	-0.906	0.637	-0.805	-0.790	1.000					
Maternal Mortality Rate	0.827	-0.479	0.738	0.727	-0.850	1.000				
Literacy	-0.792	0.532	0.532	-0.665	0.796	-0.746	1.000			
Human Development Index	-0.919	0.711	-0.797	-0.822	0.945	-0.845	-	1.000		
Improved Water Source	-0.814	0.552	-0.712	-0.747	0.806	-0.744	-	0.831	1.000	
Malnourishment	0.609	-0.456	0.726	0.773	-0.603	0.583	-0.578	-0.750	-0.496	1.000
Observations	**4393**	**3976**	**539**	**539**	**4257**	**4387**	**309**	**922**	**583**	**544**
Country Coverage	**174**	**163**	**114**	**114**	**169**	**170**	**171**	**164**	**159**	**136**

Note: All correlations are statistically significant at the 1 percent confidence level.

included in the analysis (discussed below). For each indicator, the table also shows how many of the countries, which are included in the analysis, data is available for.

The results show that IMR is highly correlated with other indicators of poverty. The strong association between IMR and other health indicators is expected. So too is the strong negative correlation between IMR and the UNDP's Human Development Index (HDI), given that IMR is one of the three components that makes up the measure. However, it is worth noting that IMR is also strongly associated with non-health dimensions of poverty, such as income poverty (both at the $1.25/day level and $2/day level) and literacy. The table also shows that GDP per capita is not as strongly correlated with other poverty indicators as IMR is – even when we consider the income poverty headcount measures. Furthermore, the table demonstrates that IMR has the highest number of observations for the countries and time period considered in this analysis, and covers the widest range of countries of all the indicators. It is, however, worth noting that there are limitations of using the IMR data. While the Abouharb and Kimball (2007) dataset does not directly impute data, in cases where no other data source could be found, the authors use UN five-year averages as a final resort. This is the case for around 7 per cent of observations after 1950 in their dataset. Furthermore, while the level of IMR data coverage is high, missing data is still an issue. This is important because often it is the poorest countries for which annual IMR data is missing. A further limitation is that while the IMR dataset is drawn from official sources, there is likely to be a significant amount of variation in the quality of surveying and data collection across countries. In many of the world's poorest countries surveying and data collection capacities are severely limited affecting the quality of data produced. It is, however, worth

noting that the quality of infant and child mortality data tends to be of a higher quality than other health or income based measures (see Attaran 2005).

4.5.2. International Inequality

The first key independent variable is countries' *international inequality*. As discussed above, network position is used as a structural measure of international inequality and is calculated using network analysis on dyadic trade relations. Countries have a position score between 1 and 4, where 1 represents the most central or core position in the network and 4 represents the most peripheral. In order to calculate countries' position in trade networks it is necessary to have data on all bilateral trade relations between pairs of countries for each year. Between 1980 and 2000, Gleditsch's (2002) bilateral trade flow data is used. For 2001 to 2007, I have combined data collected from the IMF's 'Direction of Trade Statistics' and aggregated product-specific trade data from the UN COMTRADE database.[89] The Gleditsch trade data was highly correlated with the IMF and aggregated product-specific trade data.[90]

4.5.3. Domestic Inequality

The second key independent variable used in the analysis is *domestic inequality*. While there are a number of different measures of domestic inequality, I focus here on income inequality, using the Gini index as a measure of income inequality. The Gini index provides a measure of the distribution of income within a country ranging from 0, whereby each

[89] I am grateful to Jeffrey Kucik for providing me with the aggregated data. The product-specific data is available at: http://comtrade.un.org/ [accessed 8 August 2010].
[90] For the 2001-2007 bilateral trade data, missing data was filled using a univariate imputation process.

individual in a country receives an equal share of national income, to 100, where one individual receives all of a country's income with the rest of the population receiving nothing (Solt 2009). Specifically, I use countries' *net* or *post-tax* Gini levels to measure domestic inequality, whereby Gini levels are calculated for individuals' incomes after tax. The principal reason for using net Gini levels rather than gross Gini levels is because in this study, I argue that domestic inequality impacts poverty through the effect high levels of income inequality has on political inequalities and policy outcomes – income inequalities enable richer groups to have greater influence on shaping political processes and policy outcomes. Therefore, it is differences in levels of disposable income within a country rather than pre-tax wage inequalities that matter for the process through which domestic inequality impacts poverty. Net Gini levels take into account the extent to which governments have chosen to address wage inequalities through redistributive taxation, which limits the influence of wealthier groups in society based on the argument made here. As such, I use net Gini levels to measure domestic inequality.

While the Gini index is the most widely used measure of income inequality, there are limitations with its use, which are important to note. Palma's (2011) study of income distribution within countries across the world, which I discussed in the previous chapter, demonstrates the value of analysing changes throughout a country's income distribution rather than focusing on a single summary statistic, such as the Gini index, alone. Furthermore, the Gini index may shed little light on regional differences, or on horizontal inequalities, which may be particularly significant (Ostby 2008; Stewart 2002).[91] However, the principal benefit of the Gini index is that it provides a general measure of income inequality, which enables an analysis of the effects of inequality across nations and over

[91]Horizontal inequality refers to inequality between 'culturally formed' groups (Stewart 2002).

time, and significantly; there is data available to conduct such analysis, unlike with alternative measures of inequality.[92]

This is not to imply that the availability of data is not a significant problem when using the Gini index to measure income inequality. On the contrary, a principal problem for analysing the effects of income inequality has been the absence of reliable data (Galbraith 2002; Neckerman and Torche 2007; Solt 2009). Existing datasets are often limited to a small number of countries, as in the case of the *Luxembourg Inequality Study* (LIS), which is only available for 30 industrialised countries; or in the case of the Deininger and Squire (1996) inequality dataset, contain observations that are not comparable across countries or over time for a single country because of differences in the definitions of income used or differences in the units of measurement.[93] While the more recent *World Income Inequality Database* (WIID) (UNU-WIDER 2008) contains a much higher overall number of observations, the maximum number of *comparable* observations in the dataset is 508 across 71 countries (Solt 2009: 234).[94]

In this analysis, I make use of the recently compiled *Standardized World Income Inequality Database* (SWIID), which has been designed in order to overcome the limitations of existing income inequality data (Solt 2009). The dataset uses a custom missing-data algorithm in order to merge and correct a number of existing income inequality datasets to ensure that observations are comparable and reliable. As such, the SWIID data consists of 3,331 comparable observations across 153 countries from 1960 onwards (Solt 2009: 238).

[92] For example, the data Palma (2011) uses on the income share of each decile of the population taken from the World Bank's World Development Indicators is only available for the years 1985 and 2005 for eighty countries.

[93] A particular issue is that some observations are based on net income data and others are based on gross income data.

[94] For a more detailed discussion of these existing datasets and the problems associated with them, see Atkinson and Brandolini (2001), Galbraith (2002), and Solt (2009).

Therefore, the dataset maximises 'the comparability of income inequality data while maintaining the widest possible coverage across countries and over time' (Solt 2009: 234). However, it is important to point out that such an approach, which uses data imputation, relies on a number of assumptions about the nature of income inequality within a country. In particular, the assumption is that there is very little change in levels of income inequality from one year to the next. While in general this assumption may not present a problem, there may be occassions where income inequality changes sharply in a country – for example in the former communist East European countries in the 1990s (see Palma 2011) – yet this may not be reflected in the data. Furthermore, it is important to note that even with the use of the SWIID data to measure *domestic inequality*, there is still a considerable amount of missing data. The number of observations in the analysis conducted here using the core model specification (discussed below), falls from 3125 to 2321 when *domestic inequality* is included. This is particularly important for this study, because in general it tends to be the poorest countries that have the most missing observations. As such, this is a significant limitation of the analysis.

4.5.4. Globalisation

In Chapter 7, I consider the effects of *globalisation* on the relationship between international inequality and poverty. There has been much debate on how to measure globalisation (see see Arribas et al. 2009; Caselli 2008; Kearney 2004; Andersen and Herbertsson 2005; Martens and Zywietz 2006). Here, I use the SNA concept of *network density* to measure poverty. The calculation for the network density is specified as follows:

$$\frac{\sum X_r}{n}$$

Where X_r represents the value of the trade relation and n represents the maximum number of possible ties in the network (Scott 2006). Put simply, the density of the network is the total value of all ties in the network as a proportion of the total number of possible ties in the network. I use the trade data discussed above to calculate the level of *globalisation* for each year of analysis. It is important to note that the network density is significantly affected by changes in the number of nodes (countries) in the network. As such, I also calculate network density using only countries that are present in the network for each year of analysis.

As I discuss in more detail in Chapter 7, an important limitation of the measure of globalisation used in this study is that it is more specifically a measure of the globalisation of trade, and does not consider the process of globalisation more broadly. The measure does not consider other important economic dimensions of globalisation, such as financial flows and FDI, which is particularly significant as many have argued that the process of globalisation has been most prominent in the financial sphere (Held et al. 1999; Stiglitz 2002; Payne 2005). As such, while I use a network-based measure of globalisation in the analysis, it focuses on a single dimension of the process of globalisation.

4.5.5. Interaction Terms

The hypotheses derived from the theoretical argument made in Chapter 3 include a number of conditional hypotheses, which can be tested by including *interaction terms* into the

regression analysis (see Brambor et al. 2006; Kam and Franzese 2007). In order to test hypothesis 6, which states the effect of domestic inequality on poverty will be greater in

democracies than in non democracies, I include the interaction term, *domestic inequality x democracy*. The two constituent terms that make up the interaction are *domestic inequality* and *democracy* (which I discuss below). To test hypothesis 7, which states that the impact of domestic inequality on poverty will vary according to the level of international inequality a country faces, the interaction term *international inequality x domestic inequality* is included in the OLS model. Finally, hypothesis 4.1, which states that the effect of international inequality on poverty will increase as globalisation increases is tested with the inclusion of the interaction term, *international inequality x globalisation*. The two constituent terms

that make up the interaction are the international inequality (network position) and domestic inequality variables discussed above.

4.5.6. Country Control Variables

Based on the discussion of the literature on the causes of poverty provided in Chapter 2, I include a number of control variables in the regression analysis. There are two principal regression models I use in the analysis in Chapters 5 and 6, the *core model* and the *alternative model*, which focus on the effects of inequality between and within countries on

Table 4.3. Summary Statistics of Main Variables Used in Analysis

Variable	Mean	SD	Min	Max	Source
		Dependent Variable: Poverty			
ln(IMR)	3.462	1.063	0.833	5.652	Abouharb and Kimball (2007)
		Independent Variables			
International Inequality	2.626	0.941	1	4	Own calculation using Gleditsch (2002); IMF DOTS; UN COMTRADE
Domestic Inequality	38.387	10.111	18.616	71.327	Solt (2009)
Globalisation	115.658	41.675	67.616	230.009	Own calculation using Gleditsch (2002); IMF DOTS; UN COMTRADE
		Country Characteristics			
Latitude	25.032	16.691	0.200	64.150	Updated Gallup et al. (1999)
Landlocked	0.186	0.389	0	1	Updated Gallup et al. (1999)
Economic $Growth_{(t-1)}$	3.385	6.452	-51.031	106.280	World Bank *World Development Indicators*
Population $Growth_{(t-1)}$	1.772	1.497	-7.544	12.236	UN National Accounts Statistics
Democracy	0.474	0.499	0	1	Polity IV Project (Marshall and Jaggers 2002)
Ln(1950 GDP per Capita)	7.243	0.910	5.561	10.170	Maddison (2003)
Institutions (executive constraints)	4.199	2.365	0	7	Polity IV Project (Marshall and Jaggers 2002)
Institutions (expropriation risk)	7.041	1.807	1.636	10	Acemoglu et al. (2001)
Trade Openness	94.664	88.795	2.757	1406.288	UN National Accounts Statistics

poverty. I discuss the control variables used in each of these models in turn. As highlighted above, the summary statistics for these variables are provided in Table 4.3.

An important argument that has received much attention in recent times is that poverty is, in large part, the result of countries' geography. There are two key aspects of countries' geography that have, in particular, been emphasised. The first is the whether a country is located in the tropics or not (Sachs and Warner 1995b; 1997; Bloom and Sachs 1998; Sachs 2001; 2005; Landes 1998; Gallup et al. 1999; Hausman 2001; UN Millennium Project 2005; UNDP, 2003). The second geographical factor that is linked to higher poverty is whether a country is landlocked, as landlocked countries experience higher transportation costs, which in turn impacts poverty rates (Gallup et al. 1999; Sachs 2005; Collier 2007; UNDP 2003). As such, I include two geographical variables in the core model. The first is the *latitude* of a country, which simply records the absolute mean latitude of the angular distance of the state from the equator. This variable provides a measure of whether a country is located in the geographical tropics. The second geographical variable is *landlocked*, which is a dummy variable that is recorded '1' if a country does not have a coastline within its sovereign territory and '0' otherwise. I use data provided by Gallup et al. (1999), which I update to include data for all countries included in this study, using available country information.

As I have discussed in Chapter 2, there has been much debate on the effects of population growth on poverty. While it has a long been argued that an increase in the population increases poverty through such channels as higher resource scarcity and increased unemployment, the empirical evidence has produced mixed results. Using data from the 1980s onwards, Kelley and Schmidt (2001) find a negative relationship between population growth and economic growth, leading some to argue that in recent times populations growth does have a negative impact on economic growth and poverty reduction (see Birdsall et al. 2001). As such, I include the variable, *population growth*, which is lagged by a

year in order to assess the effects of population growth over the previous year on poverty. The lagged *population growth* variable, therefore, indicates the percentage change in a country's population over the previous year. This is calculated using population data taken from the United Nations National Accounts.

A key explanation for why some countries experience high levels of poverty relate to others focuses on the type of governance of a country. In particular, much attention has been given to relationship between democracy and poverty (see Varshney 2006). The absence of democracy is said to increase poverty because the government is not accountable to its population, and furthermore, there are few channels available for people to influence governments in order to ensure that policies serve the interests of those with lower incomes (Sen 1999). As such, a dummy variable for whether a country is a *democracy* is also included based on data from the widely-used Polity IV dataset (Marshall et al. 2011). Using the polity score the dummy variable is coded '1' if the state's score is greater than or equal to 6 and '0' otherwise.[95] It is important to note that the Polity measure of democracy consists of three key components: the first is the 'presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders'; the second is the 'existence of institutionalized constraints on the exercise of power by the executive'; and the third is the 'guarantee of civil liberties to all citizens in their daily lives and in acts of political participation' (Marshall et al. 2011: 14). The second element, the existence of institutional constrains on the power of the executive, is a central part of the *institutions hypothesis*, which I discussed in Chapter 2. This is the argument that the key determinant of poverty is the quality of institutions a country has (see Rodrik et al.

[95] The polity score yields a value between -10 (strongly autocratic) to +10 (strongly democratic).

2004). As such, the variable *democracy* also provides a control for the quality of a country's institutional quality.

Another important governance factor, which is linked to poverty, is the policy choices made by governments. As I described in Chapter 2, many have argued that poverty reflects the failure for governments to implement market policies that would lead to economic growth and thereby reduce poverty (e.g. Dollar and Kraay 2004). Principal among the neoliberal polices that has been linked to poverty and the reduction of poverty is trade liberalisation. However, as Rodríguez and Rodrik (2001) have explained most existing measures of trade openness do not actually measure 'policy-induced barriers to international trade', and instead focus on volumes of trade. As such, controlling for trade liberalisation policies, particularly for the time period and number of countries analysed here, is not possible.

To deal with this, I include the variable *economic growth*, in the core model, which I lag by one year in order to capture the effects of economic growth over the previous year on current poverty.[96] While I would expect international inequalities to be linked to economic growth, I argue that international inequality impacts poverty through channels other than annual growth. By lagging *economic growth* by a year I also ensure that any effect international inequality may have on poverty through its impact on growth occurring in the observation-year will still show up in the results. Furthermore, I would expect international inequality to impact poverty over a longer time period, which controlling for the previous year's growth would not account for. In terms of domestic inequality, the argument I have made is premised on domestic inequality having an effect on poverty through its impact on policy irrespective of the rate of economic growth. By including economic growth in the

[96] In the alternative regression model I include a *trade openness* variable, as I discuss below.

model, I am able to control for the effects of policies that are said to increase growth, in particular, neoliberal policies. It is important to point out that, as I discussed in the previous chapter, there is much debate on whether these policies actually do lead to higher economic growth rates (see Chang 2002; Stiglitz 1999; Rodrik 2006); however, this is not the direct focus of this study. The data for *economic growth* has been taken from the World Bank's *World Development Indicators* data, and measures the percentage change in a country's GDP.

Finally, I also include a control variable of the natural logarithm of countries' *1950 GDP per capita* in the core model. I include this variable to model the *poverty trap hypothesis*, which states that countries' current poverty levels are in large part caused by past poverty (see Sachs 2005). In particular, the proponents of the poverty trap argument focus on the manner in which low income in the past prevents savings and investment, leading to countries becoming trapped in a state of poverty. As such, using countries' 1950 GDP per capita enables us to control for past income levels and the effect of a poverty trap. I use Angus Maddison's (2003) data on countries' GDP per capita levels in 1950.

There are two additional variables that I include in the alternative regression model. The first is the variable *institutions*. As I have explained above, the Polity democracy measure also provides a control for institutional quality, as one of the components of the measure is constraints on the executive. In order to consider the effects of institutional quality more directly, I use the Polity IV measure of *executive constraints* as a measure of *institutions* in the alternative model. Furthermore, I also conduct the analysis using an alternative measure of *institutions* using data on the average level of risk of expropriation in a country between 1985 and 1995, which I take from Acemoglu et al (2001). While this does not cover the full

time period of the analysis, a central part of the institutions hypothesis is that there is very little change over time in the quality of a country's institutions. As such, I include this data as an alternative control for the quality of a country's institutions.

I also include a *trade openness* variable, which is taken from the United Nations National Accounts. Trade openness is calculated as the sum of exports and imports as a proportion of a country's GDP measured at constant 1990 prices. This measure of trade openness has widely been used to consider the effects of liberal trade policies (e.g. Dollar and Kraay 2001). However, Rodríguez and Rodrik (2001) have demonstrated that is not actually a measure of trade *policy*. Furthermore, as Birdsall and Hamoudi (2002) have demonstrated, the trade/GDP measure is biased against countries that are highly dependent on commodities. This is a result of the collapse in commodities prices in the 1980s, which meant that countries dependent on primary commodities had their capacity to import restricted in order to reduce their trade deficits.

4.5.7. Additional Variables

In Chapter 5, I conduct an ordered logit analysis on the network measure of international inequality for which there are a number of additional variables included. The broad objective of the regression analysis of the determinants of countries' positions is to examine which country characteristics are associated with countries' positions. However, a more specific aim is to test hypothesis 2, which states that former colonies are likely to be associated with more peripheral positions in the international system than countries that were not colonies. As such, the first variable I include is *colony*, which is a dummy variable

that is recorded as a "1" if the state was ever a formal colony of a western power and "0" otherwise. To code this variable, I draw upon the data of Hadenius and Teorell (2007), which identifies all states that were colonised since 1700. Importantly, like Bernard et al (2004) before them, Hadenius and Teorell (2005) exclude the British settler colonies (USA, Canada, Australia, Israel and New Zealand) from their coding of colonies.

In addition to the *colony* variable, I examine whether there are differences in the sector composition of countries in the different positions in the international system, as I would expect. To do this, I use data on the share of agricultural production in countries' economy and the share of industry in countries' economies. This data is taken from the World Bank's *World Development Indicators*. I also consider countries overall *population* size, which like the population growth variable discussed above is taken from the United Nations National Accounts statistics. The analysis also considers whether there is a regional trend in countries' network positions, by including the variable *region*. This variable indicates which of the following five regions countries belong to: Europe, the Middle East, Africa, Asia, and the Americas. The data is taken from Small and Singer (1982).

4.5.8. Additional Networks

While the measure of structural inequality I use in this study is based on countries' positions in trade networks, as I have argued in Chapter 3, I expect structural inequalities in trade to be linked to structural inequalities in other relations between countries. In order to examine whether this is indeed the case, in Chapter 5, I use the network analysis approach of *block modelling*. Block models are networks that are presented in reduced form by considering

relations between and within countries occupying the same positions (Scott 2000). I consider whether other types of economic and political networks reveal a stable structure when they are observed between and within the four network positions (rather than by individual countries). I specifically focus on four additional networks: aid or official development assistance (ODA) flows; the similarity of countries' voting in the United Nations General Assembly; arms transfers; and troop deployments. I discuss what each of these ties represents in more detail in Chapter 5. Here, I provide a brief description of the data used in the analysis.

The first additional network I consider is the *aid* (or ODA) flows between countries. The aid data is taken from the OECD International Development Statistics (IDS).[97] It is measured in millions of US dollars, which I have held constant at 1980 prices. It is important to note that there is no data for the amounts of aid provided by China. Furthermore, the OECD does not provide disaggregated aid data for Arab states. As such, aid provided by Arab states is also not included in the data used in this study.

The second additional network of relations I consider is *UN General Assembly voting*. The UN General Assembly voting tie represents the degree of the similarity of voting for each pair of country in the General Assembly for each year. I have calculated this measure by taking the total of the number of times that a pair of countries voted 'yes', 'no', or 'abstained' on a resolution for each year, as a proportion of the total number of resolutions in the year on which the pair of countries could vote. This measure has been calculated using Voeten and Merdzanovic's (2009) 'United Nations General Assembly Voting Data', which identifies how a country voted for each resolution in a given year. It is important to

[97] David Roodman (2005) has compiled the OECD aid statistics into a dataset, which I use here.

note that in creating the block models of UN General Assembly voting, there are a number of countries that are excluded for particular time periods (despite being included in the overall analysis) because they were not members of the UN General Assembly or had been temporarily suspended. Taiwan is not included for any of the years of analysis because it is not UN member state. South Korea and North Korea both joined the UN in 1991, while Switzerland joined the UN in 2002, and hence these countries are included after they became UN member states. South Africa was temporarily suspended from the UN General Assembly between 1974 and 1994 because of its apartheid policies. The break-up of Yugoslavia meant that the Federal Republic of Yugoslavia (Serbia and Montenegro) did not participate in the UN General Assembly between 1993 and 2000.[98]

The third additional network I consider is *arms transfers* between countries. The arms transfer data is taken from the Stockholm International Peace Research Institute's (SIPRI) arms transfer database.[99] While the value of arms transfers is based on millions of US dollars at 1990 prices, the value does not necessarily indicate the financial value paid by the importer; the measurement of arms transfers is the *trend-indicator value* (TIV). The TIV is calculated based on the known unit production cost of weapons, and is applied to measure the transfer of weapons. As such, the measure includes arms that were provided in the form of military aid. As SIPRI point out, due to the difficulty in obtaining information on arms transfers there is likely to be a significant amount of missing data. The final network I consider is *troop deployments*. This is based on the number of troops deployed by one

[98] For details regarding UN member states see: http://www.un.org/en/members/ [accessed 22 November 2009]
[99] For arms trade data see see http://www.sipri.org/databases/armstransfers [accessed 17 August 2009].

country to another country for each year of analysis. I use the International Institute for Strategic Studies' (IISS) *The Military Balance* to compile the data.[100]

4.6. Estimation Models

The main objective of this study is to analyse the impact of international and domestic inequalities on poverty. I have discussed the variables and measures used to this above. In this section, I present the two main regression models I use to conduct this analysis. It should be noted that there is no existing consensus in the development literature on what model to consider the determinants of poverty. I develop the regression models used here from the review of development literature conducted in Chapter 2, in which I discussed some of the most widely cited factors seen to influence poverty levels.

There are two general equations that the analysis attempts to estimate. I refer to the first as the *core model*, and the second as the *alternative model*. The equation for the core model can be specified as:

$$Poverty_{i,t} = \beta_0 + \beta_1 International\ Inequality_{i,t} + \beta_2 Domestic\ Inequality_{i,t} + \beta_3 Latitude_i + \beta_4 Landlocked_i + \beta_5 Economic\ Growth_{i,t-1} + \beta_6 Population\ Growth_{i,t-1} + \beta_7 Democracy_{i,t} + \beta_8 1950\ GDP\ per\ Capita_i + \varepsilon_{i,t}$$

In Chapter 6, I examine the effects of international and domestic inequality on poverty separately. I begin by focusing specifically on the effects of international inequality on

[100] *The Military Balance* is available at: http://www.iiss.org/publications/military-balance/ [accessed 25 May 2009]

poverty. As such, I exclude domestic inequality from the model.[101] In the second part of Chapter 6, I focus on the effects of domestic inequality on poverty, excluding international inequality from the model. Furthermore, I consider whether the effect of domestic inequality on poverty differs in democracies and non-democracies. As such, I also include there interaction term *domestic inequality x democracy* in the model, as discussed above. In the second part of Chapter 7, I consider the effects of globalisation on poverty; specifically focusing on how globalisation impacts the relationship between international inequality and poverty. As such, I include the variable globalisation in the model, together with the interaction term, *international inequality x globalisation*. Chapter 8 considers international and domestic inequality together, as indicated in the regression equation above. Furthermore, in order to test hypothesis 7, I also include the interaction term, *domestic inequality x international inequality*. As I have pointed out in Section 4.1., I also include time and country dummy variables in the regression models as robustness checks.

In addition to the core model above, I also use an *alternative model* in this analysis. The equation for the alternative model can be specified as:

$$Poverty_{i,t} = \beta_0 + \beta_1 International\ Inequality_{i,t} + \beta_2 Latitude_i + \beta_3 Institutions_i + \beta_4 TradeOpenness_{i,t} + \varepsilon_{i,t}$$

The alternative model specifically focuses on analysing the effects of international inequality on poverty when controlling for the three leading existing explanations of poverty, namely geography, institutions, and policies (see Easterly and Levine 2003; Rodrik et al. 2004). I

[101] This also allows a far greater number of observations in the analysis, due to the problem of missing data in for domestic inequality, as discussed above.

have already highlighted the measurement issues for the institutions variable and trade openness. These are likely to lead to an overstating of the effects of institutions and trade openness on poverty. The focus here is on demonstrating the effects of international inequality on poverty, and as such, while the inclusion of *institutions* and *trade openness* in the regression model may lead to the effects of international inequality on poverty being understated; the principal objective of the analysis is to consider whether international inequality has some effect on poverty when controlling for these existing explanations.

4.7. Concluding Remarks

This chapter has discussed the research design and methodological approach used to conduct the empirical analysis in this study. The methodological approach taken here consists of combining widely used econometric techniques with less commonly employed social network analysis techniques, in order to conduct a quantitative structural analysis of poverty. In this chapter, I have explained how both of these methodological approaches will be used and combined in conducting the analysis of this research project. The methodological contribution made by this study, with regard to the use of social network analysis to examine the structure of the international system is discussed in greater detail in Chapter 9.

I have also provided a discussion of the variables used to conduct the analysis, along with the data used to operationalise these variables. Furthermore, I have highlighted some of the limitations of the variables and the data used in the analysis. In the next four chapters, I conduct the empirical analysis of this study using the approaches discussed here. Chapter 5

examines the trends in international inequality, based on the network measure, which has been described in this chapter. Furthermore, I also consider the structure of different economic and political ties between countries in the four network positions, and examines the determinants of countries' positions using an ordered logit regression analysis. In Chapter 6, I analyse the relationship between international inequality and poverty using a regression analysis. The effect of globalisation on the relationship between international inequality and poverty is examined in Chapter 7, using the network measure of globalisation discussed above. In Chapter 8, the effects of domestic inequality on poverty are considered. Furthermore, the analysis also considers whether the relationship between domestic inequality and poverty varies according to the levels of international inequality a country faces.

5. The Trends and Determinants of Structural International Inequality

In this chapter I consider the trends and determinants of structural international inequality. As I have discussed previously, international inequality has an effect on poverty because countries are connected to one another through various economic, political and social ties. These ties between countries both shape and reflect these structural inequalities. As such, this study introduces a new measure of structural international inequality, which has been created using social network analysis to calculate countries' positions in annual international trade networks, as I have discussed in the previous chapter. A key strength of the measure of international inequality, therefore, is that it is a *structural* measure of inequality based on relations between countries and countries' positions in the international system.

In this chapter, I examine the trends in structural international inequality over the time period of analysis, 1980-2007. The analysis also considers whether there are trends in different economic and political relations between countries in the each of the four hierarchical positions, thereby shedding greater light on the structural nature of the network measure of international inequality. Furthermore, the chapter examines country-specific factors that are associated with international inequality, by conducting a regression analysis of the determinants of international inequality. In particular, I focus on the colonial roots of current structural inequality. In conducting this analysis, I demonstrate the validity

of the measure of structural international inequality used in this study based on the theory laid out in Chapter 3.

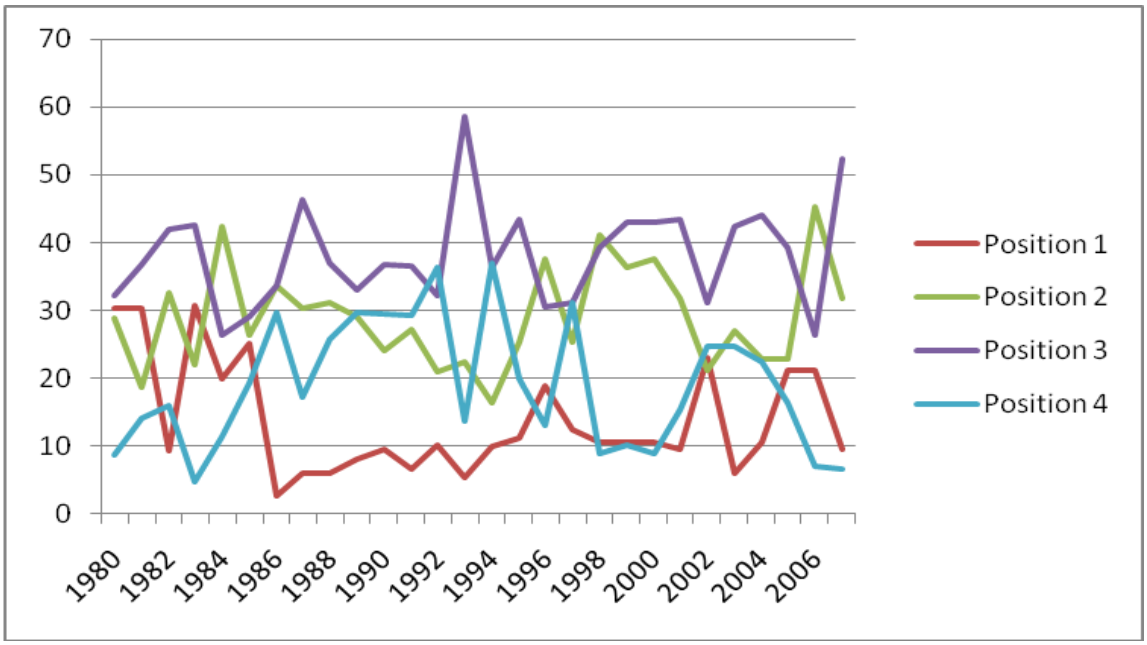
The chapter is structured as follows. I begin by examining the proportion of countries occupying each of the four positions in the international system over time. I also discuss which countries tend to be in the different positions. The second section examines the structure of a number of economic and political relations between countries in the different positions. Specifically, I consider trade relations between countries; aid flows; the similarity of voting in the UN General Assembly; troop deployments between nations; and arms transfers. In the third section, I consider the determinants of structural international inequality, focusing on country-specific characteristics. In this section, I conduct an *ordered logit* regression analysis of countries' positions in the international system. Furthermore, I assess the effects of colonial policy on current international inequality. Finally, the findings of this chapter are summarised in the fourth section.

5.1. Countries' Positions in the International System

In this study, the notion of structural international inequality is based on countries' positions in the unequal international system, which are calculated using international trade networks. In this section, I discuss the trends in countries' positions in the international system between 1980 and 2007. I begin by considering the proportion of countries occupying each of the four positions as this will shed some light on the degree of stability of hierarchical international system.

Figure 5.1 presents the proportion of countries occupying each of the four hierarchical positions for each year between 1980 and 2007. The graph suggests that there is significant fluctuation in the proportion of countries occupying each position over time. While it is difficult to identify any clear trends from the graph, we can see that, in general, the majority of countries occupy the middle two positions (Positions 2 and 3), while fewer countries occupy Position 1 and Position 4.

Figure 5.1. Proportion of Countries in Each Position by Year

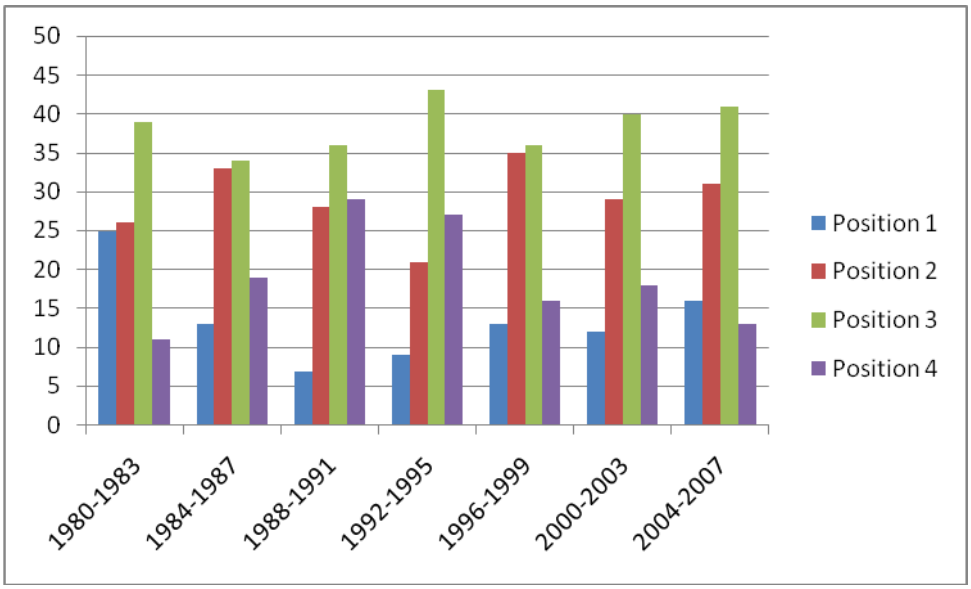


This is more clearly demonstrated in Figure 5.2, below, in which the proportion of countries occupying each position is averaged over four year periods.

Figure 5.2 shows that the majority of countries tend to occupy the two semi-peripheral positions in the international system (Position 2 and Position 3), with around 35-40 per cent of countries in Position 3, and around 20-30 per cent of countries in Position 2. In general, around 10-20 per cent of countries lie in the periphery of the international system (Position

4), with fewest countries occupying the core (around 5-15 per cent). In the first time period (1980-1983) and the last time period (2004-2007), a greater proportion of countries occupy the core than the periphery, but otherwise, the lowest proportion of countries lie in the core for each of the time periods.

Figure 5.2. Proportion of Countries in Each Position by Four-Year Period



In general, these trends are not particularly surprising, in that we would expect the majority of countries to lie in the middle sectors of the world economy. However, what Figure 5.1 does suggest is that rather than countries positions remaining fixed over time, there is a significant amount of fluctuation between positions. This runs counter to the underdevelopment theory arguments, which viewed international hierarchy as fixed over time. The full list of countries' positions for each year is presented in Appendix A. It is worth noting that in general, the change in countries positions that is depicted in Figure 5.1 is a result of countries moving back and forth between two positions, rather than countries moving across the full range of positions. In fact, no country moves more than one position

in any two years. Furthermore, few countries occupy more than two different positions in the 28 years time period. As such, while there is significant movement back and forth between positions, there is also a considerable amount of stability in the positions countries occupy over time. This can be considered further by observing the positions countries occupy in different years. Figures 4.3-4.8 present world maps which in which countries are coloured according to their positions in the international system. The lightest shade represents countries occupying the periphery (Position 4), while the darkest shade indicates countries that are in the core (Position 1).[102]

The maps demonstrate that some countries tend to remain in the same position constantly over the 28-year time period, while other countries tend to shift position more. For example, Niger and Burundi are in the periphery (Position 4) in each of the years shown, while Guyana tends to move between Position 3 and Position 4. It is important to note, therefore, that even for those countries that do move positions, they typically move between the same two positions, as is the case for Guyana. Therefore, while there is movement in countries' positions, there is also a significant level of stability in countries' positions in the international system. This is also demonstrated with countries in other positions. For example, Brazil is in the core in 1980 and in 1985, but in 1990, 1995, and 2000 it is in Position 2, before again being part of the core in 2005, while other countries such as Germany and the USA are in Position 1 for all of the years considered in this analysis. There are no examples of countries that continuously move positions, as demonstrated by there being no examples of a country occupying three different positions in three consecutive years.

[102] Countries that are shaded grey are those that are not included in the analysis for a particular year.

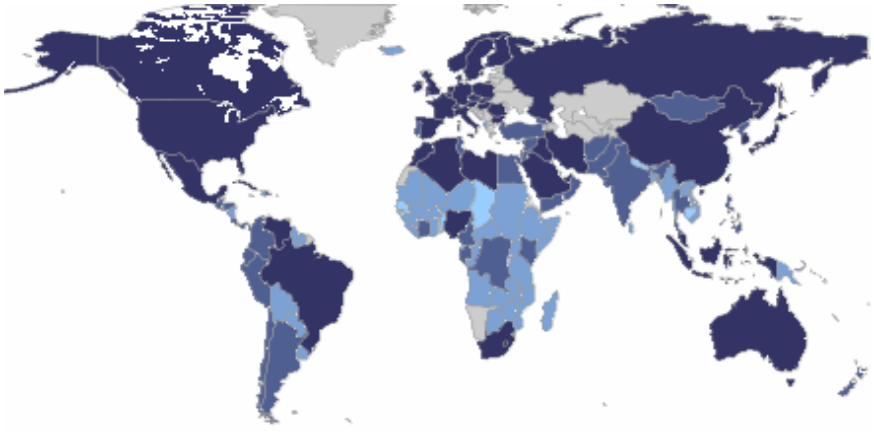


Figure 5.3. Countries' Positions, 1980

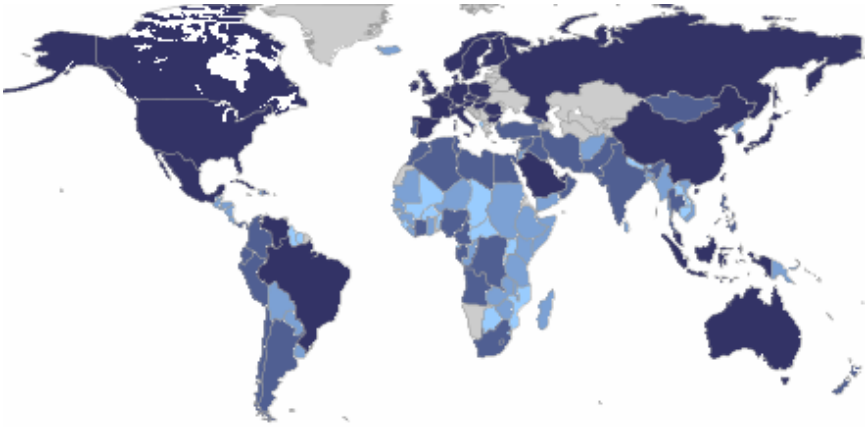


Figure 5.4. Countries' Positions, 1985

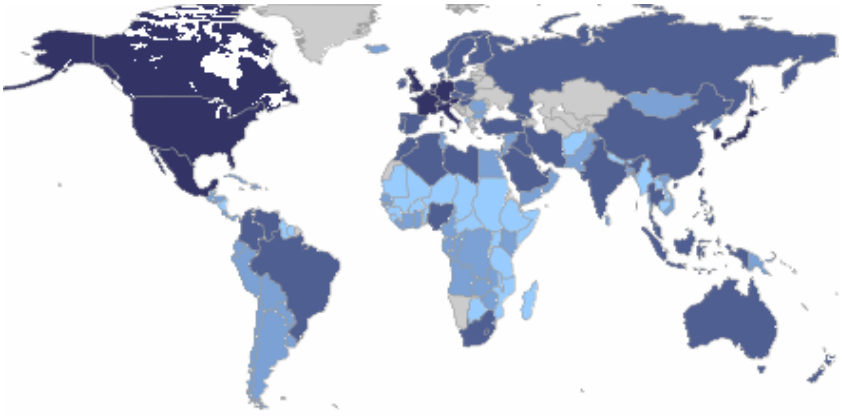


Figure 5.5. Countries' Positions, 1990

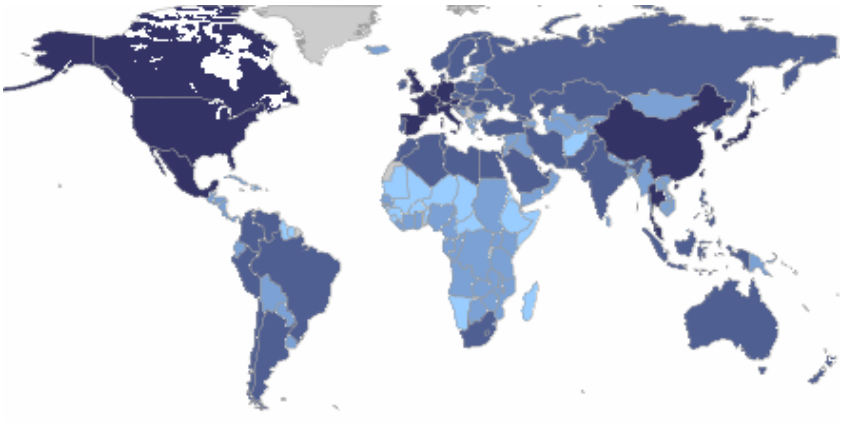


Figure 5.6. Countries' Positions, 1995

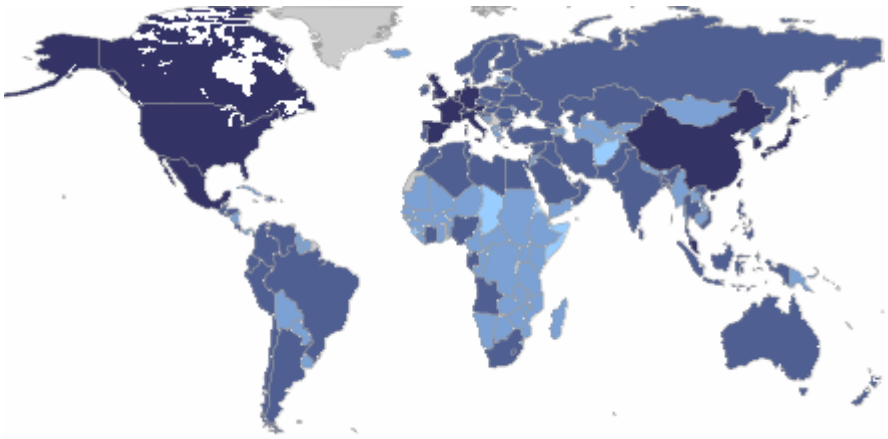


Figure 5.7. Countries' Positions, 2000

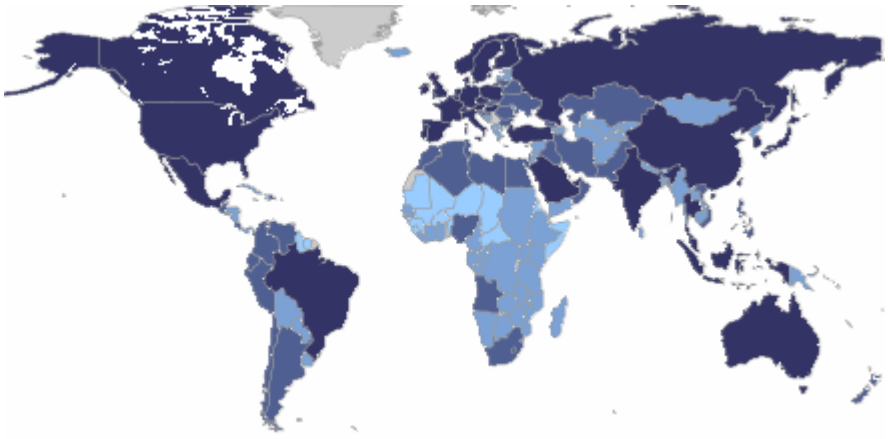


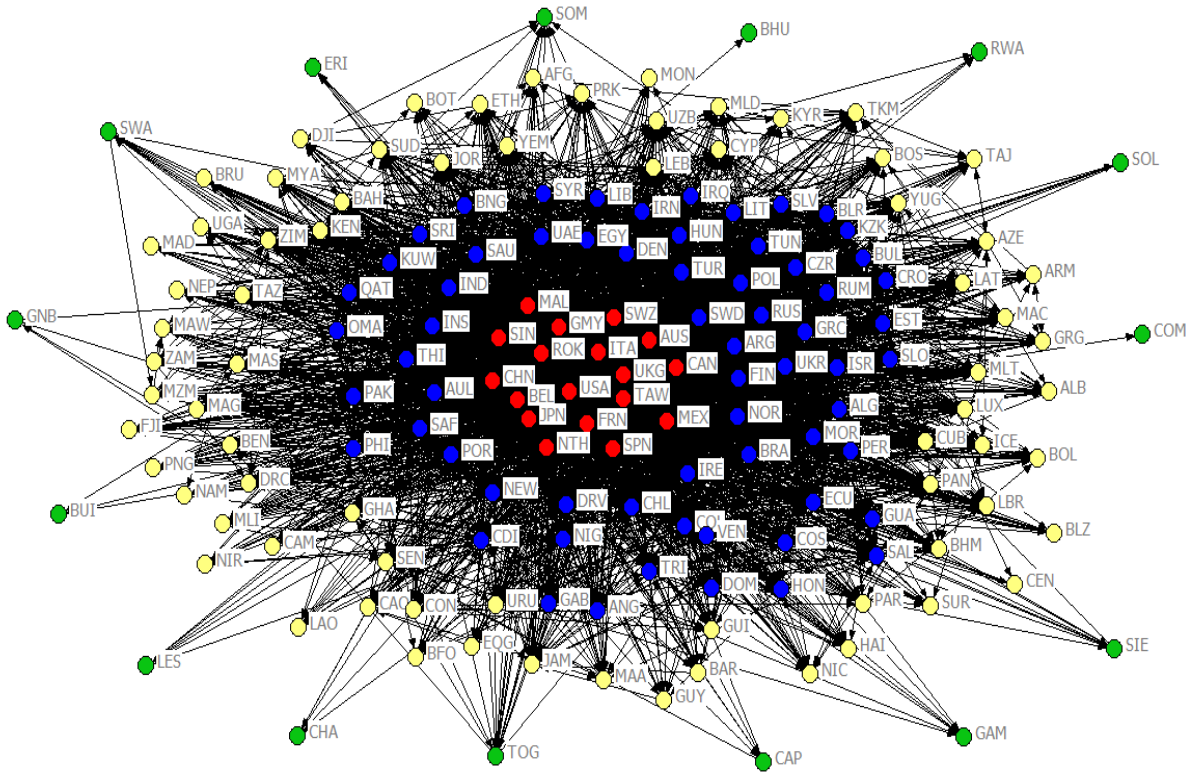
Figure 5.8. Countries' Positions, 2005

While, in general, we see countries occupy the same position or move between two positions, there are also important examples of countries that experience upward or downward trends in their positions over the period analysed. For example, Afghanistan and Mongolia are both in Position 2 at the start of the analysis, but experience downward trends over time. While others, such as Bolivia and Cambodia experience a slight upward trend, moving between Position 4 and Position 3 early in the analysis, but later moving between Position 3 and Position 2.

Overall, the maps demonstrate that countries in North America and Western Europe are in the core position of the international system, as we would expect to be the case. We also see some Asian countries, such as Japan and China consistently feature in Position 1. Countries in more peripheral positions tend to be located in sub-Saharan Africa, and parts of Latin America and Asia, which we would also expect. For example, Niger, Benin, Burkina Faso, and Mali feature consistently in Position 4.

In order to better demonstrate how these positions relate to the notion of structural inequality in the international system, Figure 4.9 depicts the international trade network for the year 2000 with countries' positions demonstrated by the different positions of the nodes in the network. The network diagram shows the international trade network in 2000. The diagram does not indicate the volume of trade between countries, only whether or not a country trades with another country. For the purposes of clarity, only trade ties over the value of US$ ten million (at 2000 prices) are included in the diagram. The core countries are coloured red, the upper semi-periphery blue, the lower semi-periphery yellow, and the periphery green. In the next section, I consider the structure of trade, and additional economic and political relations based on countries' positions, in greater detail.

Figure 5.9. Diagram of International Trade Network, 2000



Based on evidence discussed here, I find evidence to support hypothesis 1.1; the international system is characterised by a hierarchical structure. We see a clear pattern to the proportion of countries in each of the four positions, and furthermore, we see a significant amount of stability in the positions countries occupy, which both support hypothesis 1.1. There is also support for hypothesis 1.2, that countries positions in the international system are relatively stable over time. I consider both of these hypotheses in more detail in the rest of the chapter.

5.2. Relations Between and Within Positions

As I have discussed in detail in the previous chapter, the principal advantage of using countries' network positions to measure international inequality is that it provides us with a

structural measure of international inequality. In this section, I analyse the structural properties of the network position of international inequality in more detail by considering a number of different economic and political relations between countries. Specifically, I assess whether we see a clear and stable structure to these relations based on the organisation of countries into the four hierarchical positions, on which the measure of structural international inequality is based. I do this using the network concept of a *block model*, in which bilateral relations between countries in the international system are aggregated between and across the four positions hierarchical positions. Block models, which are widely used in the SNA literature, enable the complex structure of network to be presented in reduced forms across the blocks which contain the *regularly equivalent* countries (Scott 2000).

As the measure of position in the international system has been created using the SNA concept of *regular equivalence* to calculate countries' positions in international trade networks; I begin by considering the structure of trade relations across the different positions, and how well the results of the block modelling support the structural arguments regarding international trade discussed in the previous chapter. In addition to trade, I consider four types of relations between countries, which I analyse with regard to the structure of these relations across the four positions. These relations are *international aid* (or official development assistance), the level of similarity in countries' *voting patterns in the United Nations General Assembly*, *military troop deployments*, and *arms transfers*. I use block models to assess the structure of all of these relations based on the network measure of international inequality. In particular, I focus on how similar the block models for each of these relations are over time. The block models provide below are averaged over 7-year

time periods: 1980-1986, 1987-1993, 1994-2000, and 2001-2007. The block models presented here are averaged over the 7-year periods for the purposes of conserving space. The annual block models for each of the five types of relations are provided in Appendix B.

5.2.1. Trade Relations

I begin by analysing the structure of the principal relation between countries that I consider in this study – international trade – with which I have calculated countries' positions in the international system, and therefore, the level of structural inequality each country faces. As I have discussed in Chapter 3, we would to see a number of clear patterns in the relations between countries in different positions of the international system, based on the structural argument made in this study. We would expect that most of the trade of countries in the periphery (Position 4) to be with countries that lie in the core (Position 1). We would also expect there to be little trade occurring between countries in the periphery, and as such we should observe low levels of intra-position trade for the periphery. On the contrary, with the core we would expect to see a high level of intra-position trade based on the much greater export diversity of these countries (see Galtung 1971; Wallerstein 2004). For the countries in the two semi-periphery positions, Position 2 and Position 3, we would expect a high level of trade with countries in Position 1, and we would expect some trade with countries in Position 4, although much lower levels than the amount of trade between the core and the periphery (see Wallerstein 2004).

Table 5.1, below, presents the block model for trade relations. The block model presents the average level of trade flows between and within each of the four positions in US$ millions,

constant at 1980 prices. The table consists of four block models made up of average trade relations, which have been averaged over the four 7-year periods. The trade block models for each individual year are provided in Appendix B.

Table 5.1. Averaged Trade Block Model

1980-1986

Exporting Group \ Importing Group	1	2	3	4
1	3858.5	362.4	29.4	4.3
2	349.8	46.1	4.5	1.0
3	28.3	3.4	0.7	0.2
4	2.9	0.5	0.1	0.0

1987-1993

Exporting Group \ Importing Group	1	2	3	4
1	7644.8	853.5	66.4	9.9
2	885.9	123.3	12.4	1.8
3	69.6	9.4	1.6	0.5
4	6.8	1.3	0.3	0.1

1994-2000

Exporting Group \ Importing Group	1	2	3	4
1	4287.1	372.1	38.5	5.5
2	394.2	57.8	9.0	1.3
3	35.6	6.3	1.6	0.4
4	4.3	0.9	0.3	0.1

2001-2007

Exporting Group \ Importing Group	1	2	3	4
1	5951.0	586.1	49.2	6.7
2	691.0	94.9	12.2	1.5
3	51.3	7.0	1.9	0.4
4	4.5	0.7	0.2	0.3

The social network analysis conducted in this study to determine countries' positions yields unordered clusters of countries, as I have discussed in the previous chapter. The ordering of the positions has been determined by the volume of trade within each of the clusters, whereby Position 1 is the cluster of countries with the highest average level of intra-cluster trade, Position 2 is the cluster with the second highest average intra-cluster trade, Position 3 has the third highest intra-cluster trade, and finally Position 4 has the lowest average level of intra-cluster trade. As such, the fact that Table 5.1 shows that the highest intra-position trade decreases as we move from the core to the periphery is a tautological issue rather than a significant empirical finding. However, there are a number of additional features of the block models in Table 5.1 that are of high significance.

First, the degree of difference in the average levels of intra-position trade is significant. In addition to having the lowest average level of intra-position trade (which is a definitional issue), it is important to note that the level of intra-position trade in the periphery is extremely low. As explained in Chapter 3, this is in large part a reflection of the manner in which countries in the periphery have been incorporated into the world economy as the producers of raw material during the colonial period, and subsequently tend to have high levels of export concentration (see Galtung 1971: 90). This is demonstrated by the example of Zambia, discussed in the introduction, where copper made up 95 per cent of the country's exports at the time of its independence in 1964 (Seidman 1974; Fincham 1980). The limited manufacturing done in such periphery countries means that trade with other periphery countries, also producing primary commodities is limited, and instead most trade is done with core and semi-periphery countries which require raw materials for industrial production, and in turn can provide manufactured products. Furthermore, the high level of similarity in terms of the type of goods produced in periphery countries, particularly with regard to agriculture, which also limits intra-position trade.

In the first period of analysis (1980-1986) average trade between countries in Position 4 is less than $50,000 (at 1980 prices), while in the last period (2001-2007) this figure is $300,000. Average trade between countries in the core, on the other hand, is extremely high, reaching $7644.8 million between 1987 and 1993, due to the high export diversity of countries in the core, which include the USA, Canada, and Germany. Table 5.1 also shows that a key difference between Position 2 (which includes countries such as Argentina, Greece, and Israel) and Position 3 (which includes countries such as Bangladesh, Honduras,

and the Mauritius) is that the level of average intra-position trade is much higher for the former compared to the latter.

Another important property of the block models is that we see that the periphery has most of its trade with the core, which provides support for the arguments made in Chapter 3. In general we see the level of trade the periphery countries engage in decrease as we move from Position 1 to Position 4. Overall, countries in Position 4 do most of their trade with countries in the core, and the lowest levels of trade with other periphery countries. In fact this is fairly consistent across the positions; for each the four positions the highest average trade takes place with countries in the core, and the declines as we move toward the periphery.

There are a number of other features of the block models, which are worth highlighting. Table 5.1 provides a clear indication of differences between the two semi-periphery positions, Position 2 and Position 3. As highlighted above, there is significant difference in the average levels of intra-position trade between Position 2 and Position 3. In addition, we see that there is a significant difference in the levels of trade each of these positions does with the core. We can also observe differences between Position 2 and Position 3 based when we compare their average export and import levels. We see that for all four time-periods, countries in Position 2 have higher export levels to countries in Position 3, than the levels of exports from Position 3 to Position 2. Put another way, Position 3 countries consistently run a trade deficit in terms of its trade with Position 2 countries. This can be seen when we consider trade between Argentina and Bangladesh between 1990 and 2000, whereby the former is in Position 2 during this period, while the latter is in Position 3. Argentina's exports to Bangladesh value around $243.7 million during this period.

Bangladesh's exports to Argentina between 1990 and 2000, however, amount to only around $2.1 million.[103]

Another notable feature of the block models is that Position 2 consistently exports more to Position 1 than it imports from Position 1. This differs from Position 3 and Position 4, which both tend, on average, to import more from the core than they export. Put another way, on average, countries in Position 2 have a trade surplus with countries in Position 1, while countries in Positions 3 and 4 on average have a trade deficit with countries in Position 1. When comparing average export and import levels between positions, we also find that Position 4 consistently has higher average levels of imports from Position 1 than it exports to Position 1.

Overall, the results presented in Table 5.1 of the block model of trade across the four positions in the international system provide support for the theoretical argument laid out in Chapter 3. We find significant differences in the levels of intra-position trade. Furthermore, we find that the intra-position trade in the periphery is extremely low, and countries in the periphery do most of their trade with the core. The block model also demonstrates significant differences between the two semi-peripheral positions. Of particular importance, is that the block models demonstrate a consistent structure over time, in terms of the differences in average trade levels between and within each of the four positions. This provides strong support for arguments of structural trade inequalities presented in Chapter 3. While the figures presented in Table 5.1 are averaged over 7-year time periods, it is important to point out that the structural features I have discussed can be observed in the annual block models presented in Appendix B. As such, we see that there is

[103] This is it at constant 1980 US$ prices.

a clear and fairly stable structure of trade relations between countries occupying the different positions in the international system, providing further support for hypotheses 1.1 and 1.2.

5.2.2. Additional Political and Economic Relations

While I have used international trade relations to measure structural inequality in this study, structural inequality is reinforced by, and reflected in, other political and economic relations between countries. Therefore, I expect a measure of structural inequality between countries to be related to other economic and political ties between countries. Specifically, I would expect to see a clear and stable structure of other economic and political relations between countries based on their position within the international system. In order to examine whether this is indeed the case, the analysis again uses block models of the four positions; however, instead of using trade networks for the block models, I use four additional economic and political networks of relations.

The first additional relation I consider is aid flows, or official development assistance (ODA) transfers. Given that aid flows are, predominantly, provided by richer nations to poorer nations in order to promote economic development in the latter, we would expect there to be a clear pattern to the relations between the different positions. However, it is important to note that while promoting economic development in less developed nations is a primary objective in the transfer of ODA between countries; it is not the only function that aid has

served.[104] Aid has also been provided to further the political and economic interests of the donor nation, with a number of studies arguing that ODA has been used by developed nations to exert their power over developing countries in a less coercive and more consensual manner (see Morgenthau 1962; Hayter 1971; Hattori 2003; Mosse 2005; Riddell 2007; Gronemeyer 2010). Hence, while aid flows may largely be provided for the purposes of promoting development, they can also be seen to represent a political relation between countries.

Table 5.2 below provides the block models for ODA flows across the four country-positions. As with the trade block models, the aid block models are averaged over the four 7-year time periods, with the annual block models provided in Appendix B. The data has been taken from the OECD database and is measured in US$ millions, constant at 1980 prices.

The aid block models in Table 5.2 demonstrate a very clear structure of aid relations between and within the different positions in the international system, as we would expect. We see that countries in the core (Position 1) on average provide the highest amounts of aid to countries in other positions and to other countries in the core. Furthermore, countries in the periphery (Position 4) provide no aid to other countries, as would also expect to be the case. While in the first time period, countries in Position 3 do not provide any aid to other countries, between 1987 and 2007, there are small amounts of aid provided by Position 3. Countries in Position 2, the upper semi-periphery, also tend, on average, to provide small amounts of ODA.

[104] Riddell (2007: 91) has highlighted six main reasons that have historically influenced donor's decisions to allocate aid: to address emergency needs; to assist recipients achieve development goals; to show solidarity; to further their own political and strategic interests; to help promote donor-country commercial interests; and because of historic ties.

Table 5.2. Averaged ODA Block Model

1980-1986

Donor Group \ Recipient Group	1	2	3	4
1	3.17	7.27	6.02	2.78
2	0.03	0.05	0.14	0.04
3	0	0	0	0
4	0	0	0	0

1987-1993

Donor Group \ Recipient Group	1	2	3	4
1	2.49	16.09	16.09	8.75
2	0.27	0.61	0.68	0.70
3	0.10	0.53	0.27	0.15
4	0	0	0	0

1994-2000

Donor Group \ Recipient Group	1	2	3	4
1	3.68	6.48	3.96	2.70
2	0.13	0.27	0.34	0.31
3	0.29	0.44	0.23	0.13
4	0	0	0	0

2001-2007

Donor Group \ Recipient Group	1	2	3	4
1	3.27	6.40	5.38	3.34
2	0.11	0.25	0.38	0.24
3	0.12	0.23	0.17	0.10
4	0	0	0	0

It is interesting to note that, in general, the largest flows of aid from the core tend to go to the two middle positions, rather than to the periphery. There are two potential explanations for this. First, this may be a result of countries in the periphery having smaller populations, on average, than those in Position 2 and Position 3, as I discuss below. Second, it may reflect the political nature of aid provision, and the manner in which aid has often been provided more to further the political and economic objectives of donor nations than to promote development.[105] This would seem likely given that, in general, countries in the core provide comparable levels of aid to other core countries as they do to countries in the periphery. Hence, while the results of the aid block models, provided in Table 5.2 are not surprising, given ODA is provided by richer countries to poorer countries, they do, to an extent, shed some light on the structure of political influence in the international system.

[105] A number of studies find evidence to suggest that aid has been used to further donors' political objectives, particularly in the case of US aid (for example, see Wang 1999; Alesina and Dollar 2000; Dreher et al. 2008).

The next tie between countries I consider is the similarity of countries voting in the United Nations General Assembly, which has long been used as a measure of the similarity of countries' preferences and their levels of political alliance (see Potrafke 2009; Dreher et al. 2008). It is important to note that UN General Assembly voting similarity represents a rather crude measure of alliance. Countries' votes are likely to be strongly influenced by the particular issue that governments are deciding on and the nature of the resolution on which they are to vote (Newcombe et al. 1970). Furthermore, during the Cold War, voting blocs

Table 5.3. Averaged UN General Assembly Voting Similarity Block Model

1980-1986

Position	1	2	3	4
1	57.6			
2	57.6	70.4		
3	55.6	71.6	74.2	
4	50.8	67.4	70.8	68.4

1987-1993

Position	1	2	3	4
1	63.9			
2	51.0	69.0		
3	44.9	69.6	73.5	
4	40.6	67.3	72.6	62.1

1994-2000

Position	1	2	3	4
1	66.4			
2	64.8	66.0		
3	58.5	61.9	59.6	
4	47.9	53.3	54.2	52.4

2001-2007

Position	1	2	3	4
1	67.6			
2	65.6	70.0		
3	59.8	66.5	65.4	
4	51.7	61.7	63.6	65.0

tended to fall strongly along the East-West divide (Kim and Russett 1996). As such, I use UN General Assembly voting patterns to provide a broad measure of the level of cohesion between positions and within positions. The UN General Assembly voting ties have been created by calculating the proportion of times in a year each pair of countries voted the

same way. Therefore, the voting ties are non-directed.[106] In other words, they represent how similar the voting patterns of pairs of countries are rather than any material transfer from one country to another country. The block models averaged over the four time periods are presented in Table 5.3, above. The annual block models are provided in Appendix B.

Upon initial inspection, the block models in Table 5.3 show that the UN General Assembly voting ties seem to provide far less in the way of a clear structure than the other ties considered here, which may in part be because they are undirected ties. However, there are a number of important features of the block models that do shed light on the extent to which countries in different positions vote similarly in the UN General Assembly. First of all, we see that in all four of the block models, the weakest level of cohesion exists between countries in the core and in the periphery. In fact, if we consider the annual UN General Assembly voting similarity block models in Appendix B, we see that this is the case for all except two of the years of analysis (1984 and 1985). It is also interesting to note that in all four block models the similarity of voting between countries in Position 1 tends to decline as we move towards the periphery. In fact this is largely true of each of the positions; as we move further away from each position we see lower levels of similarity in voting. Therefore, on the whole, the highest levels of similarity in voting patterns occur within positions. The main exception to this being the voting similarity between Position 3 and Position 4, which in three of the four block models is higher than the internal voting similarity of Position 4.

The manner in which we observe some trends in voting based on countries' positions in the international system provides support for Kim and Russet's (1996: 629) view of UN General

[106] As I have discussed in Chapter 4, a number of countries that are included in the analysis were not UN General Assembly members during the entire period of analysis, while others have received temporary suspensions. I only include those countries that were active UN General Assembly members in the block models of UN voting patterns.

Assembly voting that 'a North-South cleavage has superseded cold war alignments, giving rise to state preferences defined along development lines.' As such, the block model suggests that in addition to structural inequality being linked to economic relations between countries in the international system, there is evidence to suggest that we see political relations also linked to structural inequality.

The final two relations between countries are bilateral troop deployments and arms transfers. Both of these ties have been used to assess the level of cooperation between countries in the International Relations literature. As Biglaiser and DeRouen (2009) have highlighted, the deployment of military troops is a fundamental aspect of countries' foreign policy, and as such, troop deployments can be used to proxy "the flag" (see also Little and Leblang 2004). While troops may be deployed as a direct result of a conflict, 'more often troops are deployed in friendly countries in cooperative ventures' (Biglaiser and DeRouen 2009: 248). As such, I use troop deployments here to consider the level of political cooperation between countries occupying the different positions in the international system. I have collected data on countries' bilateral troop deployments between 1980 and 2007 from *The Military Balance* for this block model.

Arms transfers, like troop deployments, also provide a strong indicator of the level of political influence and alliance between countries (Harkavy 1975; Neuman and Harkavy 1979; Kolodziej 1979). It should be noted that like the other relations considered, there are a number of factors that can influence arms trading between two countries, such as levels of domestic arms production and the types of weapons a country seeks to acquire, and the financial incentives for weapons producers (see Harkavy 1975; Kolodziej 1979). However, in general arms transfers provide a strong indicator of diplomatic influence and political

support. As Neuman and Harkavy (1979: vi) point out, 'arms supplies have become the single most weighty diplomatic instrument in the hands of major powers, and arms supply relations are perhaps the most useful indicators of the immediate political orientation of the world's nations'. Therefore, the level arms transfers between countries occupying different positions in the international system, sheds further light on the structure of political alliance in the international system. I use data taken from the Stockholm International Peace Research Institute's (SIPRI) arms transfer database. The measurement of arms transfers is the *trend-indicator value* (TIV) in USD millions, constant at 1990 prices. The TIV is calculated using the known unit production cost of weapons, and is applied to measure the transfer of weapons. As such, the transfers of arms between countries could be based on the purchase of arms by one country from another, or based on a country providing arms as military aid.

Table 5.4 presents the block model of troop deployment between countries occupying each of the four positions in the international system, which are averaged over seven year periods. The annual block models are provided in Appendix B. The tables demonstrate a clear structure in the deployment of military troops. Countries in the core tend to deploy the highest level of troops to the rest of the world. Furthermore, the highest level of troop deployment occurs between countries within the core. The average level of troops deployed declines as we move from the core to the periphery. On the whole, countries in the periphery (Position 4) tend to deploy very few troops to other countries. The block model demonstrates that troop deployment is largely dominated by countries in the core (Position 1).

Table 5.4. Averaged Troop Deployment Block Model

1980-1986

Deployer Group \ Host Group	1	2	3	4
1	4255.9	265.6	70.2	8.5
2	112.8	34.2	23.1	11.2
3	0	1.0	11.7	144.2
4	0	3.2	1.7	0

1987-1993

Deployer Group \ Host Group	1	2	3	4
1	2811.7	123.9	275.0	29.5
2	0.1	4.4	51.9	14.0
3	0	0.7	8.3	18.8
4	0	0	0.1	0.2

1994-2000

Deployer Group \ Host Group	1	2	3	4
1	299.5	11.8	106.3	10.7
2	0.2	0.4	15.4	2.0
3	0.2	0	5.3	0.1
4	0	0	0.7	0

2001-2007

Deployer Group \ Host Group	1	2	3	4
1	305.2	87.1	150.1	14.6
2	0.1	0.9	7.2	2.7
3	0.8	0.2	3.7	0.2
4	0.1	0	1.9	0

Table 5.5 presents the block models of arms transfers between countries occupying each of the four positions, averaged over seven year periods. The annual block models for arms transfers are also provided in Appendix B. The block models of arms transfers demonstrate a structure that is similar to the troops block models. In general, the highest average arms transfers take place between countries in the core. Furthermore, countries in the core tend to have the highest average arms exports to countries in the three other positions, too. Countries in Position 2 are next highest exporters of arms, followed by countries in Position 3. Countries in the periphery (Position 4) tend to export and import low values of arms. As such, we see horizontal relations between countries in the core, while the relations between the core and the other three positions are far more vertical.

Table 5.5. Averaged Arms Transfers Block Model

1980-1986

Exporting Group \ Importing Group	1	2	3	4
1	51.36	18.82	3.12	0.18
2	0.77	1.33	0.33	0.08
3	0	0.02	0	0
4	0	0	0	0

1987-1993

Exporting Group \ Importing Group	1	2	3	4
1	65.23	23.01	2.95	0.16
2	0.86	4.20	1.25	0.65
3	0.01	0.08	0.02	0
4	0.01	0	0	0

1994-2000

Exporting Group \ Importing Group	1	2	3	4
1	24.02	9.85	0.82	0.06
2	1.15	0.98	0.17	0.09
3	0.04	0.02	0.02	0
4	0.01	0	0	0

2001-2007

Exporting Group \ Importing Group	1	2	3	4
1	17.40	8.01	0.81	0.08
2	2.18	0.84	0.17	0.09
3	0	0.02	0.01	0
4	0	0.02	0.01	0

As with other relations considered in this section, particularly ODA, there is likely to be significant endogeneity in the structure of arms transfers between countries. Wealthier countries are likely to be more able to produce and purchase high quality and high value weapons. However, the focus here is on whether or not we see a clear structure to the arms transfers between countries, rather than a concern with causality. The evidence suggests a very clear structure of arms flows across and within the four hierarchical positions in the international system. Based on the literature on arms transfers, in which arms supplying is seen as an important measure of political alliance between countries, this again suggests a clear structure in the political relations between countries in the different positions.

In considering additional economic and political ties between countries in the different positions, I find further evidence to support a clear structure to the relations between countries based on the positions in the international system. Therefore, this section provides additional support for hypotheses 1.1. and 1.2. Furthermore, based on the analysis conducted here, I find strong support for hypothesis 1.3; economic and political relations

between countries in different positions in the international system demonstrate a stable structure.

5.3. Determinants of International Inequality

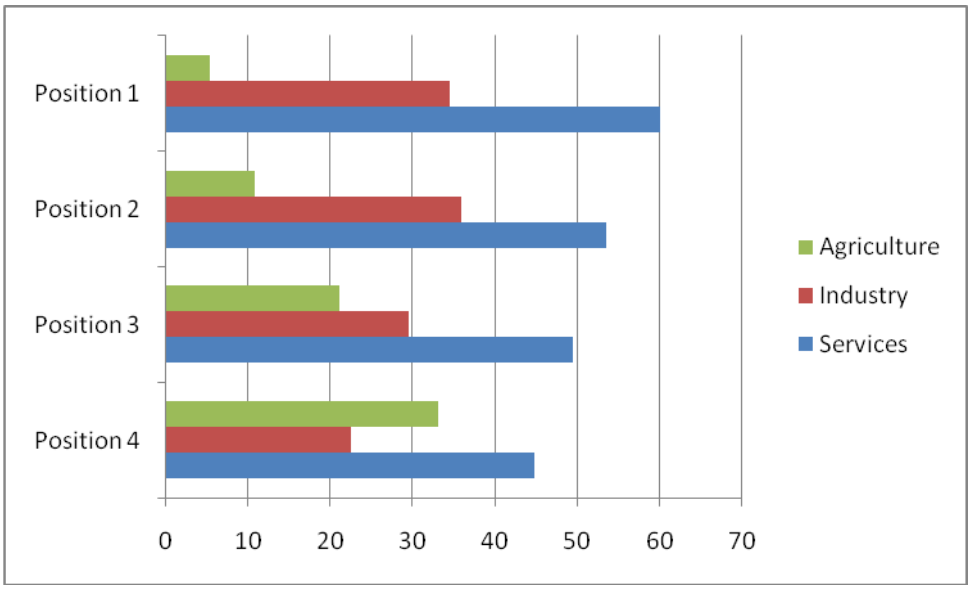
In this section, I consider the country-specific factors associated with each of the four hierarchical positions in the international system. As I have discussed previously, countries' positions in the international system are affected by the actions of other countries and the structure of relations in the international system. Therefore, in considering country-specific attributes associated with the four positions, the focus here is on broadly considering what country-properties are associated with the different positions rather than on what country attributes have a *causal effect* on international inequality. Only in the last section, which considers the effect of colonial rule and the mortality rates European settlers faced in the colonies, do I seek to make causal claims. This section begins by considering differences in the sector composition of the economies in each of the four positions. I then look more broadly at country-characteristics associated with international inequality, conducting an *ordered logit* regression analysis on the four positions. In the final section, the effects of colonial rule on current international inequality are considered in greater depth by considering the effects of European settler mortality rates in the colonies – taken from Acemoglu et al. (2001) – on international inequality.

5.3.1. Sector Composition

In this section, I analyse the sector composition of the economies of each of the four groups of countries. Structural international inequality is strongly linked to the type of production done in a country. As argued in Chapter 3, the roots of structural international inequality lie in the manner in which colonies were integrated into the world economy as the producers of primary commodities, while the colonial powers supplied manufactured goods. This structural inequality between countries has been further reinforced by current trade rules, which have made it harder for developing countries to move away from primary commodity dependence. Furthermore, these inequalities are reflected in the types of manufacturing that takes place in different countries. In general, developing countries' manufacturing tends to be in lower value-added production than for developed countries. This difference is also reinforced by international property rights rules. As such, we would expect there to be significant differences in the contribution of different sectors to the economies of countries in different positions in the international system.

In this section, I specifically consider the output share of three aggregate sectors: *agriculture*, *industry* (manufacturing and mining), and *services*. Figure 5.10, below, presents the contribution of these three sectors to the economies of each of the four network positions between 1980 and 2007. As Ocampo and Vos (2008: 50) point out, it is important to note that the three sectors considered are broad aggregations, and as such, 'high- and low-productivity units coexist in all of these broadly defined sectors'. This is of particular importance when considering the services sector, which can include the extensive informal sector that exists in many developing countries as well as modern business services (Ocampo and Vos 2008).

Figure 5.10. Sector Composition by Position



The graph shows that in all four groups of countries, services makes up the largest share of the economy on average, between 1980 and 2007. As we move from the core (Position 1) countries to the periphery (Position 4), we see that the average share of the GDP that services accounts for declines. In countries in the core, services account for around 60 per cent of national GDP, while in the periphery the corresponding figure is around 45 per cent. The most significant difference between the different positions is the share of agriculture to the economy. Between 1980 and 2007, in countries in the periphery of the international system, agriculture contributed around 33 per cent to economic output, which decreases as we move towards the centre. On average, agriculture makes up only around 5 per cent of the economy of countries in Position 1. The differences in industry's contribution to economic output are not as large. In countries in Position 1 and those in Position 2, industry's share of the economy is around 35 per cent. For countries in Position 3, this falls to around 30 per cent, while in countries occupying the more peripheral position, industry, on average, contributed around 22 per cent to the economy, between 1980 and 2007.

Again, it is important to note that three sectors are broadly aggregated, and conceal important resource shifts that may occur within each of these sectors (Ocampo and Vos 2008: 50). However, we still see that there are some clear differences in the structure of the economies of countries in the different positions. Specifically, we find that agriculture makes up a larger share of national economy as we move from countries in the centre of the international system to those in the periphery. We find that the services, however, make up a larger share of economies in closer to the centre than those in the periphery. The differences in the contribution of industry to the economies of countries occupying different positions is not as pronounced, although overall, industry makes up a smaller share of the economies of countries occupying the two more peripheral positions than the two more central positions. In general, this is consistent with the theory of structural international inequality laid out in Chapter 3.

5.3.2. Country Attributes and International Inequality

In this section, I further examine the country characteristics associated with each of the four hierarchical periods. In order to do so I conduct an *ordered logit* (ologit) regression of *international inequality*. The analysis employs country-years as the unit of observations and is conducted over the time period of 1980-2007. The dependent variable of the regression analysis is the network measure of *international inequality*. I include a range of variables that we would expect to influence countries' positions. The first variable I include is a *lagged international inequality* variable. This inclusion of this variable is based on the argument that countries' positions in the international system remain fairly stable over time (hypothesis 1.2). Therefore, we would expect current international inequality to be linked to past

international inequality. I also include countries' GDP per capita levels, as I expect there to be a strong association between GDP per capita and countries' positions in the international system. I also include *economic growth* in the regression model, in order to assess whether different positions are associated with different annual growth rates, controlling for other factors. In order to examine whether there is any regional trend in countries' positions in the international system, the variable *region* is included in the model. This variable indicates whether countries are in Europe, the Middle East, Africa, Asia, or the Americas (see Small and Singer 1982). I also consider whether a country having access to a coastline in its sovereign territory impacts its position, by including the variable *landlocked*. The variable *democracy* is included to assess whether regime type or institutions have an effect on countries' positions. Countries' levels of *trade openness* is also likely to be associated with countries' positions, and so too is the size of countries' *population*. Following the discussion above, I consider the share of countries' economies made up of agricultural and industrial production, to assess whether these two factors have an impact on position, once we control for other factors. Finally, I also include the variable *colony*, which indicates whether or not a country is a former colony. Before presenting the results of the ologit regression analysis, I first provide summary statistics of these variables based on the four hierarchical positions. The non-partitioned summary statistics of these variables has been provided in Table 4.3.

Table 5.6 presents some clear differences across the different country attributes according to countries' positions in the international system. We see that GDP per capita is much higher the more central countries lie in the international system. Furthermore, we see that the size of countries' populations is higher, the more central the country is. Table 5.6 also

suggests that countries in Position 1 and Position 2 tend, more often, to be democracies, than countries in Positions 3 and Position 4.

Table 5.6. Country Attributes by Position

	Position 1	**Position 2**	**Position 3**	**Position 4**
GDP per Capita (Constant US$)	22510.57	13036.59	5955.78	1659.01
Economic Growth	3.25	3.93	3.53	2.98
Population (Millions)	101.0	50.8	11.3	5.9
Democracy	70.13	53.04	34.91	22.22
Landlocked	9.09	8.45	22.33	40.23
Trade Openness	89.90	88.49	95.59	83.35
Colony	19.16	53.81	76.98	88.89

As we move from the centre (Position 1) to the periphery (Position 4), we find that the proportion of landlocked countries and former colonies increases. The table shows that there is significant difference in levels of trade openness and economic growth according to the four positions. Countries in Position 4 experience lower growth and are slightly less open to trade than countries in the other positions, but the differences are not particularly large.

In order to assess whether these difference are statistically significant, and whether they remain when we control for other factors, it is necessary to consider the results of the ologit regression analysis, which are provided in Table 5.7, below. In Model 1, I include all of the variables discussed above, which the exception of *industry share of economy* and *colony*. In Model 2, I exclude *agriculture share of economy* and *colony*, while in Model 3, I exclude

agriculture share of economy and *industry share of economy*. I do not include these three variables together, as there is likely to be significant collinearity between them.

The results of the regression analysis demonstrate that *lagged international inequality* has a statistically significant impact on current international inequality. This result is not surprising, as we would expect countries trade relations to remains fairly constant over time. Furthermore, when we replace the lagged position variable with a variable for countries positions in 1965 international trade network, the results suggest that international inequality in 1965 has a statistically significant effect on current international inequality (see Appendix B).[107] As such, the results of the regression analysis provide further support for hypothesis 1.2 that countries positions in the international system remain fairly stable over time.

The results presented in Table 5.7 also provide further confirmation of the relationship between countries' per capita national incomes and the levels of international inequality they face, as we find that higher *GDP per Capita* is associated with a higher likelihood of a country being in a more central position rather than in a more peripheral position.

The strong association between international inequality and countries' national per capita national income levels is expected, as one of the key arguments made in this study is that international inequality impacts the wealth and poverty of nations. However, this does raise the issue of endogeneity, and in particular, the direction of causality in the relationship between international inequality and GDP per capita. I discuss this issue in more detail in the next section and in Chapter 6. However, it is worth highlighting here that one method I use to address this endogeneity is to conduct a simultaneous equations regression analysis.

[107] Countries' 1965 positions have been calculated in the same way as countries' positions between 1980 and 2007, using Gleditsch's (2002) bilateral trade data.

A brief discussion of this approach and the results of the 2SLS and 3SLS regression analysis are presented in Appendix C. The results of the simultaneous equations regressions demonstrate that *international inequality* has a strong and statistically significant effect on GDP per capita, when we control for the effect of GDP per capita on international inequality.

Table 5.7. Ologit Regression of Countries' Positions in the International System

	1	2	3
International Inequality$_{(t-1)}$	2.236***	2.238***	2.233**
	(0.088)	(0.088)	(0.088)
ln(GDP per Capita)	-1.389***	-1.437***	-1.446***
	(0.084)	(0.077)	(0.076)
Economic Growth	0.007	0.008	0.006
	(0.007)	(0.007)	(0.007)
Region	0.010	0.001	-0.088**
	(0.033)	(0.033)	(0.039)
Landlocked	0.234**	0.259**	0.357***
	(0.116)	(0.117)	(0.119)
Democracy	0.026	-0.081	0.108
	(0.106)	(0.111)	(0.108)
Trade Openness	-0.002***	-0.002***	-0.002***
	(0.001)	(0.001)	(0.001)
ln(Population)	-1.031***	-1.030***	-1.002***
	(0.048)	(0.047)	(0.048)
Agriculture Share of Economy	0.013**		
	(0.006)		
Industry Share of Economy		-0.011***	
		(0.004)	
Colony			0.562***
			(0.135)
R^2	0.591	0.591	0.592
Log Likelihood	-1921.67	-1920.51	-1914.46
No. of Observations	3578	3578	3578

Note: Robust standard errors presented in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

The regression yields a negative coefficient on *population*, which is statistically significant at the 99 per cent confidence level. Therefore, we find that countries with larger populations are more likely to be in more central positions than countries with smaller populations, controlling for other factors. This is consistent with the notion of power that is typically espoused in the International Relations literature, whereby a larger population size is seen as a fundamentally linked to countries' power in the international system (see Mearsheimer 2003).[108]

The results demonstrate that countries for which agricultural production makes up a higher share of national GDP are more likely to feature in peripheral positions (Model 1), while countries in which industrial production has a higher share of national GDP are more likely to be in central positions in the international system (Model 2). Both of these findings are in line with the analysis of sector compositions above, and are consistent with the arguments regarding structural international inequality laid out in Chapter 3. It is interesting to note that while the differences between the four positions in the contribution of industry to the economy, discussed above, are not large, the regression analysis demonstrates that industry's share of the economy has a statistically significant impact on countries' positions. This may be because the type of industry taking place differs between countries in different positions. We also find that when we include a control for whether a country is a former *colony* or not (Model 3), we find that former colonies are more likely to be in peripheral positions than countries that are not former colonies, controlling for other factors – a result which is statistically significant at the 99 per cent level. This, again, is consistent with the arguments made in Chapter 3, and provides strong support for hypothesis 2.1.

[108] International Relations scholars, such as John Mearsheimer (2003) have tended to highlight the importance of populations size in determining both the military and economic power of countries in the international system.

The ologit regression also yields a negative coefficient on *trade openness*, which is statistically significant at the 99 percent confidence level. As such, the regression analysis suggests that, controlling for other factors; higher trade openness is associated with countries being closer to the core than the periphery. This is an interesting result, as the figures in Table 5.6 above suggest that overall differences in levels of trade openness by position are not particularly large. However, this result is also likely to be impacted by the bias against primary commodity producing countries in the measure of trade/GDP that Birdsall and Hamoudi (2002) have highlighted. The authors argue that as a result of the collapse in commodities prices in the 1980s, countries that are dependent on primary commodities have had their capacity to import restricted in order to reduce their trade deficits.

Another interesting result is that *democracy* is not related to countries' positions in the international system in any of the regression models. This suggests that the differences in proportions of democracies in each of the positions that we see in Table 5.6 are most likely explained by additional factors that are associated with both democracy and international inequality, such as per capita income levels. As I have highlighted in the previous chapter, the measure of democracy used also includes a component based on institutional quality. This suggests that the quality of a country's institutions – measured by the level of executive constraints – does not significantly affect countries' positions in the international system, when controlling for countries' per capita income levels.

I find that when controlling for the agriculture's or industry's contribution to national income, the *region* a country is in has not bearing on it's positions in the international system. However, in Model 3, when both of these two variables are excluded and *colony* is

included instead, the results show that *region* has a statistically significant effect on *international inequality*. In fact, when I exclude *colony* from the regression model, we can see that there is no regional effect on countries' positions. It is interesting to note that when *region* is replaced with an alternative geographic variable, *latitude*, there is no link between *latitude* and *international inequality* in any of the models. The results also suggest that, controlling for other factors, there is no relationship between annual *economic growth* and countries' positions.

In order to ensure that these results are robust, I also conduct the analysis using an OLS regression instead of an ologit regression. The results of the OLS regression, which are presented in Appendix B, are very similar to the results presented in Table 5.7. As such, I find that *past position*, *GDP per capita*, *population size*, the *sector composition* of the economy, *trade openness*, and a country being a former *colony*, are all associated with the positions' countries occupy in the international system.

5.3.3. Analysing the Colonial Origins of International Inequality

The results of the regression analysis in Table 5.7 demonstrate that former colonies are likely to be in more peripheral position, when controlling for other factors. Therefore, the results provide support for hypothesis 2.1, that former colonies are likely to occupy more peripheral positions in the international system than countries that are not former colonies. This is in line with the underdevelopment theory argument that colonial rule is a fundamental cause of the unequal world economy. It is, however, important to note that a number of other factors, as discussed, are also linked to countries' positions. As such, the

argument here is not that colonialism alone determines countries' current positions in the international system, but rather that it is an important factor influencing contemporary international inequality. As I have discussed in Chapter 3, the argument for how colonial rule impacts international inequality centres on the manner in which colonial powers transformed the economies in the colonies to be based on resource extraction. Consequently, these colonies were forcefully incorporated into the world economy as the supplier of primary commodities to be transferred to Europe. The European colonial powers produced manufactured goods, and this *international division of labour* has a highly negative impact on the economies of the colonial powers, in large part, because of the declining terms of trade that these countries faced.

The mainstream development literature has tended to ignore the legacy of colonialism on current development, as I have discussed previously. In recent times, however, the impact of colonialism on present day development has received significant attention. This is largely due to the work of Acemoglu, Johnson and Robinson (2001; 2002; 2012) who have drawn attention to the manner in which the colonial powers set up extractive industries in former colonies, which has led to the creation of weak institutions in these regions. These weak institutions, they argue, are the fundamental cause of differing levels of wealth and poverty around the world.[109] An important insight that Acemoglu et al. (2001) offer is that the types of policies implemented by the colonial powers, particularly with regard to the institutions set up in the colonies, were influenced by the morality rate of European settlers in the colonies. In places where European settlers had lower mortality rates they set up strong institutions replicating and improving upon those that existed in Europe. However, in places

[109] As I have highlighted in Chapter 2, this view is supported by Rodrik et al. (2004) and Easterly and Levine (2003).

where there were high mortality rates among European settlers, they set up extractive economies with weak institutions; the principal objective in such places was the extraction of resources and their transfer to Europe.

There is some similarity between this *institutions argument* and some of the arguments put forward by underdevelopment theorists. Both emphasise the importance of colonialism and the colonial policy of setting up extractive economies and institutions in the colonies, and the importance this has for current development. This similarity in the arguments can be taken further. Acemoglu et al. (2002) argue that this legacy of colonialism has led to 'reversal of fortunes' whereby those regions which were the most wealthy prior to falling under European colonial rule are now the poorest, while those that were poor prior to European colonialism are now the wealthiest, due to the institutions put in place by the colonial powers. A similar argument has been put forward by underdevelopment theorists, such as Andre Gunder Frank (1969: 13), who highlights the manner in which close ties with colonial powers transformed the economies of once wealthy regions into the exporters of primary products, which explains their current underdevelopment.

Acemoglu et al. (2006: 29) differentiate their argument from the arguments made by underdevelopment theorists, which they term 'Marxist analyses of colonialism and of the development of the modern world economy', as they argue that in such analyses the focus is on 'heavy plunder of the colonies by Europeans' and not on the institutions put in place by the colonial powers (Acemoglu et al. 2006: 29).[110] While underdevelopment theorists do highlight colonial plunder in their analyses, as I have discussed in Chapter 3, they also focused on the manner in which the colonial powers transformed the economies and set up

[110] Acemoglu et al. (2006: 34, fn.6) cite works by Andre Gunder Frank and Emmanuel Wallerstein as examples of these Marxist analyses of colonialism and the world economy.

institutions in the colonies, which were focused on the transfer of natural resources to Europe. However, in considering the types of institutions set up by the colonial powers, underdevelopment theorists tended to link the colonial institutions to the unequal international system.[111]

The fundamental difference between the recent arguments focusing on institutions and the underdevelopment theory arguments, as I have pointed out in Chapter 3, is that the former tend to ignore the broader international context, and instead focus solely on the manner in which colonial policies have adversely impacted domestic institutions in the former colonies, and these institutions are the key factors impacting poverty. The underdevelopment theorists, on the other hand, have tended to focus more on how these same colonial policies led to the creation of both poor institutions and an unequal international system, which continues today.[112] The example of the Democratic Republic of Congo, has been highlighted in Chapters 2 and 3, to demonstrate how colonial policies can impact both the quality of domestic institutions and a country's position in the international system. In order to test this argument I draw on Acemoglu et al.'s argument on the influence of settler mortality on colonial policies, and assess the relationship between European settler mortality and the structural measure of international inequality, introduced in this study (see Figure 3.1). Based on the structural arguments of the colonial roots of international inequality, we would expect hypothesis 2.2 – *Former colonies where European settlers faced higher mortality rates are in more peripheral positions than former colonies with lower settler mortality rates* – to hold.

[111] This is demonstrated by Andre Gunder Frank (1969) in his discussion of the manner in which colonial powers set up *latifundia* (properties consisting of large areas of land, producing of primary commodities). Frank (1969: 14) highlights how this led to the creation of 'institutions of servitude', where the principal function of these institutions was to enable the *latifundum* to respond to increased demand in the world market by increasing the supply of its products

[112] This argument is shown in Figure 3.1.

In Acemoglu et al.'s (2001) seminal analysis, the authors use data on the European settler mortality for 64 countries to analyse the effects of institutions on countries' per capita income levels in 1995, where settler mortality is used as an instrumental variable. Their analysis is conducted using a two-stage instrumental-variables approach demonstrating the link between settler mortality and institutions, and then settler mortality and GDP per capita in 1995. The principal measure of institutional quality used by Acemoglu et al. is the level of protection against expropriation, averaged over 1985-1995. In order to test hypothesis 2.2, I analyse the effects of settler mortality on international inequality in 1995 in the same 64 countries. I test the effects of settler mortality on international inequality, while controlling for the quality of these former colonies' institutions, measured by average protection against expropriation risk, 1985-1995 (as Acemoglu et al. do). I do this by using an ologit regression analysis on countries' positions in 1995. The results are presented in Table 5.8 below.

Table 5.8. Ologit Regression of Settler Mortality and International Inequality

	1	2	3	4
ln(European Settler Mortality)	1.226*** (0.450)	1.034** (0.456)	1.391*** (0.489)	1.176**
Institutions (expropriation risk)	-0.895*** (0.237)	-0.669** (0.276)	-0.941*** (0.251)	-0.884*** (0.237)
ln(GDP per Capita)		-0.583* (0.299)		
Region			0.392 (0.242)	
Latitude				-0.010 (0.030)
R^2	0.335	0.352	0.347	0.335
Log Likelihood	-51.568	-50.231	-50.575	-51.497
No. of Observations	64	64	64	64

Note: Robust standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

In Model 1, I assess the effects of (logged) settler mortality on international inequality, controlling for institutional quality. In Model 2, I also include countries' per capita income levels in 1995 in the regression analysis. I include a control for *region* in Model 3, and for *latitude* in Model 4.

In each of the models, the *settler mortality* variable yields coefficients that are positive and statistically significant at the 99 per cent confidence level. Therefore, the results show that colonies where European settlers faced higher mortality rates are more likely to be in peripheral positions than in central positions in the international system. It is especially important to note that this relationship holds when controlling for quality of institutions. As such, the results provide strong support for hypothesis 2.2. The results also show that the variable *institutions*, measured by average protection against expropriation risk, yields a negative coefficient, which is statistically significant, suggesting that countries with higher quality institutions are likely to be in more central positions than in peripheral positions, as we would expect. Somewhat surprisingly, we find that when controlling for *settler mortality* and *institutions*, the statistical significance of the effect of countries' *GDP per Capita* in 1995 on *international inequality* falls below the 95 per cent confidence level. The results also demonstrate that *region* does not have a statistically significant impact on countries' positions in the international system. Furthermore, the effect of *settler mortality* on countries' positions is not a direct result of the geography of these countries; when *latitude* is included, in Model 4, the results demonstrate that *settler mortality* still has a statistically significant effect on countries' positions, while *latitude* does not have an effect.

I conduct a number of additional checks to ensure the robustness of these findings. The results of these additional tests are provided in Appendix B. The results remain consistent

when using an OLS regression instead of an ologit model. In addition, the effect of *settler mortality* on *international inequality* holds when an alternative measure of institutional quality, based on executive constraints, is used. Furthermore, using *latitude* instead of *region* as a geographical variable does not alter the findings. In addition, following Acemoglu et al. (2001: 1387) I also check that the relationship holds when excluding the United States, Canada, Australia, and New Zealand (the "Neo-Europes") from the analysis. The exclusion of these countries from the analysis does not affect the findings, as *settler mortality* still has a statistically significant impact on countries' positions, controlling for institutional quality. Finally, I also find that there is a statistically significant relationship between *settler mortality* and *international inequality* when using data for the entire time period of 1980-2007 rather than for 1995 alone.

The implications of these findings are highly significant. The results are consistent with the argument laid out in Chapter 3, suggesting that current international inequality has been shaped by the policies of the colonial powers. The decision by the colonial powers to set up extractive economies in some colonies – based on conditions in these regions being unfavourable for European settlement – led to these countries being forcefully incorporated into the world economy as the suppliers of primary commodities; these countries continue to occupy peripheral positions in the international system, irrespective of the quality of their domestic institutions. The analysis conducted in this section, therefore, provides support for the causal argument being made in this study. In demonstrating that current international inequality is influenced by colonial policy when controlling for the quality of institutions, geography, and GDP per capita, the analysis demonstrates that current structural inequality between countries are, in large part, a result of the historic process of creating a world

economy, and do not simply reflect differences in wealth and poverty in countries caused exclusively by domestic factors. Hence, in terms of the relationship between international inequality and poverty, which I consider in detail in the following chapter; the analysis conducted here suggests that the direction of causality runs from the former to the latter.

The findings of this analysis also raise some concerns over the validity of settler mortality as an instrument for institutional quality. While the quality of institutions is certainly likely to be important for explaining current poverty; the view that institutional quality is the single most important causal factor for current poverty is largely based on the instrumental variables analysis of Acemoglu et al. (2001). This approach hinges on the instrumental variable, *settler mortality*, impacting current income levels solely through its effect on institutions, and not through any alternative channels.[113] However, the analysis here demonstrates that *settler mortality* also impacts inequality in the international system. This international inequality also has a direct impact on per capita income, as I demonstrate in the next chapter, and as such, I posit that *settler mortality* affects current poverty, both through its effect on institutions and its effect on international inequality. As such, this violates the exclusion restriction condition of the instrumental variable.

5.4. Concluding Remarks

In this chapter, I have examined the structural measure of international inequality that has been introduced in this study, which has been created using network analysis to calculate

[113] Glaeser et al. (2004) explain, '...in econometric terms, valid instruments must be uncorrelated with the error terms, and if settlement patterns influence growth through channels other than institutions, they are not valid instruments.' As discussed in Chapter 2, Glaeser et al. argue that the *settler mortality* variable violates the exclusion restriction condition, because *settler mortality* influences human capital, which impacts growth rates.

countries' positions in annual trade networks. The analysis is this chapter has, in particular, analysed trends in countries' positions, as well as structural- and country- specific factors associated with international inequality. There are a number of important findings from this analysis. I find strong support for hypothesis 1.1, that the international system is characterised by a hierarchical structure in which countries occupy different positions. We find that countries' positions remains fairly stable over time, although countries do, at times, move back and forth between two positions in the 28 year period of analysis. Based on observing countries' positions over this period, and the results of regression analysis, we find that countries' past positions tend to be related to the present positions. As such, the analysis in this chapter confirms hypothesis 1.2, that countries' positions in the international system are relatively stable over time.

I have also conducted a network block model analysis in this chapter, in which the analysis has focused on the extent to which we see economic and political relations exhibiting a stable structure based on the network measure of international inequality. In all of the relations considered here, I find that there are features of the block models, which demonstrate we see a stable structure to these relations based on the network measure of countries' positions in trade networks. Hence, we find support for hypothesis 1.3; economic and political relations between countries occupying different positions in the international system demonstrate a stable structure.

The analysis in this chapter has also considered the characteristics of countries occupying each of the four hierarchical positions. We find that a number of factors, such as GDP per capita, population size, and past position all influence countries' current positions. Furthermore, we find that international inequality is associated with countries' sector

composition, whereby countries in which agricultural production makes up a larger proportion of the economy tend to be in more peripheral positions in the international system. Countries in which a larger share of national income is made up of industrial production tend to occupy more peripheral positions. These findings are in line with the argument made in Chapter 3.

The analysis also supports the theoretical arguments made in Chapter 3 with regard to the colonial origins of structural international inequality. The results of the regression analysis provide strong support for hypothesis 2.1, that former colonies are likely to occupy more peripheral positions than countries that are not former colonies. Furthermore, when considering the effects of colonial policy in more detail, and the influence of European settler mortality on colonial policies, I find support for hypothesis 2.2; former colonies in which European settlers faced higher mortality rates are likely to occupy more peripheral positions than former colonies in which mortality rates for European settlers was lower, controlling for the quality of institutions in these countries. As such, the analysis conducted in this chapter also demonstrates the historic roots of contemporary international inequality.

The analysis in this chapter has provided broad support for the theoretical argument laid out in Chapter 3. As such, this also provides evidence for the validity of the network measure of structural international inequality. In the next chapter, I test one of the main arguments of this thesis – that international inequality has a significant effect on poverty.

6. The Effect of International Inequality on Poverty

In this chapter, I empirically analyse a central argument of this thesis, that inequality between countries has a direct impact on poverty around the world. I analyse the effects of international inequality on poverty using multivariate regression analyses over the time period, 1980-2007. Poverty, the dependent variable of the analysis, is measured using infant mortality rate (IMR). The principal independent variable analysed in this chapter is *international inequality*. As I have discussed in the previous two chapters, the analysis is conducted using a network measure of structural international inequality. The results of the analysis conducted in this chapter suggest that international inequality has a strong and significant effect on poverty when controlling for other country-specific factors drawn from the existing literature on poverty (see Chapter 2). This finding is robust when alternative model specifications are employed and when alternative measures of poverty are used.

In assessing the effect of international inequality on poverty, two different model specifications for the regression analysis, which include different control variables in the analysis. The first is the *core model* specification, discussed in Chapter 4. The second model, the *alternative model*, directly compares the effects of international inequality on poverty with the three of the dominant explanations of poverty: geography, institutional quality, and trade openness. While the existing measures of institutional quality and trade openness have received much criticism; I use them here to show that even when dominant measures of institutional quality and trade openness are included, international inequality still has a significant effect on poverty. The results of the analysis are broadly supportive of the

theoretical arguments made in Chapter 4. In the third section of the chapter, these findings are discussed in greater detail, linking the results to the theory laid out in Chapter 3.

6.1. How International Inequality Affects Poverty

The existing explanations of poverty around the world tend to focus solely on the role of domestic factors in causing and perpetuating poverty, as I have highlighted in Chapter 2. However, such an approach ignores the role of developed countries and the international system in causing and perpetuating poverty. In particular, I argue that poverty is significantly impacted by inequality between countries in the international system. Drawing on existing arguments made by structural and underdevelopment theorists, in Chapter 3, I have laid out a theoretical argument for how international inequality causes poverty, focusing in particular on international trade. The roots of the existing international inequality lie in the colonial era and the manner in which colonies were incorporated into the world economy as the producers of primary commodities, while the colonial powers supplied higher value-added manufactured goods. Despite rapid industrialisation in some former colonies, structural inequalities in international trade persist as many developing countries are unable to move into higher value-added manufacturing, which remains dominated by the technologically superior developed countries. Furthermore, many developing countries have been unable to move away from primary commodities dependence, in part due to international trade rules, which have generally worked against the interests of developing countries.

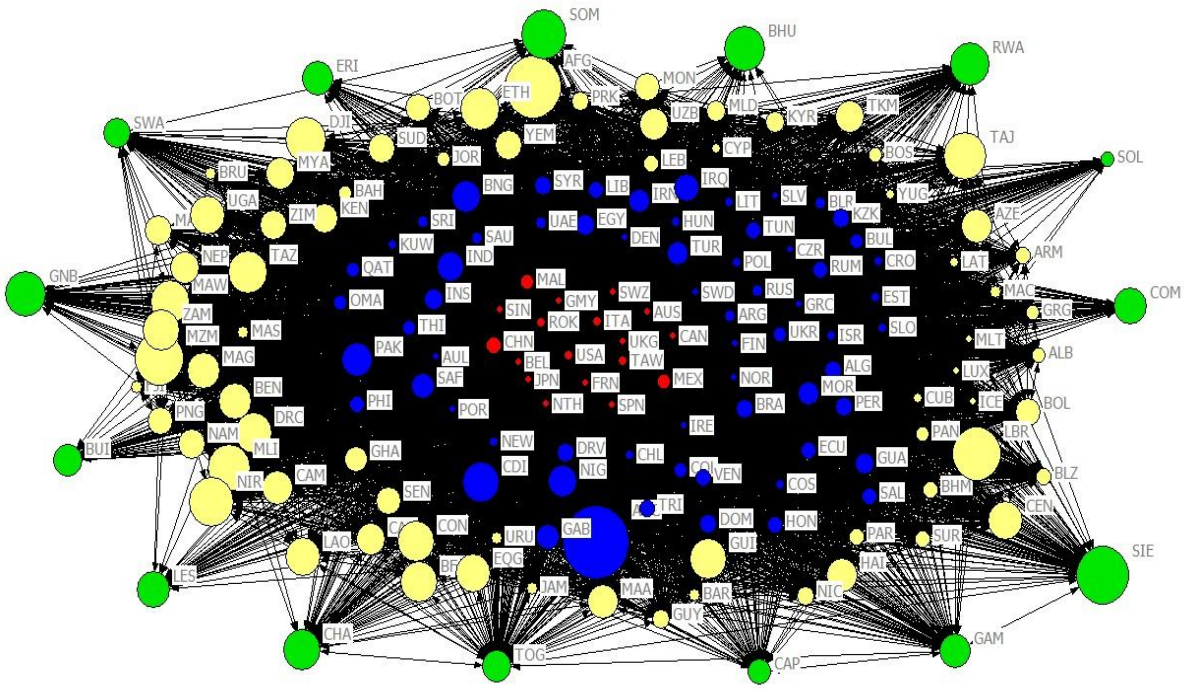
The analysis conducted in the previous chapter provides support for this argument. The results of the *ordered logit* regression analysis on countries' positions in the international system, which indicate the level of structural inequality they face, demonstrate that being a former colony is associated with countries being in more peripheral positions. This is found to be the case when other factors, including GDP per capita, are controlled for. Furthermore, the analysis also demonstrated that higher European settler mortality, which influenced colonial policies, is also linked to countries facing higher levels of structural inequality in the international system, when controlling for country attributes, such as the quality of domestic institutions.

This chapter considers the second part of the argument, namely the impact of international inequality on poverty. Broadly speaking, there are two mechanisms through which this international inequality in trade impacts poverty. The first and principal mechanism is the transfer of wealth from developing countries to developed countries. This is linked to the manner in which unequal and exploitative trade relations between developed and developing countries have meant that developing countries have tended to face deteriorating terms of trade over time. This process, in effect, limits the resources available to developing countries, which in turn impacts poverty levels within these countries. The second mechanism is through the type of production that occurs in developing countries, which is directly linked to their position in the international system. As discussed in Chapter 3, there are a number of adverse effects of primary commodity dependence, such as leading to unevenly distributed development, vulnerability to price shocks, and higher levels of corruption. Furthermore, even in terms of the manufacturing typical done in developing countries, such production is subject to higher levels of competition and downward

pressure on prices, which leads to declining incomes. As such, based on this argument for international inequality impacting poverty, in this section I test Hypothesis 3, which states: *countries in more peripheral positions in the international system experience higher poverty than those in more central positions.*

Figure 6.1 shows the international trade network from 2000 with the countries coloured according to their position, as in Figure 5.9. In addition, the sizes of the nodes in the network diagram reflect the level of poverty based on IMR rates.

Figure 6.1. International Trade Network and Poverty, 2000



The diagram shows that countries in more central positions in the network clearly have much lower poverty levels, while countries in more peripheral positions have much higher levels of poverty. Therefore, the network diagram suggests that countries' network positions are strongly linked to poverty. In order to test whether this association is a direct

relationship or whether it is the result of other factors that are associated with both countries' positions and with poverty, I conduct a multivariate regression analysis.

Therefore, returning to the examples of Haiti and Zambia discussed in the introduction; I am now in a position to empirically test whether the levels of poverty these countries experience is exclusively the result of domestic factors, such as weak institutions and adverse geography, or whether poverty in these countries is influenced by structural inequalities they face in the international system. The multivariate regression analysis will enable me to examine which of these factors has an impact on poverty, and the degree to which each factor affects poverty.

6.2. Findings

I first conduct a regression analysis using the *core model* specification discussed in Chapter 4. The dependent variable in the model is *poverty*, measured by the logged infant mortality rate. In addition to the network measure of international inequality; the model includes two geographical variables, *latitude* and *landlocked*, which measure countries' distance from the equator and whether or not countries have a coastline, respectively. I also include *economic growth*, which is the percentage increase in the per capita income and is lagged by a year, and the level of *population growth*, which is also lagged by a year. The model also includes the binary variable of whether or not a country is a *democracy*, drawn from the Polity IV data, which measures whether a government has been democratically elected and the quality of institutions, in terms of providing checks and balances on government action.

Finally, I operationalise the poverty traps hypothesis by including *1950 GDP per capita* level, which is logged. The summary statistics for these variables are provided in Table 4.3.

In addition to using this core model specification to test the effect of international inequality on poverty, I also conduct a regression analysis using additional variables which have been used to directly measure alternative causes of poverty. This alternative model includes variables that measure *trade openness* and the quality of *institutions* measured by the Polity IV index of *executive constraints*. As noted previously, these measures have received criticism in recent times with regard to the issue of validity, despite their wide use in the existing literature. However, few alternative measures of institutional quality and trade openness exist, which are valid, available for the full range of countries in the international system, and available as time-series data. As such, these variables are included based on their widespread usage in the existing literature. The regression model also includes *latitude* and *1950 GDP per capita*. The summary statistics for these variables can also be seen in Table 4.3, in Chapter 4.

This analysis employs country-year units of observation over the time period of 1980-2007. The main analysis is conducted using OLS regression with country-clustered standard errors, as I have discussed in Chapter 4. In addition, I also perform a number of additional tests to ensure that the findings are robust. A number of alternative regression models are used in the robustness checks. Specifically, I use a PCSE regression model, a time-fixed effects regression, and a time- and country-fixed effects model. I also conduct the analysis with the inclusion of a number of additional variables and alternative measures to ensure that the results are robust to alternative model specifications.

6.2.1. Results with Core Model Specification

Table 6.1 presents the results of the multivariate regression analysis using the basic model specification. Both models in Table 6.1 use an OLS regression with country-clustered standard errors. Model 1 considers the effects of international inequality controlling for the country characteristic variables, including *economic growth*. As we would expect that international inequality also affects growth levels, in Model 2, I exclude the lagged economic growth variable, in order to see if this has an effect on the international inequality regression coefficient.

The results suggest that international inequality has a strong and statistically significant impact on poverty. Model 1 shows that a one unit increase in international inequality (a move of one position towards the periphery) leads to a 26 percentage-point increase in infant mortality rate, and that this result is statistically significant at the 99 per cent confidence level. The impact of the differences in countries' positions on the level of poverty experienced can be seen when we compare the previously discussed example of Zambia with its neighbouring country, Zimbabwe. If we consider both countries in 2002, they are highly similar when comparing the different domestic attributes, such as their geography and the poor quality of their political institutions. The main difference between the two countries is that while Zambia is in the periphery (Position 4); Zimbabwe is in the lower semi-periphery (Position 3). As a result, we see a significant difference in the levels of poverty that the two countries experience. Zambia has an infant mortality rate of 100.2, which means that out of every 1000 infants born, just over 100 die before the age of 1. Zimbabwe's infant mortality rate, on the other hand, is significantly lower, at 65.9.

Table 6.1. Regression Results International Inequality and Poverty (Core Model)

	1	2
International Inequality	0.259***	0.270***
	(0.068)	(0.069)
Latitude	-0.011**	-0.011**
	(0.005)	(0.005)
Landlocked	0.068	0.068
	(0.084)	(0.085)
Economic Growth$_{(t-1)}$	-0.011***	
	(0.003)	
Population Growth$_{(t-1)}$	0.161***	0.151***
	(0.037)	(0.037)
Democracy	-0.333***	-0.336***
	(0.104)	(0.105)
ln(1950 GDP per Capita)	-0.434***	-0.423***
	(0.060)	(0.060)
Constant	6.160***	6.044***
	(0.468)	(0.472)
R^2	0.731	0.728
Root Mean Square Error	0.563	0.566
No. of Observations	3125	3125

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

As I discuss in more detail below in section 6.2.3, which details the robustness checks conducted, when GDP per capita is used as an alternative measures of poverty; the effect of international inequality remains strong and statistically significant at the 99 per cent level. Based on the theoretical argument made in Chapter 4 of the consequences of structural international inequality, we would expect countries' network position to have an impact of countries' share of global economic growth. As such, in Model 2, I exclude *economic growth* from the regression model. The regression analysis yields a point estimate of 0.28 on

international inequality, statistically significant to the 99 percent confidence level. The increase in the effect of international inequality on poverty suggests that international inequality is also linked to levels of annual economic growth, as we would expect. Therefore, based on the results of the regression analysis using the basic model specification, I find strong support for hypothesis 3; countries in more peripheral positions in the international system have higher poverty levels, controlling for other country-specific factors.

It is also important to point out that the results of the regression analysis also provide support for a number of other explanations of poverty put forward in the existing literature. Countries' tropical location has a small direct effect on poverty, as a one degree increase in countries' *latitude* is associated with a decrease of 1.1 percentage point in poverty. Model 1 demonstrates that *economic growth* in the previous year lowers poverty, as a one per cent increase in income in the previous year leads to a 1.1 percentage-point decrease in infant mortality. The results here also suggest that *population growth* in the previous year is negatively related to poverty, with a one per cent increase in population associated with a 1.6 percent-point increase in poverty (Model 1). A country being a *democracy* is associated with 33 percentage-point decrease in poverty compared to a non-democracy. Furthermore, there is strong support for the view that past national income has a significant effect on current poverty, as we find a one-percentage point increase in countries' *1950 GDP per capita* is associated with a reduction in infant mortality of 43.4 percentage-points. When controlling for other factors, a country being *landlocked* does not have a statistically

significant effect on poverty.[114] As highlighted previously, unlike some classic underdevelopment work, the argument made in this study is not that international inequality fully accounts for differences in levels of poverty around the world.

6.2.2. Results with Alternative Model Specification

In this section, I again consider the effects of international inequality on poverty, controlling specifically for *institutional quality*, *geography*, *and trade openness*, the three causes of poverty that currently dominate mainstream development debates (see Easterly and Levine 2003; Rodrik et al. 2004). As discussed in Chapter 4, I use measures of institutions, geography and trade integration drawn from the extant literature; however, as noted previously, the validity of these measures has been called into question in recent times. I measure *institutions* using the Polity IV measure of executive constraints discussed in Chapter 4. I also use an additional measure of institutions, based on the risk of expropriation, drawn from Acemoglu et al.'s (2001) study of institutions and development, to confirm the findings. The absence of a satisfactory measure of *trade openness* or liberalisation policies has been pointed out by Rodriguez and Rodrik (2001). Here, I use one of the more common measures that have been used in the literature: trade as a proportion of GDP (based on constant values) taken from the United Nations National Accounts data. I again use countries' latitude to assess the direct effects of a country's geography on poverty. Finally, I also include countries' *1950 GDP per capita* to assess the effects of past poverty. The results are presented in Table 6.2. Model 1 includes all of the variables in the

[114] It is worth pointing out, however, that in the regression analysis conducted in the previous chapter, a country being landlocked was found to have a significant effect on international inequality.

regression analysis. In Model 2, I exclude *1950 GDP per capita*, and focus specifically on the effect of *international inequality* on poverty, controlling for *institutional quality*, *trade openness*, and *geography*.

Table 6.2. Regression Results International Inequality and Poverty (Alternative Model)

	1	2
International Inequality	0.250***	0.402***
	(0.051)	(0.049)
Latitude	-0.016***	-0.022***
	(0.003)	(0.003)
Institutions	-0.107***	-0.137***
	(0.020)	(0.021)
Trade Openness	0.004***	-0.004***
	(0.001)	(0.001)
ln(1950 GDP per Capita)	-0.405***	
	(0.065)	
Constant	7.028***	3.991***
	(0.500)	(0.207)
R^2	0.749	0.688
Root Mean Square Error	0.543	0.605
No. of Observations	3284	3284

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

The results demonstrate that when controlling for *institutions*, *trade openness*, and *geography*; *international inequality* has a strong and significant effect on poverty. In Model 1, which also includes *1950 GDP per capita*, the results show that a one unit increase in international inequality leads to a 25 percentage-point increase in IMR. This result is statistically significant at the 99 per cent level. The results demonstrate that all of the

control variables also have a statistically significant effect on poverty, confirming arguments made in the existing literature. Higher levels of institutional quality are associated with lower poverty; the further countries are from the tropics, the lower the levels of poverty they experience; greater trade openness is associated with lower poverty; and past poverty levels impact current poverty. In Model 2, I exclude *1950 GDP per capita* from the regression model. Here, we find that the effect of *international inequality* on *poverty* increases; the regression analysis produces a point estimate of 0.402 on *international inequality*. In other words, a one unit increase in a country's network position is associated with an increase in infant mortality rate of 40 percentage-points. The effect of *latitude* increases slightly, while there is no change on the effect of *trade openness* on poverty. The effect of *institutions* on poverty increases significantly, which we would expect to be the case, as past levels of GDP per capita are likely to influence current institutional quality (see Chang 2007).

6.2.3. Robustness Checks

There has been little attempt to measure the effects of structural international inequality on poverty using a cross-country quantitative analysis, as has been done here. Hence, in light of the significance of these findings, it is particularly important to consider the robustness of these findings. To do this, a number of additional tests are conducted, the results of which are provided in full detail in Appendix C. I conduct three types of robustness checks. First, I consider whether the results hold when using alternative regression models, particularly fixed effects models. Second, I check whether the relationship between international inequality and poverty holds when including additional control variables into the regression

model. Finally, the findings using alternative measures of the dependent variable, poverty, and independent variable, international inequality, are assessed.

Alternative Models

I begin by confirming that the results hold when using alternative regression models and additional variables. Table 6.3 presents the results of the multivariate regression analysis with the core model specification, using three alternative regression models, which have been discussed in Chapter 4. Model 1 uses an OLS regression with panel-corrected standard errors (PCSE). Model 2 controls for time fixed effects. In Model 3, a time and country fixed effects regression model is used. When using an OLS regression with panel-corrected standard errors, I find that the effect of international inequality on poverty is still statistically significant at the 99 per cent level. Therefore, the results are robust when controlling for potential contemporaneous correlation of error terms within the panels. I also conduct the regression analysis using a time fixed effects model, and a time and country fixed effects model.[115] As discussed in Chapter 4, Ross (2006) has argued that when using health indicators, such as infant mortality rate, as a measure of poverty, it is important to consider time fixed effects. This is in order to control for the overall improvements in health that have occurred worldwide over time. As noted previously, there are a number of drawbacks to using fixed effects, particularly in models that include variables that change very slowly over time – and, in the case of time fixed effects – when they include both variables over time and variables that do not vary over time, as is the case here.

[115] As I have explained in Chapter 4, because the clusters in the regression analysis are unbalanced, I do not use country-clustered standard errors in the fixed effects models.

Table 6.3. OLS with PCSE and fixed effects regressions of international inequality on poverty

	1	2	3
International Inequality	0.259***	0.306***	0.028***
	(0.025)	(0.015)	(0.010)
Latitude	-0.011***	-0.011***	
	(0.001)	(0.001)	
Landlocked	0.068***	0.049*	
	(0.018)	(0.027)	
Economic Growth$_{(t-1)}$	-0.011***	-0.008***	0.001
	(0.003)	(0.002)	(0.001)
Population Growth$_{(t-1)}$	0.161***	0.133***	-0.003
	(0.013)	(0.009)	(0.004)
Democracy	-0.331***	-0.285***	0.005
	(0.021)	(0.024)	(0.014)
ln(1950 GDP per Capita)	-0.434***	-0.431***	
	(0.015)	(0.015)	
Constant	6.160***	6.057***	3.910***
	(0.172)	(0.127)	(0.032)
R^2	0.731	0.729	0.056
No. of Observations	3125	3125	3125

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively. For Model 2 and 3, time- and country-dummies are not reported.

The results presented in Table 6.3, however, show that international inequality has a statistically significant effect on poverty even with the inclusion of a time dummy. With the inclusion of a time dummy in the core model, a one unit increase in international inequality is associated with an increase of 30.6 percentage-points in IMR. Therefore, when controlling for time trends in IMR, we find that the effect of international inequality on poverty increases. Interestingly, international inequality is the only time-varying variable to have a statistically significant effect on poverty. The inclusion of a time dummy in the alternative model specification – presented in Appendix C – similarly demonstrates that international

inequality has a statistically significant effect on poverty at the 99 per cent confidence level. When *1950 GDP per Capita* is included in the time fixed effects model, the regression analysis yields a point estimate of 0.301 on *international inequality*, and when *1950 GDP per Capita* is excluded the regression coefficient of *international inequality* is 0.465.

I further test the robustness of the findings by controlling for country fixed effects. While, as we would expect, the effect of *international inequality* on *poverty* is lower when controlling for time and country fixed effects using the *core model* specification, *international inequality* still yields a point estimate of 0.028, which is statistically significant at the 95 per cent confidence level. When controlling for both country and time fixed effects, we see that the regression yields a point estimate of 0.028 which is statistically significant at the 95 per cent confidence level. When we consider the *alternative model* specifications, the results of which are presented in Appendix C, the inclusion of time and country fixed effects produces a regression coefficient of 0.023 for *international inequality*, which is statistically significant at the 95 per cent level. It is worth pointing out that the results of the fixed effects analysis are likely to significantly understate the effect of international inequality on poverty, as a number of countries do not change position during the 28-year time period of analysis. For example, the US and Germany always feature in the core, while Burundi and Eritrea feature constantly in the periphery. As such, the use of country fixed effects means that the relationship between international inequality and poverty in such cases is not taken into account, as it is absorbed by the country dummy variable. The results demonstrate that the effects of international inequality on poverty are consistent to the inclusion of country and time fixed effects.

As was discussed in Chapter 4, a potential problem with the analysis of the effect of international inequality on poverty is reverse causality. In other words, rather than countries' positions in the international system impacting poverty levels, it is poverty that determines countries' positions. Specifically, we might expect there to be a strong endogenous relationship between international inequality and GDP per capita, as we would not expect infant mortality to directly affect countries' positions in the international system. There are two methods I use to address this issue. One way is by demonstrating that the relationship between international inequality and poverty holds, even when we control for *GDP per capita*, as I discuss below. The other approach I use to address the issue of endogeneity is to use a simultaneous equations regression model to analyse the relationship between international inequality and GDP per capita. A short description of this analysis and the table of results are provided in Appendix C. Using both a 2SLS model and a 3SLS model, I find that the causal effect between the two variables runs in both directions, which is statistically significant at the 99 per cent level. In other words, the relationship between international inequality and GDP per capita is circular. What is particularly important to note is that international inequality as a large effect on GDP per capita, which is statistically significant at the 99 percent level, even when controlling for the effect of GDP per capita on international inequality. This provides further support with of the argument made in this study, as it suggests that international inequality has a causal effect on poverty.

Additional Controls

A number of additional control variables are included in regression model in order to confirm the robustness of the findings. I first consider whether international inequality still

has an effect on poverty, measured by IMR, when we control for countries' *GDP per capita*, which as I mention above, enables us to confirm that the relationship between international inequality and poverty is not simply a reflection of the endogenous relationship between international inequality and GDP per capita. I have argued in this study that while the principal channel through which international inequality affects poverty is through its effect on the availability of resources to a country; it also has an impact on the distribution of development in a country. Countries in more peripheral positions tend to be incorporated into the international system as the producers of primary commodities or lower level manufacturing which increases poverty through channels in addition to national income levels. As such, if this argument holds, we would expect international inequality to impact poverty when controlling for countries' GDP per capita levels. The regression results (presented in Appendix C) show that when we include (logged) *GDP per Capita* in the regression models, international inequality still has a statistically significant effect on poverty (IMR). Using the *core model*, we find that inclusion of *GDP per Capita* in the regression model yields a point estimate of 0.088 on *international inequality*, which is statistically significant at the 95 per cent level. In other words, when we control for countries' GDP per capita levels, we find that a one-unit increase in *international inequality* is associated with a nine percentage-point increase in poverty. When *GDP per Capita* is included in the *alternative model*, the regression coefficient of *international inequality* is 0.13, which is statistically significant at the 99 per cent level. Therefore, the analysis demonstrates that international inequality affects poverty though channels other than per capita national income, providing support for the argument made in this study.

In order to further confirm the robustness of these findings, it is also necessary to also consider whether the results hold with the inclusion of other variables that may affect infant mortality rates. I include a variable for whether or not a country was experiencing *civil conflict* in a year, taken from the widely used UCDP/PRIO database (Harborn and Wallensteen 2010). I also include the International Country Risk Guide (ICRG) *quality of governance*[116] variable, which measures corruption, law and order, and bureaucracy quality in a country.[117] The results suggest that even with the inclusion of both of these variables, international inequality has a strong effect on poverty, which is statistically significant to the 99 percent confidence level. Furthermore, I also use an alternative measure of institutional quality in the alternative model, based on average levels of protection against the risk of expropriation (see Acemoglu et al. 2001). The results suggest demonstrate that *international inequality* still has a statistically significant effect on poverty to the 99 per cent level. The inclusion of additional controls has no impact on the findings.

Alternative Measures of Dependent and Independent Variables

I also check to see if the results hold when using an alternative measure of poverty as the dependent variable. Using the *GDP per capita* as the dependent variable (taken from the World Bank's *World Development Indicators*), international inequality has a strong effect on GDP per capita (0.39), which is significant to the 99 per cent level. The results of the simultaneous equations regression models, discussed above, demonstrate that international

[116] This data has been taken from the Quality of Governance dataset.

[117] A key reason for not including the ICRG *quality of governance* measure in the main regression results is because there is much lower data availability, which means that the number of observations is reduced significantly.

inequality has a statistically significant effect on GDP per capita, even when controlling for the endogeneity of the relationship.

The robustness of the results is further tested by considering alternative measures of the principal independent variable, *international inequality*. While I have used a fourfold partition of countries in international trade networks based on a substantive and methodological justification, I would still expect alternative partitions of countries to have a significant impact on poverty. Hence, I also conduct the analysis of international inequality on poverty for 3- and 5-splits of the network, and find that the results hold. Furthermore, the results are not dependent on the method used to partition countries by conducting the hierarchical clustering using the average link method. Changing the method of clustering had no effect on countries' positions in the trade network. When *international inequality* is lagged by one year or by two years, it still has a strong and statistically significant effect on poverty. As different dyadic trade datasets were used to calculate network position for 1980-2000 and for 2001-2007, I also run Models 1 and 2 again splitting the data for these two different time periods, to ensure that the different datasets do not impact results. Again, the results show the effect of international inequality on poverty to be almost identical for both samples, and to be statistically significant at the 99 per cent level. Hence, the findings of the analysis conducted in this section hold when using different model specifications and alternative measures of the independent and dependent variables, thus confirming the robustness of the results.

6.3. Discussion

In this section, I discuss the results of the analysis conducted in this chapter looking, in particular, at how the findings relate to the theoretical arguments on the relationship between international inequality and poverty put forward in Chapter 3. The results of the analysis broadly support the theoretical argument made in this study. I find that international inequality has a strong and significant effect on poverty, when controlling for a number of factors associated with poverty that have been drawn from the existing development. Furthermore, the robustness of this relationship is confirmed using a number of additional checks.

As I have highlighted at the start of this study, a fundamental weakness of the current literature examining the causes of poverty is that the focus has been solely on the effects of domestic factors on poverty; the effects of the broader international system on poverty are largely ignored (Townsend 1993; Gore 2000; Pogge 2001; 2008). This is particularly the case for quantitative cross-country studies of poverty. Therefore, a significant contribution of the analysis conducted in this chapter is to demonstrate that international inequality has a strong and significant effect on poverty, when controlling for country characteristics typically associated with poverty. The effect of international inequality on poverty has been tested using different model specifications, demonstrating the robustness of this finding. In particular, it is worth noting that the level of international inequality a country faces – based on their position in the international system – is strongly associated with poverty, when controlling for the quality of institutions, the geography and the level of trade openness of a country. Furthermore, when conducting additional robustness checks, I find that that international inequality has a significant effect on poverty, even when controlling for levels of per capita national income. This suggests that the relationship between international

inequality and poverty is not spurious, but rather that there is a strong and direct relationship between the two. It also provides support for there being two key channels through which international inequality impacts poverty; through the overall levels of resources available to a country, and also through its distributional effects.

The impact of countries' positions in the international system on the levels of poverty has discussed above, in relation to the different positions of Zambia and Zimbabwe and the differences in their levels of poverty. This relationship can also be seen with the example of Haiti, which was also discussed in the introduction of this study. The similarities between Haiti and its neighbouring country, the Dominican Republic, are arguably even greater than in the case of Zambia and Zimbabwe. The geography of the two countries is almost identical given that two states make up the island of Hispaniola in the Caribbean. In fact, based on a comparison of the two countries' latitude, Haiti has a marginally more favourable geography, with a latitude of 18.55 compared to the Dominican Republic's latitude of 18.5. In 2005, both countries were ranked in the Polity index as having good democratic institutions. Furthermore, in terms of trade openness, according to the UN National Accounts data, Haiti was more open to trade than its neighbour, with its openness to trade measured as 112.4 per cent compared to the Dominican Republic's 104.0 per cent. However, the two countries faced very different levels of structural inequality based on their positions in the international system. While the Dominican Republic was in the upper semi-periphery (Position 2), Haiti was in the periphery (Position 4) in 2005. This difference of two positions had a significant bearing on the levels of poverty each country experienced. Haiti's infant mortality rate was 84.0, compared with the Dominican Republic's infant mortality rate of 30.1.

The examples of Zambia and Haiti, discussed in Chapter 1, also demonstrate how changes in a country's position over time can have an effect on the levels of poverty a country experiences. The results of the fixed effects regression model, discussed above, suggest that an increase of one position (a move of one position from the centre towards the periphery) is associated with a 3 per cent increase in poverty. As I have explained above, this is likely to significantly underestimate the effect of a change in position on poverty because a number of countries do not shift position in the 28 year period of analysis. Despite this, when we consider the cases of Zambia and Haiti, we can see how changes in position over time impact poverty levels. In the 1980s, Zambia is consistently in the lower semi-periphery (Position 3) of the international system. During this period, infant mortality rate, on average, was 95.2. In the early 1990s, conditions of borrowing from the IMF meant that the agricultural sector in Zambia underwent liberalisation (see McCulloch et al. 2000). Consequently, the country moved into the periphery (Position 4) during this period, and IMR went from being in the mid 90s up to 106.4 in 1994, at a time when infant mortality rates were falling globally. In Haiti, the country is in the lower semi-periphery (Position 3) in 2000, where the country's IMR is 81.1. In 2005 Haiti has moved to the periphery (Position 4) and IMR has increased to 84. As with Zambia, the change in Haiti's position occurs around the time when the country has implemented extensive liberalisation measures, which saw huge volumes of subsidised US rice flow into the country, destroying Haiti's domestic production, as discussed in Chapter 1.

The findings demonstrate that the unequal structure of the international system has a direct impact on poverty, and therefore, the analysis demonstrates that factors both internal and external to a country influence poverty rates. As such, the results provide support for

arguments made by underdevelopment scholars, who have linked international inequality to poverty (e.g. Baran 1968; Frank 1969; Dos Santos 1970; Cardoso and Faletto 1979; Wallerstein 1974). They also support the structural arguments made more recently, in the context of globalisation, on the effects of the international system on poverty (e.g. Pogge 2001; Kaplinsky 2005). Therefore, the results demonstrate the importance of moving away from a narrow 'internalist' approach to poverty, to understanding how countries are integrated into the international system and the effect this has on poverty (see Gore 2000; Rodik 2001).

It is important to note, however, that contrary to some classic underdevelopment works, the results do not suggest that poverty is a consequence of international factors alone, nor do the results indicate that differences in poverty levels around the world are fully accounted for by international inequality. In fact, Figure 6.1 shows that a number of the poorest countries do not lie in periphery (Position 4). The analysis results find that a number of domestic factors have a significant effect on poverty. In particular, the results suggest economic growth is associated with lower poverty; democracy and institutional quality is associated with lower poverty; past poverty has a strong effect on current poverty levels, providing some support for the poverty traps argument; and significantly, the analysis finds that population growth in the past year is associated with higher poverty levels, confirming Kelley and Schmidt's (2001) findings. As such, the results of the analysis do not support the arguments made by some underdevelopment theorists who argued that poverty was solely a result of international factors (see Blomstrom and Hettne 1984). The results, however, do indicate that international inequality is one of a number of factors that impact poverty

levels. As such, the analysis conducted here provides cross-country evidence for the synthesis of exogenism and endogenism in development that Hettne (1995) has called for.

6.4. Concluding Remarks

The analysis conducted in this chapter has focused on examining the effects of international inequality on poverty. This has been done by conducting a regression analysis of poverty, measured by infant mortality rate, over the time period, 1980 to 2007. The results of the analysis provide broad support for the theoretical argument laid out in Chapter 3. Specifically, I find support for the hypothesis tested in this chapter: countries in more peripheral positions in the international system are found to experience higher levels of poverty than countries in more central positions (hypothesis 3). The findings of this chapter have a number of important implications for development policy aimed at reducing poverty and for future poverty research, which I discuss in Chapter 8.

In the next chapter, I build on the analysis conducted in this chapter by considering how the process of *globalisation* impacts the relationship between international inequality and poverty. This is done using network-based measure of globalisation based on the density of annual trade networks.

7. Globalisation, International Inequality, and Poverty

This chapter builds upon the analysis conducted in Chapter 6 by considering how changes in the structure of the international system affect the relationship between international inequality and poverty examined in the previous chapter. An important criticism that has been made of various strands of underdevelopment theory is that little consideration was given to how the structure of the international system changed over time – and what effects such structural change has (Cox 1981; Blomstrom and Hettne 1984). The analysis in this chapter deals with this issue, and in doing so, helps move beyond some of the problems of underdevelopment theory. In looking at change in the structure of the international system, the analysis here focuses on the process of *globalisation*, which is associated with the greater interconnectedness of national economies in the international system (Held 1993; Rodrik 2007). Specifically, this chapter looks at how the process of globalisation has conditioned the effect of international inequality on poverty, examined in the previous chapter. In order to do this, I use a network measure of globalisation, based on the density of trade networks between 1980 and 2007. In order to examine the effects of globalisation on the international inequality-poverty relationship, I use multivariate regressions analysis with an interaction effect. As with the previous chapter, the dependent variable in the analyses conducted here is poverty, which is measured using infant mortality rate.

The chapter is laid out as follows. The first part of the chapter discusses the links between globalisation, international inequality and poverty. The second part of the chapter discusses the network measure of globalisation used in this study, and compares it to alternative

globalisation measures. In the third part of the chapter, I look at whether there is evidence to suggest that countries in the periphery position are those that have been 'left behind' from the process of globalisation, as the conventional view purports. A multivariate regression analysis is then used to consider the effect of globalisation on the relationship between international inequality and poverty. The analysis employs the network measure of *globalisation*, calculated using the SNA concept of *network density*. Using the interaction term, *international inequality x globalisation*, I examine whether the effect of international inequality on poverty, found in the previous chapter, increases as globalisation increases. The results of the analysis suggest that the effect that higher international inequality has of increasing poverty increases as the process of globalisation increases. In the fifth section, I discuss the findings in more detail, in particular considering the extent to which the results support the argument laid out in Chapter 3. The findings of this chapter broadly support the arguments made in this study.

7.1. Globalisation and the Relational View of Poverty

In recent years, there has been much discussion and debate around the relationship between globalisation, international inequality, and poverty. As I have explained in Chapter 3, an important aspect of this debate is the contrasting views on whether poverty is a result of some countries not participating in the process of globalisation (the residual view), or whether the process of globalisation leading to some countries being adversely incorporated into the world economy explains current poverty (the relational view). The former approach sees the process of globalisation leading to lower inequalities between countries, and poverty largely affecting those countries that have been excluded from this

process. The latter, relational, view posits that while some countries may benefit from globalisation, others can lose out. From this perspective, the process of globalisation has reinforced inequalities between countries. While producers in some countries have been able to construct barriers to protect their profits from the increased competition resulting from the process of globalisation; in other countries globalisation has led to producers facing declining incomes (Kaplinsky 2000; 2005).

In order to analyse these arguments, I use a network measure of globalisation, based on the density of trade networks. I begin by looking at the relationship between globalisation and countries' positions in the international system. I then conduct a regression analysis looking at the effects of globalisation and international inequality on poverty. Specifically, I consider whether as globalisation increases the effect of international inequality on poverty – whereby higher international inequality is associated with higher poverty – also increases (hypothesis 4.1).

7.2. A Network Measure of Globalisation

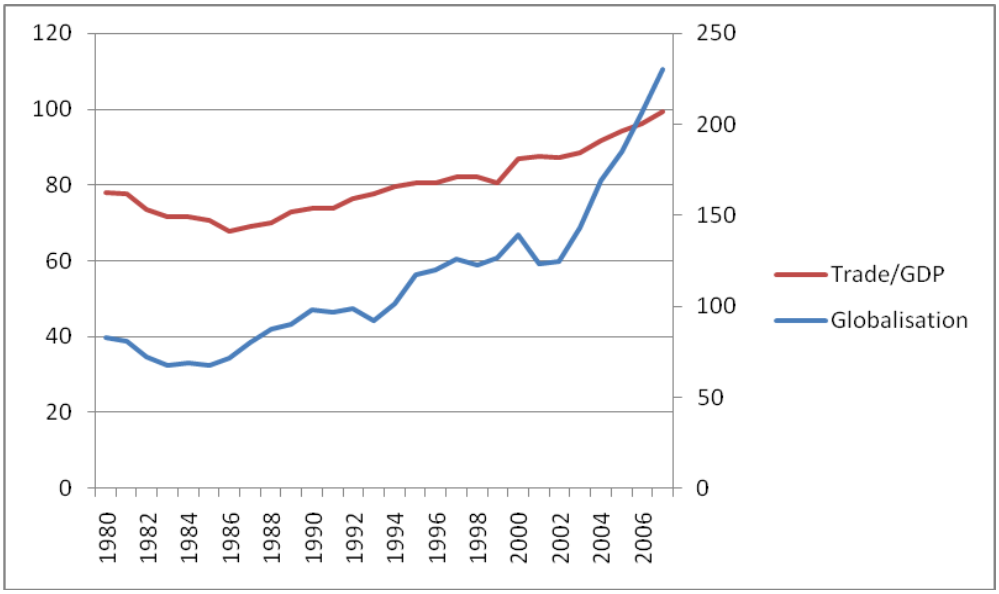
In this analysis, *network density* is used to measure globalisation. The measurement of globalisation has received much attention in recent times (see Arribas et al. 2009; Caselli 2008; Kearney 2004; Andersen and Herbertsson 2005; Martens and Zywietz 2006; Sumner 2004). However, there is little consensus on how best to measure the process of globalisation. This is in large part a result of globalisation being a multifaceted process involving cultural, social, political, and various economies ties across nations. Therefore, a single measure will undoubtedly fail to capture all of these dimensions. Here, I follow

traditional approaches to quantifying globalisation, by focusing on trade. As such, an important limitation of the measurement of globalisation in this study is that it focuses exclusively on a single dimension of globalisation; the globalisation of trade. This means that the measure of globalisation does not reflect the full dimensions of economic globalisation, such as financial and FDI flows. This is important, because as Payne (2005: 137) points out, 'the financial sphere is also, by general consent amongst analysts of globalization, the sector of the world economy where global economic integration has proceeded furthest, with both capital and currency markets linked on a virtually continuous basis over the 24 hours of the day' (see also Held et al. 1999; Stiglitz 2002). I focus on the globalisation of trade here, partly because there is much wider coverage and higher quality data for trade. Furthermore, as the measure of structural international inequality used here is also based on trade flows, it provides greater consistency in the analysis.

In continuing with the 'networks as structure' approach taken in this study, globalisation is considered to be the greater overall size of the network relation together with the greater interconnectedness of the network. I use the relatively straightforward SNA concept of *network density* to capture these two areas. As I have explained in Chapter 4, the density of trade networks is the overall value of the network as a proportion of the total number of possible connections in the network. As the number of countries in the analysis differs each year, I calculate the density based on trade networks using countries that are present for each year of the analysis. I also calculate the density of the networks with all of the countries included in the analysis for a given year, which I use to confirm the robustness of the findings.

Figure 7.1 shows that trends in the measure of globalisation used here over the period of analysis (1980-2007). The blue line presents the network globalisation measure, which corresponds to the right-hand axis. I also include another trade-based measure that is often used to measure globalisation, trade/GDP. The red line shows trends in trade/GDP between 1980 and 2007, which corresponds to the left-hand axis.

Figure 7.1. Globalisation Trends



The graph shows a relatively similar increasing trend with both measures of globalisation. However, the graph shows that the network measure of globalisation increases more over this time period than average trade/GDP. Furthermore, we see the changes in the network measure of globalisation as being slightly less even than the changes in trade/GDP.

7.3. Globalisation and the Periphery

Before I analyse the effects of globalisation on the relationship between international inequality and poverty, I consider two related issues centred on the relationship between globalisation and international inequality. First, I look at the relationship between globalisation and international inequality using the two network measures for each. Second, I consider the argument that countries in the periphery (Position 4) are those that have been 'left behind' from the process of globalisation.

There has been much debate over the effects of globalisation on international inequality (see Wade 2007; Milanovic 2005; Sala-i-Martin 2002; Wolf 2004). It is worth highlighting, as a number of authors point out, that this debate has led to the relationship between globalisation and international inequality being viewed as a one-way relationship, whereby 'inequality is understood predominantly as an effect or a consequence of globalisation' (Phillips 2005: 45). This has not only limited the analysis of the impact of inequality as Payne (2005: 244) has highlighted, but further, with specific regard to the relationship between globalisation and inequality, it overlooks the manner in which globalisation is the result of inequalities in wealth and power between countries (Woods 2000; Stiglitz 2002; Pogge 2008; Chang 2007). As such, I consider here whether there is any clear relationship between globalisation and international inequality based on the network measures employed in this study.

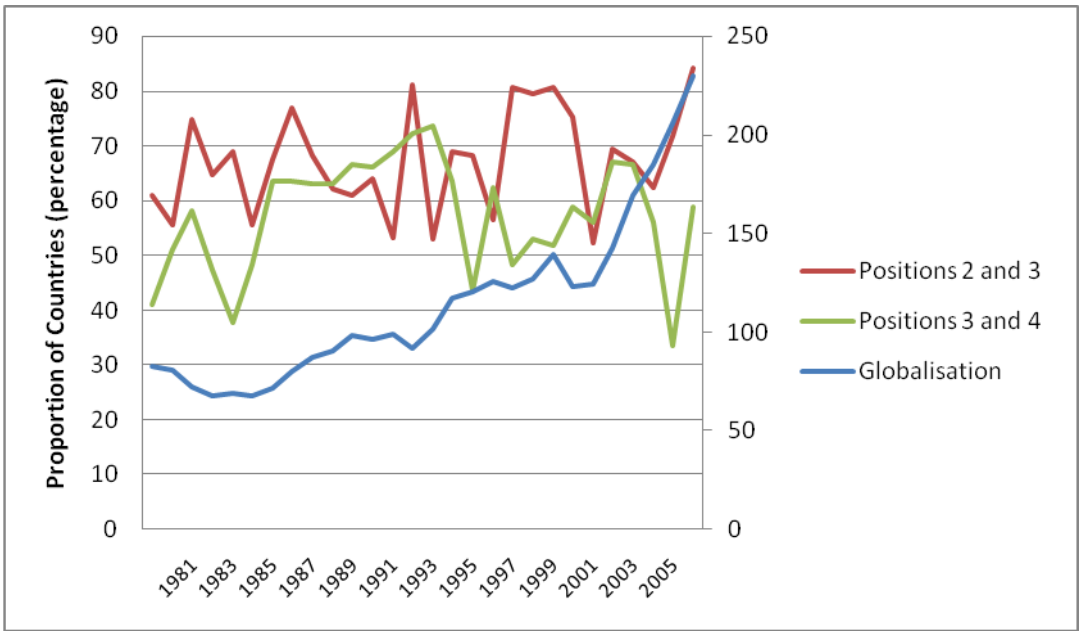
In assessing whether we observe any clear relationship between globalisation and the proportion of countries occupying each of the four hierarchical positions in the international system; it is worth considering once again the analysis of trends in countries' positions undertaken in Chapter 5. The analysis demonstrated that when we observe each position annually, it is difficult to see any clear trend. Once the proportion of countries in each

position was averaged over four year periods, we found that, overall, the majority of countries lie in the middle two position (Position 2 and Position 3), and that a much lower proportion of countries occupy the core and periphery. Furthermore, Figure 5.2 demonstrates that this structure remained fairly stable over time. As such, we would not expect to see a relationship between globalisation, which has an upward trend over time, and the proportion of countries in each position, which remains stable over time. Instead, I consider whether we observe any trends when we aggregate countries based across two positions. I focus on two aggregations: Position 2 and Position 3, the *semi-periphery* or middle sector of the international system; and Position 3 and Position 4, the bottom positions of the international system. In considering trends in these two aggregations, I seek to uncover whether there has been any growth in the middle sector of the international system, which would suggest that increased globalisation is linked to some degree of convergence between countries in the international system. By looking at whether there has been an trends in the proportion of countries appearing in the bottom two positions, we can ascertain whether globalisation is associated with an upward or downward shift in positions for the majority of countries in the international system.

Figure 7.2 shows that there is no obvious relationship between globalisation and the proportion of countries lying in the middle positions or the bottom positions of the international system, which is perhaps not altogether surprising based on the findings in Chapter 5 regarding the proportion of countries in each positions over time. Therefore, using the network measures of globalisation and international inequality, I do not find a clear relationship between the two. There are a number of possible reasons for why this is the case. First, it may be down to the manner in which international inequality is measured

in this study. International inequality is measured by considering countries' positions in the international system. This measure does not, however, indicate the degree of inequality between positions, and whether the distance between positions is increasing or decreasing. A second possible explanation is that the time period analysis is too short to uncover a relationship. The most recent wave of globalisation is generally seen to have begun in the 1960s and 1970s (see Frobel et al. 1980; Dicken 2003), and, as such, the period of analysis considered here (1980-2007) may not fully capture the relationship between globalisation and international inequality.

Figure 7.2. Globalisation and Countries' Positions in the International system



While no clear relationship between the process of globalisation and the proportion of countries occupying different positions in the international system is found, we can assess the degree to which globalisation has led to greater incorporation of countries in the different positions into the international system. In fact, a key issue in the debate over

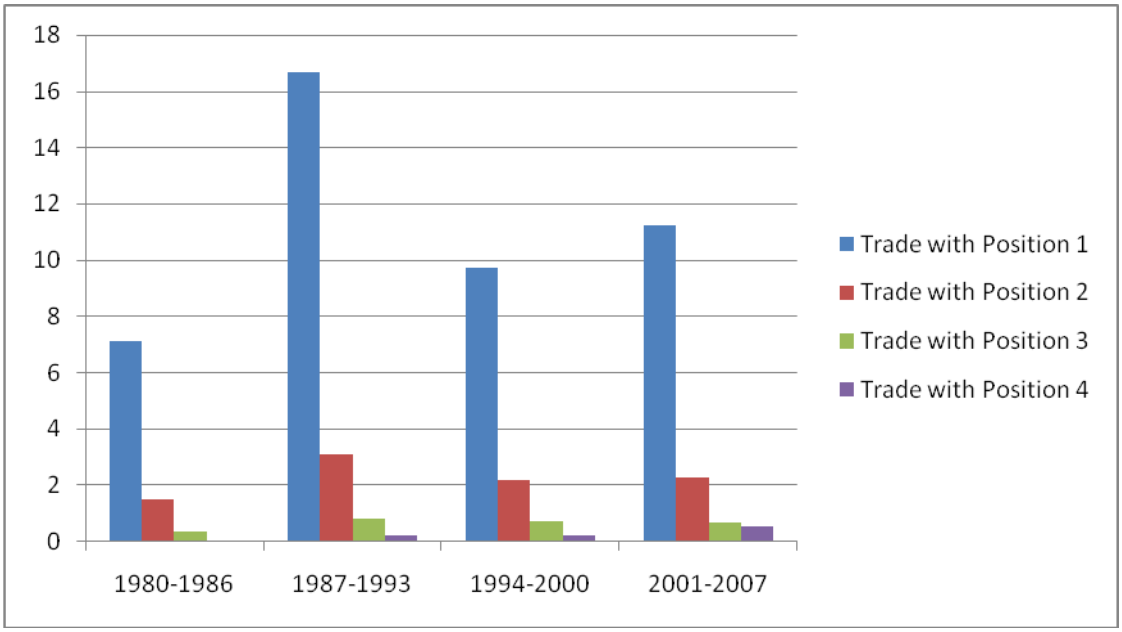
whether poverty is residual to the process of globalisation or whether it is relational, is the extent to which globalisation has led to greater incorporation of all countries into the world economy, or whether some countries have been 'left behind' from the process of globalisation. Therefore, I assess hypothesis 4.2, which states *as globalisation increases periphery integration into the international system increases*.

In order to test this hypothesis, I first consider the block model of countries trade relations, provided in Chapter 5. The block model in Table 5.1 provides the average level of trade flows between countries in each of the different positions. In particular, I consider the average trade ties of countries in the periphery with other countries in the periphery, and with countries in each of the other three positions. Based on the general trend of globalisation increasing over the 28-year time period, we can first assess the extent to which periphery countries' trade increases or decreases over this period. Figure 7.3 below shows the average level of total trade between countries in the periphery with countries in each of the four positions.

The graph shows that Position 4 countries' total trade is lowest in the first 7-year period, between 1980 and 1986. Average trade then increases sharply with countries in other positions and with other periphery countries in 1987-1993. Average trade in the final two periods is much lower than in 1987-1993, although periphery trade with all positions is higher in both of these two periods than in the first period. Furthermore, we see an increase in average trade levels between 1994-2000 and 2001-2007. If we ignore the second period, in which there is a sharp spike in the periphery's average trade with other positions, and consider the other three periods, we find that there is a steady increase in the levels of average trade countries in the periphery engage in over time. As such, while the evidence is

not particularly strong, the graph suggests that the incorporation of countries in the periphery has increased as globalisation has increased.

Figure 7.3. Globalisation and Periphery Trade

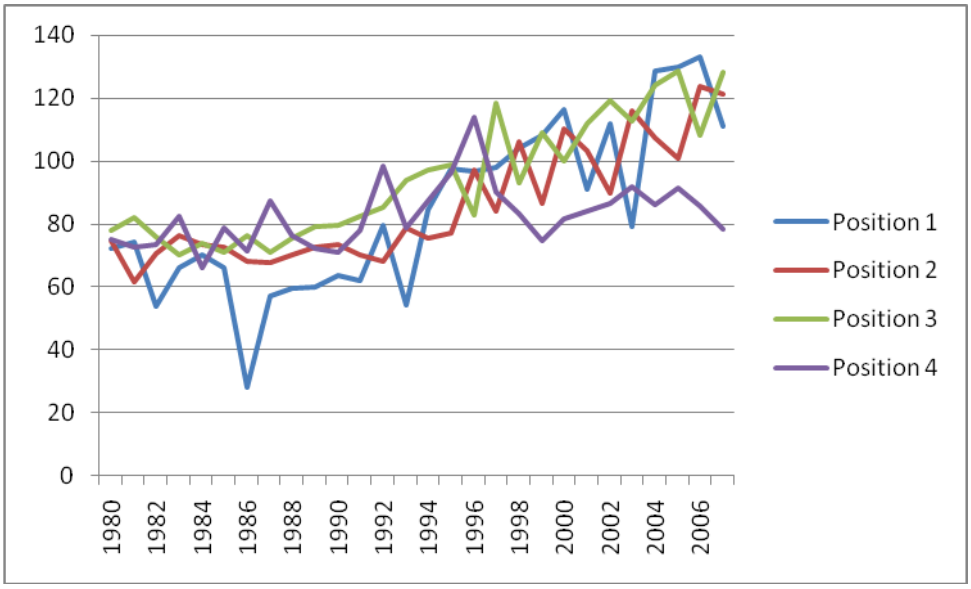


In addition to considering average trade flows, we can also assess whether countries in the periphery have increased their integration into the world economy as globalisation has increased by looking at trends in trade/GDP ratios. As I have discussed previously, while trade/GDP is used to measure trade openness, there are a number of drawbacks of this measure. In particular, as Birdsall et al. (2002) have demonstrated the measure tends is affected by levels of primary commodity dependence, and as such we would expect countries in more peripheral positions to have lower levels of trade openness. In Figure 7.4 below I graph the annual trade/GDP of each of the four positions, at constant prices.

Figure 7.4 shows that there are significant fluctuations in the levels of trade openness of each of the four positions. The graph demonstrates that until around 1997, the level of trade openness for the countries in Position 4 increases over time. In fact, between 1995

and 1996 countries in the periphery have higher average trade/GDP ratios than countries in the other three positions. However we see a decline in the levels of trade openness for periphery countries in 1997. While there is a steady increase in trade/GDP of periphery countries until around 2004, after this point we again see a sharp fall in the levels of trade openness. In the last three to four years, we see a significant difference in the level of trade/GDP for periphery countries compared to countries in the other three positions.

Figure 7.4. Globalisation and Trade Openness by Position



The evidence considered here does not irrefutably suggest a clear relationship between increased globalisation and the increased integration of countries in the periphery into the international system. When looking average trade flows, we find that there is an increase in average trade that the periphery countries does with each of the other three positions and with other periphery countries during the time period in over which *globalisation* increases. We also see a small increase in trade openness of countries in the periphery between 1980 and 2007, although there does not appear to be a very strong relationship between higher globalisation and higher trade openness for periphery countries. However, for much of the

period considered, the trade openness of periphery countries does not substantially differ from those of countries in the other positions (except during 2003-2007). Therefore, the evidence certainly does not support the view that countries in the periphery are those that have been 'left behind' from the process of globalisation. In the middle of the time period considered we actually see that countries in the periphery have the highest level of international trade integration, and for much of the time period considered we see that countries in the periphery are more open to trade than those in the core. As such, while we do not see a clear relationship between increased globalisation and increased participation by periphery countries in the international economy; the evidence goes against the view that countries in the periphery are not participating in the world economy.

In order to analyse how the process of globalisation has affected the relation between international inequality and poverty, I conduct a multivariate regression analysis of poverty, which includes the interaction term, *international inequality x globalisation*. The analysis will demonstrate whether the effect of *international inequality* on *poverty* changes as the level of *globalisation* increases.

7.4. Findings

The results of the multivariate regression analysis are provided in Table 7.1. The analysis uses the *core model* specification outlined in Chapter 4 with the inclusion of the network measure of *globalisation* using an OLS regression with country-clustered standard errors. Model 1 looks at the effects of *globalisation* on poverty. Model 2 repeats this analysis with the inclusion of the interaction term, *international inequality x globalisation*.

7.4.1. Results of Regression Analysis

The results provided in Table 7.1 suggest that *globalisation* has a negative direct relationship with poverty, whereby increased globalisation is associated with lower poverty.

Table 7.1. Regression Results Globalisation, International Inequality and Poverty

	1	2
International Inequality	0.256***	0.133*
	(0.068)	(0.073)
Globalisation	-0.003***	-0.006***
	(0.000)	(0.001)
International Inequality x Globalisation		0.001**
		(0.000)
Latitude	-0.012**	-0.012**
	(0.005)	(0.005)
Landlocked	0.074	0.074
	(0.085)	(0.085)
Economic Growth$_{(t-1)}$	-0.008**	-0.007**
	(0.003)	(0.003)
Population Growth$_{(t-1)}$	0.144***	0.142***
	(0.036)	(0.036)
Democracy	-0.296***	-0.298***
	(0.106)	(0.106)
ln(1950 GDP per Capita)	-0.447***	-0.448***
	(0.061)	(0.061)
Constant	6.655***	6.971***
	(0.482)	(0.466)
R^2	0.744	0.745
Root Mean Square Error	0.549	0.548
No. of Observations	3125	3125

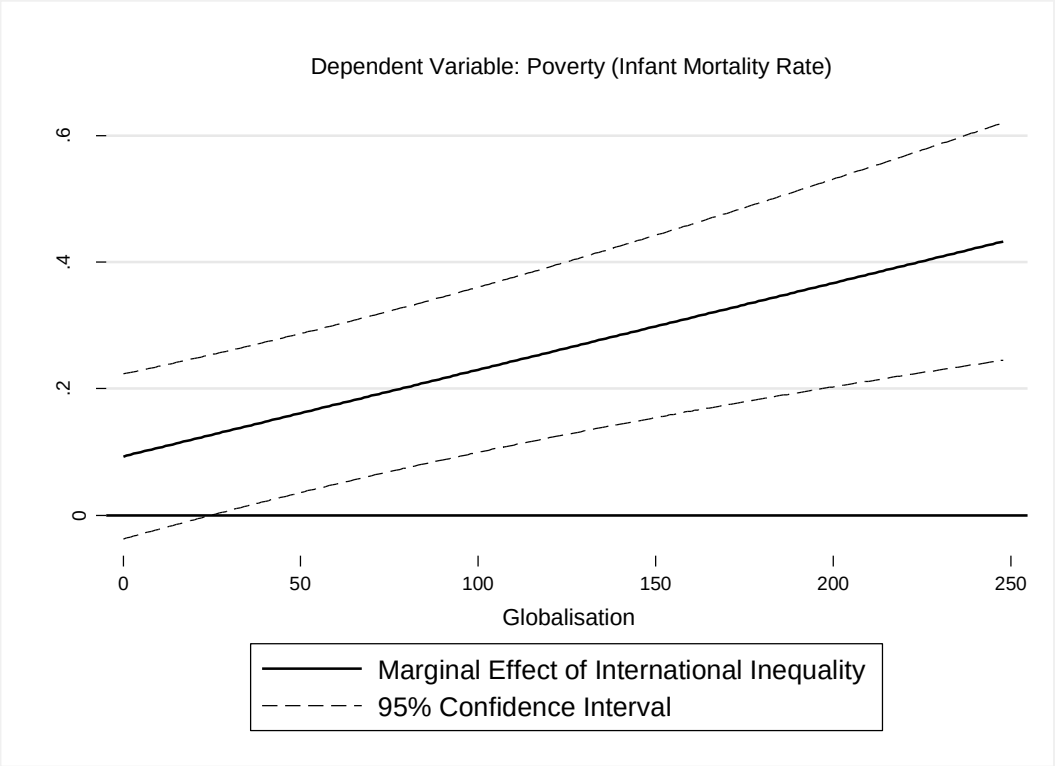
Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively

The results of Model 1 show that a one unit increase in *globalisation* is associated with a reduction of 0.3 percentage-points in IMR, a result that is statistically significant to the 99 percent confidence level. As such, the impact of *globalisation* on poverty is not particularly strong. We would also expect there to be a high degree of endogeneity between globalisation and GDP per capita, whereby changes in GDP per capita may explain both the increase in globalisation and the reduction in IMR. Furthermore, as Figure 7.1 demonstrates there has been an increase in globalisation over time, which has occurred as health has improved around the world, as Ross (2006) has pointed out. Hence, the negative relationship between globalisation and poverty may be explained by increased GDP per capita or general improvements in health over time.

In Model 2, the interaction term, *international inequality x globalisation*, is added to the analysis. The inclusion of the interaction term enables us to see whether *international inequality* has a stronger effect on poverty as *globalisation* increases (or decreases) or whether *international inequality* has a weaker effect on poverty with higher levels of *globalisation*. As such, this regression tests hypothesis 4.1. The results of Model 2 show that the OLS regression produces a point estimate of 0.001 on the interaction term, which is statistically significant to the 99 per cent level. The positive sign of the coefficient suggests that as globalisation increases, the effect of international inequality on poverty increases.

To better demonstrate the marginal effect of *international inequality* on poverty as *globalisation* increases; I have graphed the effect of the interaction in Figure 7.8. The solid line represents the coefficient estimate and its concomitant 95 per cent confidence intervals are displayed as the dotted lines.

Figure 7.8. The Marginal Effect of International Inequality as Globalisation Changes



The positive slope of the graph shows that as *globalisation* increases, the effect of *international inequality* on poverty increases. The marginal effects graph demonstrates that in 1990, when globalisation is 98; a one unit increase in international inequality is associated with a 23 percentage-point increase in poverty. In 2000, when globalisation is 139; a one unit increase in international inequality is associated with a 27.2 percentage-point increase in poverty. As such, while these differences are not extremely large, they do suggest that increased globalisation is associated with a notable increased in the effect of international inequality on poverty. Therefore, the results of the regression analysis provide support for hypothesis 4.1.

7.4.2. Robustness Checks

In order to confirm the robustness of the findings of this section, I conduct a number of additional checks. I begin by using alternative models to conduct the regression analysis. Next, I consider whether the findings from the regression analysis above are robust to the inclusion of additional control variables. Finally, the analysis considers whether alternative measures of globalisation and poverty impact the findings. The results of the robustness checks are provided in Appendix D.

Alternative Models

Table 7.2 presents the results of the regression analysis with the interaction term *international inequality x globalisation*, using alternative regression models. Model 1 presents the results of a panel-corrected standard errors model. In Model 2, the results of the regression analysis controlling for time fixed effects are shown. Model 3 presents the results of a country and time fixed effects regression model.

The results remain statistically significant at the 99 per cent confidence level when using a panel-corrected standard errors model. Furthermore, Models 2 and 3 demonstrate that the inclusion of time and country fixed effects also does not alter the findings of the analysis.[118] With both models, the analysis yields a regression coefficient of 0.001 on the interaction term, which is statistically significant at the 99 per cent confidence level. As such, when using results suggest that the findings regarding the manner in which globalisation conditions the relationship between international inequality and poverty are robust when

[118] As the variable *globalisation* is the same for each country in any given year, it is excluded from the time fixed effects model due to collinearity.

controlling for time and country fixed effects. The implication of this result is that in addition to globalisation increasing the effect of differences in position between countries; the process of globalisation means that changes in a country's position over time also lead to greater change in poverty levels. As the world becomes increasingly globalised; a country moving from a more central position to a more peripheral positions has a greater effect on increasing poverty in that country.

Table 7.2. OLS with PCSE and Fixed Effects Regression Results for Globalisation International Inequality and Poverty

	1	2	3
International Inequality	0.133***	0.200***	-0.105***
	(0.042)	(0.073)	(0.015)
Globalisation	-0.006***		-0.008***
	(0.001)		(0.000)
International Inequality x Globalisation	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)
Latitude	-0.012***	-0.011***	
	(0.001)	(0.001)	
Landlocked	0.074***	0.050*	
	(0.017)	(0.027)	
Economic Growth$_{(t-1)}$	-0.008**	-0.008***	0.000
	(0.003)	(0.002)	(0.001)
Population Growth$_{(t-1)}$	0.142***	0.132***	-0.005
	(0.013)	(0.009)	(0.000)
Democracy	-0.298***	-0.288***	0.001
	(0.025)	(0.024)	(0.013)
ln(1950 GDP per Capita)	-0.448***	-0.432***	
	(0.015)	(0.015)	
Constant	6.971***	6.071***	4.684***
	(0.233)	(0.127)	(0.048)
R^2	0.745	0.703	0.055
No. of Observations	3125	3125	3125

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively. For Model 2 and 3, time- and country-dummies are not reported.

Additional Controls

The inclusion of additional variables, such as *trade openness* and *institutions* (discussed in the previous chapter) do not alter the results significantly. With the inclusion of both of these variables, *globalisation* and the interaction term, *international inequality x globalisation*, yield results similar to those presented in Table 7.1, statistically significant at the 99 per cent confidence level. Furthermore, it is worth noting that the direct impact of globalisation on poverty holds when GDP per capita is included as an additional control. As such, this suggests that the relationship between globalisation and poverty is not simply a result of GDP per capita leading to greater globalisation. These results are presented in Appendix D.

Alternative Measures of Dependent and Independent Variables

When using logged *GDP per capita* to measure poverty, we find that both *globalisation* and the interaction terms yield similar point estimates to those of Table 7.1, which are statistically significant to the 99 per cent confidence level. Hence, the findings are robust to the use of an alternative measure of poverty. The use of the alternative measure of *globalisation*, which is based on calculating network density with the inclusion of all countries in the network, rather than only those present for all of the years of analysis, the effect of *globalisation* on poverty increases very slightly (the regression coefficient is 0.004). The value of the regression coefficient for the interaction term also increase very slightly (to 0.002) when using the alterative measure of globalisation. As such, the use of the

alternative measure provides confirmation of the robustness of the findings of this section. Furthermore, the relationship between globalisation and poverty also holds when the globalisation measure is lagged by one year or by two year, and when the interaction term is lagged by one year or by two years. See Appendix D for the tables of these results.

7.5. Discussion

The analysis conducted in this chapter has built upon the findings of the previous chapter by considering how the relationship between international inequality and poverty is affected by structural changes in the international system linked to the process of globalisation. In general, the results provide support for the arguments made in Chapter 3. Specifically, the chapter has considered the effects of globalisation on poverty, focusing on how globalisation conditions the relationships between international inequality and poverty. I use a network-based measure of globalisation, which focuses specifically on the globalisation of trade. Using this measure, I find that the general trend in the level of globalisation is very similar to alternative measures of globalisation based on trade/GDP. However, the network density measure of globalisation suggests that the increase in globalisation since 2002 is sharper and larger than with the alternative measure.

In looking at the relationship between globalisation and international inequality between 1980 and 2007, we find that there does not appear to be any clear link between globalisation and the positions countries occupy in the international system. As discussed in Chapter 4, the proportion of countries occupying the different positions has remained fairly constant over time, while globalisation has increased in the time period analysed. Again, it is

important to note that the network measure of structural international inequality used in this study does not consider 'distance' between countries' positions in the international system. However, if there were a strong link between globalisation and structural international inequality, we would still expect to see some evidence for globalisation to be linked to positions countries occupy – which does not appear to be the case, here. Of particular importance for this study is whether the periphery (Position 4) countries have participated in the process of globalisation or not. In other words, is the international inequality that has been discussed in this study a result of some countries being more 'globalised' than others, as some, such as the World Bank (2002) have suggested. In order to consider this argument, I assess whether periphery countries' participation in the global economy increases as globalisation increases.

The results suggest that the periphery countries' trade relations have increased during the period in which globalisation has increased; however, the relationship is not particularly strong. When we consider the differences in levels of trade openness between countries in the periphery and countries in the other three positions, it can be seen that for much of the period, periphery countries are as open to trade as countries in the other positions. In fact, I find that in the mid-1990s, countries in Position 4 are more open to trade than countries in any of the other three positions. However, between 2004 and 2007, periphery countries have lower trade/GDP ratios than countries in the other positions, and there is a slight divergence between the levels of openness of periphery countries and those in the other positions. In general, based on levels of trade openness, I do not uncover evidence to suggest that over the period in which globalisation is increasing, periphery countries are less open to trade than other countries, supporting arguments made by Kaplinsky (2000) and

Rodrik (2001). As such, while there is not strong evidence that periphery countries increase their participation in the international economy as globalisation increases; we can reject the view of periphery countries somehow representing those have 'left behind', as the World Bank (2002) viewpoint would suggest.

The results of the regression analysis show that globalisation is associated with lower poverty, when controlling for other factors. While the effect of globalisation on poverty is not particularly large; it is important to note that this result holds even when controlling for time fixed effects, and hence the effect of higher globalisation on lower poverty cannot be attributed to general improvements in health over time. Furthermore, it is also important to note that the relationship holds even when controlling for per capita GDP levels. Therefore, while the direction of causality in the relationship between increased globalisation and GDP per capita is likely to run in both directions; the effect of higher network density (globalisation) on lowering infant mortality rate occurs independently of the relationship between globalisation and GDP per capita. This would suggest some support for the view that globalisation lowers poverty is through the improved availability of higher quality and wider-ranging products at a lower cost (Kaplinsky 2005).

As highlighted previously, however, much of the criticism of globalisation focuses on how globalisation has reinforced inequalities between countries – and this in turn has had led to higher poverty. From this perspective, globalisation conditions the relationship between international inequality and poverty. In order to test the effects of globalisation on the international inequality-poverty relationship, I have included an interaction term, *international inequality x globalisation*, in the regression analysis. If, as some argue, globalisation has little effect on between country inequality and poverty, then we would

have expected the interaction term to have little effect in the regression model. The view held by many proponents of globalisation is that increasing interconnectedness of the international system has meant that inequalities between countries are no longer important, and that poverty is residual to globalisation. In other words the underlying reason for the persistence of poverty in a globalised world is because some people are not able to participate in the process of globalisation (World Bank 2002; Wolf 2004). If this were the case, we would expect the regression coefficient for the interaction term to be negative; as globalisation increases, the effect of international inequality on poverty should decline. Finally, a third perspective is that poverty is relational to the process of globalisation (Kaplinsky 2005; Krugman and Venables 1995). From this viewpoint the combination of increased competition that has followed from the process of globalisation and international inequality between countries, has meant that while some have been able to benefit from the globalisation, others are worse off as a result. As such, the view suggests a positive regression coefficient for the interaction term, whereby increased globalisation is associated with a stronger relationship between international inequality and poverty.

The results in Table 7.1 provide support for the third perspective; increased levels of globalisation lead to international inequality having a larger effect on poverty. As such, the analysis provides confirmation of hypothesis 4.1. This is depicted in Figure 7.8. Therefore, the results provide support for the view that globalisation is a 'win-lose' process for developing countries, rather than being the 'win-win' process that many proponents of globalisation has argued (see Kaplinsky 2005). While the effect of globalisation on the international inequality-poverty is not particularly strong – the results do show that the

process of globalisation has not eroded inequalities between countries, or reduced the impact of these inequalities, as some have suggested.

The case of Zambia, discussed in the introduction and in the previous chapter, provides a clear example of how the process of globalisation can increase the impact of international inequality on poverty. In 1980, Zambia was in the lower semi-periphery (Position 3) and had an infant mortality rate of 91.8. Sixteen years later, in 1996, the country remained in the lower semi-periphery (Position 3); however, its IMR had risen to 105.1. This is at a time when infant mortality rates around the world were declining (Ross 2006). During the 1990s the country implemented swift and comprehensive trade liberalisation, which as discussed previously, had a number of negative consequences. The liberalisation of the agricultural sector had a negative impact on smaller-scale farmers who were unable to obtain necessary inputs. Furthermore, the reforms led to the rapid collapse of the country's small manufacturing section (McCulloch et al. 2001; Green 2008). These policies were justified by the IMF on the basis of needing to curtail inflation in Zambia; yet, as Hertz (2004: 19) argues, in Zambia's case, the implementation of these policies made little sense given that the rise in inflation was the result of the increase in international oil prices, rather than because of domestic factors. Instead, these policies can be seen as part of the dominant ideology that formed the Washington Consensus (see Gore 2000; Wade 2007). Furthermore, the promotion of these policies by developed countries and the international financial institutions has been central in driving the process of globalisation (see Woods 2000; Stiglitz 2002; Chang 2007). As such, the manner in which Zambia's poverty increased in the 1990s provides an example of how the process of globalisation can increase the effects of international inequality on poverty.

It is, again, important to highlight the limitations of the analysis conducted here. As has been widely discussed, the process of globalisation is complex and involves economic, political, social, and cultural dimensions. The focus here has solely been on the globalisation of trade, and, as such, does not consider the effect of other dimensions of globalisation on poverty. This is a significant limitation, in terms of the measure of globalisation, as a number of scholars argue that the process of globalisation has been far more extensive in other areas, such as finance (see Payne 2005). For example, Stiglitz (2002) has argued that the effect of financial liberalisation – associated with globalisation – has had a far more negative effect on developing countries than greater trade liberalisation.

7.6. Concluding Remarks

This chapter has considered how changes in the structure of the international system impact the relationship between international inequality and poverty, which was analysed in the previous chapter. Specifically, this chapter has focused on examining how the process of globalisation has affected the relationship between international inequality and poverty, which was analysed in the last chapter. The results, in general, provide support for the arguments made in Chapter 3, whereby globalisation is found to increase the effect of international inequality on poverty. As such, the analysis conducted in this chapter demonstrates that the effect of international inequality on poverty is likely to increase as the world becomes increasingly globalised. In the next chapter, I consider the impact of domestic inequality on poverty, and whether the impact of domestic inequality on poverty varies according to the level of international inequality a country faces.

8. Domestic Inequality, International Inequality, and Poverty

The empirical analysis conducted so far in this thesis has focused on examining international inequality and its effects. In this chapter, I incorporate domestic inequality into the analysis, by considering the relationship between domestic inequality and poverty. In doing so, the analysis aims to shed greater lights on the process through which domestic inequality impacts poverty. This chapter also examines the relationship between domestic inequality and poverty – and, in particular, assesses whether the effect of domestic inequality on poverty varies according to the levels of international inequality a country faces. In doing the analysis conducted here moves beyond the limitations of both mainstream development analysis – which tends to focus exclusively on domestic causes of poverty ignoring the internaitonal context – and classic underdevelopment theory – which tended to explain development through external-international factors while ignoring the role of domestic processes.

This chapter is outlined as follows. In the first section, I summarise the theoretical arguments made in Chapter 3 on how domestic inequality is posited to affect poverty through the impact domestic inequality has on the policy process. This section also provides a brief discussion of existing quantitative analyses of the relationship between domestic inequality and IMR, highlighting the shortcomings of this literature that the analysis conducted in this chapter addresses. In the second section I conduct a regression analysis assessing the effects of domestic inequality on poverty. The analysis also considers whether – in line with the argument laid out in Chapter 3 – domestic inequality has a greater impact

on poverty in democracies than in non-democracies. This is done through including an interaction term in the regression model. In the third section I discuss the relationship between domestic inequality and international inequality, and the implications of this relationship for poverty levels. Specifically, I posit that the effect of domestic inequality on poverty is likely to be greater in more central countries that face lower international inequality than in more peripheral countries that face higher international inequality. Section four empirically examines this argument through the use of a regression analysis with the interaction term *domestic inequality x international inequality*. In the fifth section I provide a discussion of the chapter's findings, particularly with regard to the argument set out in Chapter 3.

8.1. Domestic Inequality and Poverty

As the example of Mexico provided in Chapter 1 highlights, the principal channel through which domestic inequality affects poverty is through the impact of domestic inequality on the policy process. In countries with higher levels of domestic inequality, policies are skewed to favour wealthier members of society, which, in turn, means they gained disproportionate access to resources and opportunities (Wade 2007; Rao 2006; Karl 2002). Higher domestic inequality can enable the wealthier to shape policy outcomes for their own benefit as a result of vote capture through clientelism (Breman 1974; Clapham 1982; Eade 1997; Robinson and Verdier 2002); because the wealthier have greater access to resources, which enables the rich to prevail in open disputes (Goodin and Dryzek 1980; Glaeser et al. 2003); because the wealthier are able to set the policy agenda and prevent some issues, such as a policies for greater redistribution, from being discussed (Bachrach and Baratz

1970; Solt 2008; Mosse 2010); and finally, because the lack of resources available to the poorer in society means that they may abandon their attempts to influence policy (Lukes 2005; Mosse 2010). As such, the analysis in this chapter tests hypothesis 5, which states that countries with higher domestic inequality experience higher poverty levels than those countries with lower domestic inequality.

In addition to testing the effects of domestic inequality on poverty, I also aim to shed more light on the mechanism through which inequality within countries impacts poverty, and whether domestic inequality affects poverty through the 'policy channel' as I have posited above. The analysis conducted in this chapter examines whether this is the case in two ways. The first is by testing hypothesis 5 – that higher domestic inequality is associated with higher poverty – *controlling for the effects of economic growth* in the model. By doing so, the analysis demonstrates that the relationship between domestic inequality and poverty occurs independently of any relationship between domestic inequality and growth. The second way in which the analysis examines the process through which domestic inequality impacts poverty is by testing hypothesis 6, that the effect of domestic inequality on poverty is higher in democracies than in non-democracies. This hypothesis is based on the argument that the public is more likely to be able to influence policies in a democracy than in a non-democracy, and as such if inequalities shape impact poverty through the manner in which it enables wealthier members of society to have greater influence over policy outcomes, while the less wealthy have less influence on policy; we would expect there to be a greater effect in democracies.

Before analysing the effects of domestic inequality on poverty it is worth considering the findings of existing quantitative studies regarding the relationship between domestic

inequality and poverty. As I have noted previously, much of the development and political economy literature has tended to focus on the relationship between domestic inequality and per capita income (see Kanbur and Squire 2001; Banerjee and Duflo 2003). Consequently, relationships between domestic inequality and alternative measures of poverty, such as infant mortality, have been under-analysed in the development and political economy literature. There has, however, been a number of studies in the public health literature have considered the relationship between income inequality and public health outcomes, such as infant mortality rate (for example, Wilkinson 1992; 1996; 2000; Waldman 1992; Kaplan et al. 1996; Chiang 1999; Lynch et al. 2000; Biggs et al. 2010).[119] There has been much debate on the effects of income inequality on public health in this literature. While the majority of studies that Wilkinson and Pickett (2006) review find a negative relationship between income inequality and public health (i.e. higher inequality worsens health outcomes); this finding has more recently been contested on methodological grounds (see Biggs et al. 2010).

There are a number of important differences between the existing studies of income inequality and IMR conducted in the public health literature and the analysis conducted here. Firstly, the public health literature, in general, has tended to focus on a narrow range of countries, and in particular, the wealthiest countries (Deaton 2003).[120] As such, these studies do not consider the cross-country evidence, as I do here – particularly, with regard to developing countries. Another important difference is that the focus of these studies is more specifically on public health than on poverty, unlike the analysis conducted here,

[119] See Wilkinson and Pickett (2006), and Deaton (2003) for reviews of the literature on income inequality and public health outcomes.
[120] This is in largely due to there previously being a lack of high quality data for developing countries (Deaton 2003).

which uses IMR as a proxy measure of poverty. As a result, the regression models used in these studies often tend to include other variables, which we would associated with poverty, such as education outcomes and income levels (Biggs et al. 2010). A final – and related – difference is that in focusing on health independently of poverty, the theoretical approach taken here differs from the approach taken in the majority of public health studies. In fact, a key weakness with the inequality-public health literature that Deaton (2003: 114) points out is that, in general, 'the literature does not specify the precise mechanisms through which income inequality is supposed to affect health'. As such, this again leads to very different specifications for the regression models, whereby public health studies often include variables such as quality of health service, investments in health, access to clean drinking water, which based on the argument I have made, are affected by domestic inequality.[121]

8.2. Findings

In analysing the effects of domestic inequality on poverty, and whether the effect of domestic inequality on poverty is stronger in democracies, I conduct an OLS regression using the *core model* specification and the *alternative model*, discussed previously. The results of the regression analysis using the *core model* specification are provided in Table 8.1, below. The *alternative model* specification is used as an additional robustness check, and the results are presented in Appendix E. Furthermore, the regression analysis is also conducted with the inclusion of the interaction term, *domestic inequality x democracy*, which enables

[121] It is worth pointing out that in his review of the inequality-health literature, Deaton (2003) discusses the link between income inequality and investments in health, political inequalities and public goods, citing some of the studies I have referred to in Chapter 3.

us to observe whether the effect of domestic inequality on poverty differs in democracies and non-democracies. I conduct a number of additional checks to test the robustness of the findings, including the use of time and country fixed effects models, which I discuss in section 8.2.2.

The analysis uses countries logged IMR to measure poverty. Countries' Gini levels to measure domestic inequality. It is worth highlighting again that there are both strengths and weaknesses of using the Gini coefficient as a measure of domestic inequality. The principal weakness of the measure is that it can reveal important details regarding the within-country distribution of income, such as the share of national income (see Palma 2011), and the extent to which inequality within countries has an important group-based or 'horizontal' component (see Stewart 2002; Ostby 2008). However, a key strength is that it provides us with a measure of domestic inequality that enables analysis of the effects of domestic inequality across different countries, and furthermore, it allows us to assess the effects of changes in domestic inequality over time.

8.2.1. Results of the Regression Analysis

Table 6.3, below, present the results of the multivariate OLS regression analysis of poverty between 1980 and 2007. As discussed previously, the analysis uses country-clustered standard errors. Model 1 includes the lagged *economic growth* variable, which in Model 2, *economic growth* is omitted from the regression. By excluding economic growth from Model 2, I can assess the extent to which the relationship between domestic inequality and

poverty is affected by economic growth. In Model 3, I include the interaction term, *domestic inequality x democracy*.

Table 8.1. Regression Results Domestic Inequality and Poverty

	1	2	3
Domestic Inequality	0.021*** (0.006)	0.022*** (0.006)	0.013** (0.006)
Domestic Inequality x Democracy			0.018** (0.009)
Latitude	-0.004 (0.006)	-0.004 (0.006)	-0.002 (0.006)
Landlocked	0.203** (0.103)	0.209** (0.103)	0.221** (0.102)
Economic Growth$_{(t-1)}$	-0.017*** (0.006)		-0.018*** (0.006)
Population Growth$_{(t-1)}$	0.177*** (0.065)	0.167** (0.068)	0.178*** (0.065)
Democracy	-0.348*** (0.130)	-0.349*** (0.133)	-1.121*** (0.429)
ln(1950 GDP per Capita)	-0.536*** (0.097)	-0.526*** (0.098)	-0.505*** (0.102)
Constant	6.436*** (0.659)	6.296*** (0.664)	6.567*** (0.638)
R^2	0.721	0.716	0.726
Root Mean Square Error	0.577	0.582	0.572
No. of Observations	2321	2321	2321

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

The results of the analysis provide strong support for the argument that domestic inequality affects poverty levels. Model 1 show that a one per cent increase in countries' Gini levels is associated with a 2.1 percentage-point increase in infant mortality. This is statistically significant to the 99 per cent level. Model 2 shows that the omitting economic growth has very little effect on the regression coefficient for domestic inequality. The effect of domestic inequality on poverty changes from 2.1 per cent to 2.2 per cent. As such, the analysis provides support for the argument made here – that the effect of domestic inequality on poverty occurs independently of levels of economic growth in a country, and as such the evidence supports the view that domestic inequality impacts poverty though the 'policy channel'. Overall, the analysis provides strong support for hypothesis 5, that countries with higher levels of domestic inequality experience higher levels of poverty.

Returning to the example of Mexico, discussed in the introduction, demonstrates the effect that domestic inequality can have on poverty. Despite experiencing significant economic growth between 1990 and 2005, Mexico's average infant mortality rate was over 20. In 1999, the country's IMR was 26.2 which means that of every 1000 infants born, over 26 die before the age of one – a figure that is high in comparison to other industrialised countries. During this same period, Mexico's Gini levels are around 48, which is certainly high by international standards. In fact, if we compare Mexico with Sri Lanka, we find that in 1999 Sri Lanka's IMR is 17 compared to Mexico's 26.2. Yet the governance and institutions and overall GDP per capita levels were much worse in Sri Lanka than in Mexico. The major

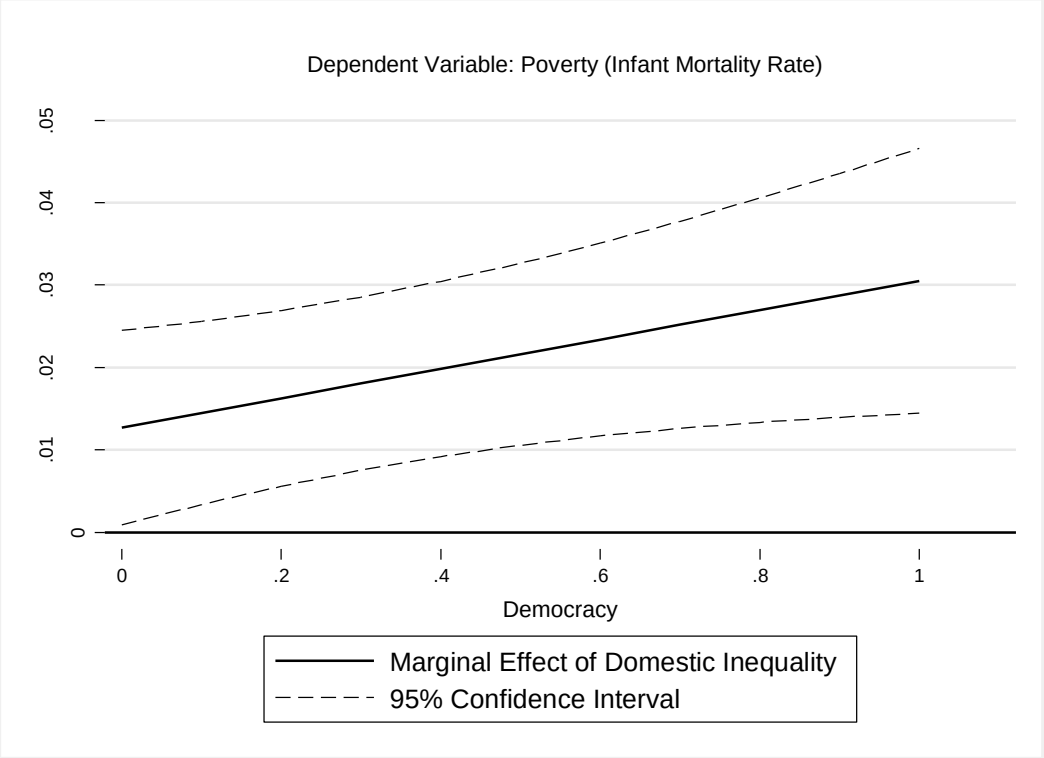
difference between the two countries, however, is that Sri Lanka's Gini level in 1999 is 39 compared to Mexico's which is 49.[122]

The results also provide support for existing explanations of poverty. Economic growth is associated with lower poverty levels. The results suggest that a one per cent increase in the population of a country is associated with a 17.7 percentage-point increase in infant mortality. Once again, democracy is associated with lower poverty levels, and past poverty has a strong and statistically significant effect on current poverty. It is worth noting, however, that the results here show that countries' *latitude* does not have a statistically significant effect on poverty. A country being *landlocked*, though, is associated with a 20 percentage-point increase in poverty.

Model 3 includes the interaction term, *domestic inequality x democracy*. The regression analysis produces a point estimate of 0.018 on the interaction term, which is statistically significant to the 95 percent confidence level. The positive sign of the coefficient suggests that the effect of domestic inequality on poverty increases as countries move from non-democracies to democracies, as we would expect based on the argument made in Chapter 3. The effect of the interaction is graphed in Figure 4.1. The solid line represents the coefficient estimate and its concomitant 95 percent confidence intervals are displayed as the dotted lines.

[122] In 1999, according to the Polity IV data Mexico had a high quality institutionalised democracy, while Sri Lanka did not. Mexico's GDP per capita in 1999 was $11485.8. Sri Lanka's GDP per capita in 1999 was $2910.0.

Figure 8.1. Marginal Effect of Domestic Inequality as Democracy Changes



The upward sloping curve demonstrates that domestic inequality has a large impact on poverty in democracies than in non-democracies. When the marginal effects of domestic inequality on poverty are calculated, using the interaction analysis, the results suggest that in non-democracies a one per cent increase in inequality is associated with 1.3 per cent increase in poverty, while in democracies a one percent increase in inequality is associated with a 2.9 per cent increase in poverty. In both cases, the effect of inequality on poverty is significant at the 95 per cent confidence level.

8.2.2. Robustness Checks

I also conduct a number of additional checks to confirm the robustness of the findings on the effect of domestic inequality on poverty. The full results of the additional checks are provided in Appendix E. I begin by analysing whether the results of the analysis are robust when using alternative model specifications. Next the impact of including additional and alternative control variables has on the findings is considered. Finally, I consider whether the findings of this analysis are consistent when using alternative measures of the principal independent and dependent variables.

Alternative Models

The robustness of the findings is tested using *alternative regression* models, the results of which are provided in Appendix E. The results using the *alternative model* confirm that findings of the analysis conducted above showing that domestic inequality has a significant effect on poverty. Table 8.2 presents the results of the analysis using an OLS with panel-corrected standard errors (Model 1), a time fixed effects model (Model 2), and a time and country fixed effects model (Model 3). The use of OLS regression with panel-corrected standard errors confirms that domestic inequality has a statistically significant effect on poverty at the 99 percent confidence level. When we used a time fixed effects model, the regression analysis yields a point estimate of 0.021 on *domestic inequality*, which is statistically significant at the 99 percent confidence level. As such, this suggests that the effect of domestic inequality on poverty is robust when we control for time effects.

Table 8.2. OLS with PCSE and Fixed Effects Regression Results for Domestic Inequality and Poverty

	1	2	3
Domestic Inequality	0.021***	0.021***	-0.005***
	(0.002)	(0.002)	(0.001)
Latitude	-0.004***	-0.005***	
	(0.001)	(0.001)	
Landlocked	0.203***	0.224***	
	(0.018)	(0.032)	
Economic Growth$_{(t-1)}$	-0.017***	-0.014***	0.003***
	(0.004)	(0.003)	(0.001)
Population Growth$_{(t-1)}$	0.177***	0.153***	-0.032***
	(0.019)	(0.013)	(0.006)
Democracy	-0.348***	-0.288***	0.024*
	(0.026)	(0.030)	(0.015)
ln(1950 GDP per Capita)	-0.536***	-0.569***	
	(0.015)	(0.019)	
Constant	6.436***	6.698***	4.021***
	(0.156)	(0.158)	(0.055)
R^2	0.721	0.720	0.014
No. of Observations	2321	2321	2321

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively. For Model 2 and 3, time- and country-dummies are not reported.

However, when using a country fixed effects model or a two-way fixed effects model (country and time fixed effects), the results suggest – rather surprisingly – that domestic inequality has a small but statistically significant negative relationship with poverty.[123] In other words we find that when time and country fixed effects are controlled for; an increase in domestic inequality is associated with a very small decrease in poverty. An equally surprising finding of the fixed effects model is that higher *economic growth* is associated

[123] The inclusion of a squared domestic inequality term to test whether the relationship may be curvilinear is statistically insignificant and does not impact the findings of the two-way fixed effects regression.

with higher poverty. There are a number of possible explanations for these results when using the fixed effects models, which I discuss in Section 8.5.

Additional Controls

When we use the *alternative model*, which includes *institutions*, *latitude*, *trade openness*, and *1950 GDP per Capita*, the effect OLS regression yields a point estimate of 0.026 on *domestic inequality*, which is statistically significant at the 99 per cent confidence level. The effect of domestic inequality on poverty is robust to the inclusion of additional variables. When using the core model, including the additional control variables, *institutions*, *trade openness*, *quality of government*, and whether a country is experiencing *civil conflict*, I find that domestic inequality has a strong effect on poverty, significant to the 95 per cent level. As such, the results of the OLS regression, which demonstrated a statistically significant positive relationship between domestic inequality and poverty, are robust to the inclusion of additional control variables in the regression model.

Alternative Measures of Dependent and Independent Variable

I also check to see if similar results are obtained when using an alternative measure of poverty. I find that domestic inequality does *not* have a statistically significant effect on *GDP per capita* – a result that holds when *economic growth* is omitted from the model. This suggests that the effect of inequality on poverty is not robust to alternative measures of poverty; specifically inequality does not have an effect on poverty when we use a distribution-neutral measure of poverty. This result is not particularly surprising and is

consistent with the arguments made in Chapter 3. I discuss this finding in more detail in section 8.5.

I also conduct the analysis using an alternative measure of within-country income distribution; the share of national income received by the bottom quintile of the population, which is taken from the World Bank's WDI data. Rather than considering distribution across the entire population of the country, this measure focuses on the level of inequality faced by the poorest in each society. The results of the analysis support the finding that inequality has a strong effect on poverty (measured by IMR), which is statistically significant to the 99 per cent level. The regression analysis yields a point estimate of -0.042 on *Income Share of Lowest 20 per cent*, which suggests a one percent increase in the share of national income received by the bottom quintile in associated with a four percent decrease in poverty.

I also consider alternative measures of the interaction term. In the main results presented above, the measure of *democracy* is a binary variable based on Polity IV index, where countries are coded '1' if their polity scores are greater to or equal to 6, and '0' otherwise. In order to further test whether the relationship between domestic inequality and poverty varies as levels of democracy change, I also conduct the analysis using the continuous *polity* score, which is a continuous measure of democracy between 0 and 10. When I include the interaction term, *domestic inequality x polity*, in the analysis; the regression coefficient produced for the interaction term is 0.001, which is statistically significant at the 95 per cent confidence level. Therefore, the increased effect of income inequality on poverty occurs as countries become more democratic at all levels of democracy, not simply when a country shifts to and from being a strong democracy.

8.3. The Interaction of International and Domestic Inequality

This study has to this point, separately considered the effects of international inequality on poverty and the impact of domestic inequality on poverty. An important question that arises, which was posed in the introduction, is does domestic inequality have the same impact on poverty in countries which face different levels of international inequality as a result of the different positions in the international system? In other words, turning to the examples of Mexico and Zambia used previously in this study; does domestic inequality have the same effect on poverty in Zambia, as it does in Mexico, even though Mexico is in a more central position in the international system – and hence faces lower international inequality – than Zambia, which is in a more peripheral position? It is this question that I consider in this section.

Before considering this question, however, I first look to see if there is a relationship between international inequality and domestic inequality. This study has previously analysed the effects of international inequality and domestic inequality on poverty in separate regression analyses. The results of this analysis suggest that both inequality between countries and inequality within countries have a significant effect on poverty. International and domestic inequalities, however, do not occur in isolation from one another. Therefore in this section, I consider the relationship between international and domestic inequality, and the effect of this relationship on poverty.

Underdevelopment theorists have typically tended to argue that international and domestic inequalities are closely linked (see Baran 1968; Frank 1969; Sunkel 1972; Cardoso and Faletto 1979). Consequently, from this perspective, international and domestic inequalities are seen to impact poverty largely through the same channels. In Chapter 3, I have argued

that while there may indeed be a strong relationship between international inequality and domestic inequality; the notion that international and domestic inequalities are endogenously related, whereby a change in one inevitably leads to a change in the other, is over-deterministic. Furthermore, such an approach fails to acknowledge important differences across the developing world, particularly with regard to social reforms that have taken place and the levels of domestic inequality.

This study posits that international inequality and domestic inequality impact poverty, predominantly, through two different channels. While international inequality has an effect on the distribution of resources within a country; the principal channel through which international inequality impacts poverty is through its effect on the availability of resources to a country. The effect of domestic inequality on poverty occurs because high levels of within-country inequality more directly affect policy outcomes, which shape the distribution of resources within a country. As such, international inequality primarily affects poverty through its impact on the availability of resources; while domestic inequality affects poverty through shaping the distribution of resources within a country. If this is indeed the case, then we would expect that domestic inequality has a greater impact on countries facing lower levels of international inequality (at more central positions in the international system) than in countries facing higher levels of international inequality (at more peripheral positions in the international system). In other words, countries in more central positions in the international system, such as Mexico, have access to sufficient resources to counter extreme poverty. Therefore, in these countries poverty is more likely to be a result of the distribution of these resources within the country, which is largely shaped by domestic policies. In such cases, poverty is more strongly linked to domestic inequality than to

international factors. Countries in more peripheral positions, such as Zambia, on the other hand, have lower overall levels of resources available to them, and may have insufficient resources available to avoid high levels of poverty. In these cases, the within-country distribution of resources is unlikely to have a significant impact on poverty, because the principal problem is the insufficient resources available, which is in large part a result of international inequality. As such we would expect domestic inequality levels in more peripheral countries like Zambia to have less of an impact on poverty levels.

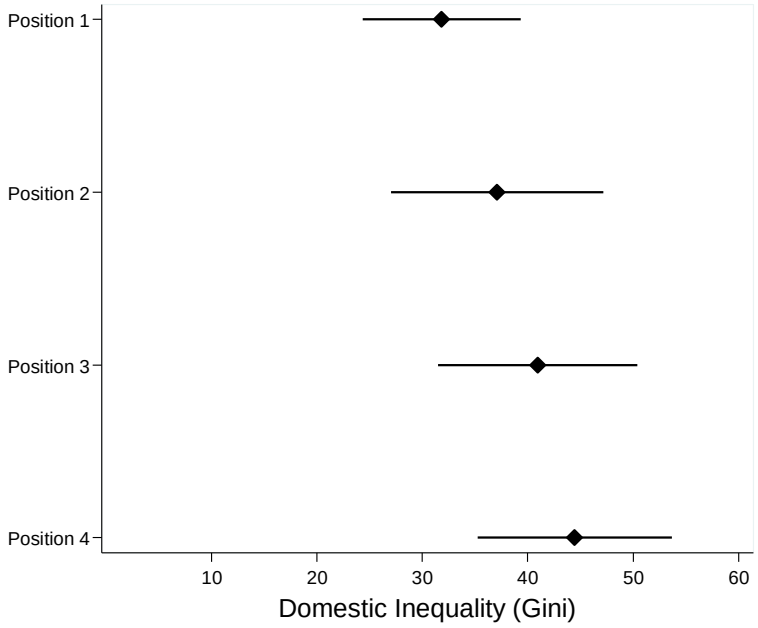
8.4. Findings

Before testing whether the effect of domestic inequality on poverty varies according to levels of international inequality countries face; I first analyse the relationship between international and domestic inequality, and the argument made by many underdevelopment theorists that position in the international system and domestic inequality levels are intrinsically linked. From this perspective, periphery countries have high levels of domestic inequality because of their peripheral positions. If this underdevelopment view holds, then there are two outcomes we would expect. First, we would expect that domestic inequality levels increase significantly as countries move from the core (Position 1) to the periphery (Position 4). Second, we would expect the effect of domestic inequality on poverty to fall significantly with the inclusion of the international inequality variable in the regression model, and vice versa, we would expect the effect of international inequality on poverty to decline with the inclusion of domestic inequality in the model.

Figure 8.2 presents mean Gini levels between 1980 and 2007 by countries' network positions. The graph shows that as network position increases mean domestic inequality also increases; however, the relationship is not particularly strong. The mean Gini level between 1980 and 2007 for countries in Position 1 (the core) is around 32 per cent, for those in Position 4 (the periphery) it is around 45 per cent. Countries in Position 2 and Position 3 have mean Gini levels of 37 per cent and 41 per cent, respectively. These differences are not particularly large, and furthermore, they may be explained by other factors that vary with both international and domestic inequality, such as geographical factors. In addition, when we consider the level of correlation between international inequality and domestic inequality, similar results are obtained.

The level of correlation between the two is around 0.39, which is statistically significant at the 99 percent confidence level, suggesting a weak statistically significant relationship between international inequality and domestic inequality. Therefore, while there is some suggestion of a relationship between international inequality and domestic inequality, the strength of the relationship does not seem to conform to the deterministic underdevelopment theory view of the relationship between inequalities between and within countries.

Figure 8.2. Domestic Inequality by Position in the International System



To further examine this argument, it is necessary to consider whether international inequality and domestic inequality impact poverty through the same channels. In order to do so I conduct a regression analysis, in which I include both *international inequality* and *domestic inequality*. If the effect of each of these variables on poverty occurs through the same – or very similar – channels; we would expect the results of the regression analysis to differ significantly when both variables are included to when each variable is included separately. Specifically, we would expect the regression coefficients for *international inequality* and *domestic inequality* to be much smaller – or to lose statistical significance – when they are included into the regression analysis together than for when they are included separately. In the regression, I also consider the effect of the interaction between international and domestic inequality on poverty.

8.4.1. Results of Regression Analysis

Table 8.3 provide the results of the multivariate regression analysis. The analysis uses an OLS regression with country-clustered standard errors. The regression tests the effects of international and domestic inequality on poverty, and the effect of the interaction of international and domestic inequalities on poverty. Model 1 repeats the analysis of the effect of *international inequality* on *poverty*, using the *core model* specification (see Table 6.1, Model 1). However, the observations are restricted to those for which domestic inequality observations are also available, in order to enable comparisons of the effects of *international inequality* and *domestic inequality* on *poverty* to be made. In Model 2, I include both *international inequality* and *domestic inequality*, thereby enabling an analysis of the effects of inequality between and within countries on poverty. In Model 3, the interaction term, *domestic inequality x international inequality*, is included to test whether the domestic inequality has a greater effect on poverty in countries that occupy a more central position in the international system than those occupying more peripheral positions, as I posit in hypothesis 7.

I have argued that the international inequality and domestic inequality impact poverty largely through different channels. In order to test hypothesis 7, that the effects of domestic inequality on poverty decreases as international inequality increases, Model 3 includes the interaction term, *domestic inequality x international inequality*, in the regression analysis.

Table 8.3. Regression Results International Inequality, Domestic Inequality and Poverty

	1	2	3
International Inequality	0.259***	0.235***	0.655***
	(0.077)	(0.071)	(0.176)
Domestic Inequality		0.019***	0.045***
		(0.005)	(0.012)
International Inequality x Domestic Inequality			-0.010***
			(0.004)
Latitude	-0.008	-0.002	0.000
	(0.006)	(0.006)	(0.006)
Landlocked	0.077	0.073	0.113
	(0.092)	(0.091)	(0.089)
Economic Growth$_{(t-1)}$	-0.014***	-0.013***	-0.013***
	(0.005)	(0.004)	(0.004)
Population Growth$_{(t-1)}$	0.186***	0.157**	0.156***
	(0.066)	(0.061)	(0.060)
Democracy	-0.309**	-0.347***	-0.337***
	(0.128)	(0.127)	(0.125)
ln(1950 GDP per Capita)	-0.448***	-0.444***	-0.442***
	(0.089)	(0.090)	(0.088)
Constant	6.118***	5.280***	4.184***
	(0.672)	(0.764)	(0.935)
R^2	0.723	0.741	0.748
Root Mean Square Error	0.575	0.556	0.549
No. of Observations	2321	2321	2321

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

The results show that the regression analysis yields a point estimate of -0.01 on the interaction term, which is statistically significant at the 99 per cent confidence level.[124] Hence, this suggests that the impact of domestic inequality on poverty varies according to

[124] Table 6.4 also presents the regression coefficients of the constitutive variables in the interaction term (*international inequality* and *domestic inequality*). As Brambor et al. (2006) point out these values correspond to the value that the variable would take if the other constituent variable is 0. As such, these regression coefficients have no substantive meaning as neither international inequality or domestic inequality ever take the value of 0.

countries' position in the international system, and vice-versa, the impact of international inequality on poverty varies according to the levels of domestic inequality. The negative sign of the coefficient means that the effect of *domestic inequality* on poverty decreases as *international inequality* increases (see Kam and Franzese 2007: 50). In order to better demonstrate the marginal effect of *domestic inequality* on poverty as *international inequality* (countries' position in the international system) increases; I have graphed the effect of the interaction in Figure 4.2. The solid line represents the coefficient estimate and its concomitant 95 percent confidence intervals are displayed as the dotted lines.

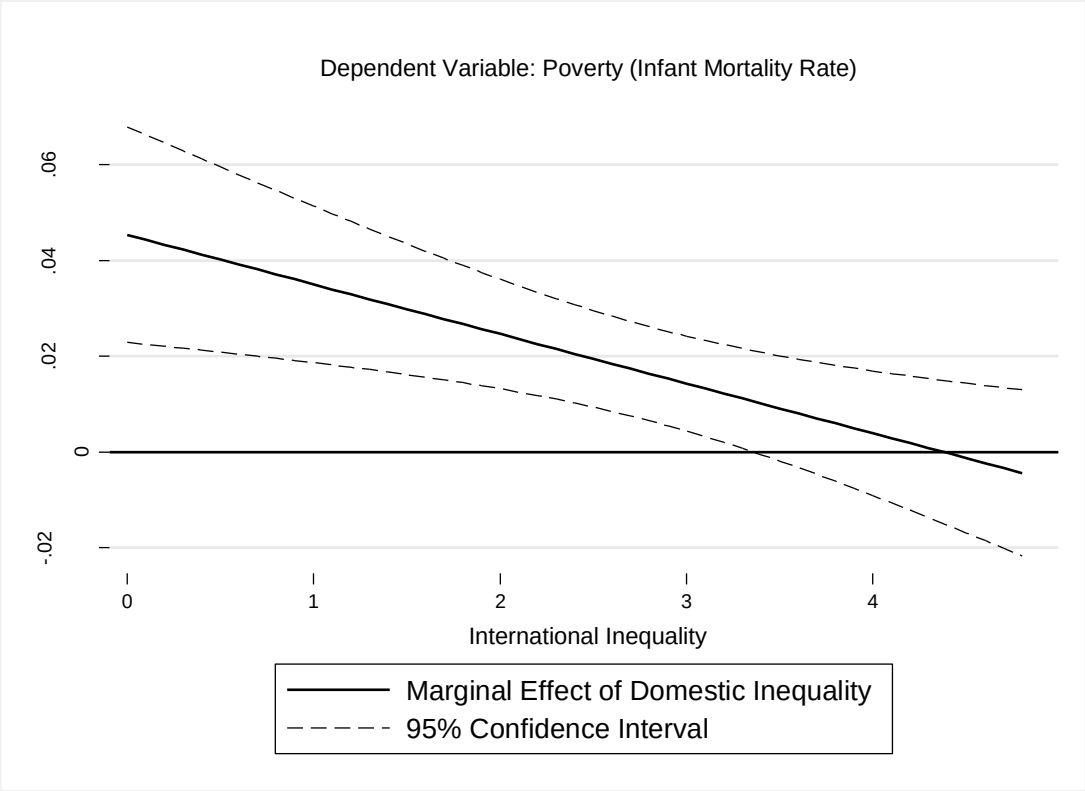
The graph shows a downward sloping marginal effects curve. As international inequality increases (a move from core to periphery); the effect of domestic inequality on poverty declines, eventually reaching statistical insignificance. The graph suggests that the effect of domestic inequality is statistically significant until international inequality reaches the value of around 3.25.[125] Hence, domestic inequality does *not* have a statistically significant effect on poverty in countries in the periphery of the international system (Position 4). If we consider the differences in the effect of domestic inequality in countries in Position 2 and Position 3, the marginal effects graph suggest that in Position 2 countries, a one percent increase in domestic inequality is associated with an increase in poverty of 2.5 percentage-points. In Position 3 countries, a one percent increase in domestic inequality is associated with a 1.5 percentage- point increase in poverty.

Therefore, the results suggest that domestic inequality has a stronger impact on poverty in countries closer to the core than in countries closer to the periphery – and furthermore, that domestic inequality does not have an effect on poverty in countries in the periphery

[125] This is where the upper and lower bounds of the confidence interval are no longer both above the zero line (Brambor et al. 2006: 14).

(Position 4). Consequently, the results of the regression analysis with the interaction term provide support for hypothesis 7, that the effect of domestic inequality on poverty is higher countries in more central positions in the international system than in countries in more peripheral positions.

Figure 8.3. Marginal Effect of Domestic Inequality as International Inequality Changes



Therefore, returning to the cases of Mexico and Zambia discussed previously in this study; the results suggest that the effect of domestic inequality on poverty in the two countries differs significantly. Between 1980 and 2007, Mexico moves between the core (Position 1) and the upper semi-periphery (Position 2). During this period, Zambia moves between periphery (Position 4) and the lower semi-periphery (Position 3). In 2005, Mexico is in the Position 1 and has a Gini of 46, while Zambia is in Position 3 and has a Gini level of 50. Based

on the results presented above, a one per cent reduction in the Gini level in Mexico would be associated with a 3.5 per cent fall in poverty. In Zambia, however, a one per cent reduction in the Gini of the country would lead to a 1.5 per cent fall in the country's poverty. Furthermore, in years prior to 2005, such as 2002, when Zambia is in the periphery (Position 4), the results suggest that domestic inequality is not significantly linked to poverty.

8.4.2. Robustness Checks

I conduct a number of checks to confirm the robustness of this finding, the results of which are presented in Appendix E. The effect of the interaction term remains statistically significant at the 99 per cent confidence levels when using a panel-corrected standard errors model. When the analysis is conducted using a time fixed effects model, the interaction term is statistically significant at the 95 per cent level, although the impact of the interaction term is much lower. The inclusion of a time dummy in the regression yields a point estimate of -0.011 on the interaction term, which is statistically significant at the 99 per cent confidence level. This suggests that when I control for the trend of improving health between 1980 and 2007, the level of international inequality has a slightly bigger effect on the relationship between domestic inequality and poverty. Hence, the use of alternative model specifications confirms the robustness of the findings. The use of a time and country fixed effects model leads to a further decline in the impact of the interaction term on poverty, with the regression coefficient of the interaction term falling to -0.001. Furthermore, with the use of both time and country fixed effects, the statistical significance

of the interaction term falls to below the 95 per cent confidence level, although it remains statistically significant at the 90 percent level. These results are presented in Appendix E.

When additional variables are included, the regression coefficient is negative and statistically significant at the 99 percent level. The inclusion of the interaction term in the alternative regression model yields a point estimate of -0.007, which is statistically significant at the 95 percent confidence level. However, when *trade openness* is added to the core regression model, the statistical significant of *domestic inequality x international inequality* falls just below statistical significant at the 95 per cent level, although it remains significant at the 90 per cent confidence level.

Unsurprisingly, when GDP per capita is used to measure poverty, the interaction term is not statistically significant. This follows from the result that domestic inequality does not have an impact on per capita national income discussed in Chapter 6. When I interact *international inequality* with the alternate measure of domestic inequality, the *share of national income received by the bottom quintile* of the population, the regression analysis yields a point estimate of 0.086 on the interaction term, which is statistically significant at the 99 per cent confidence level. This result is consistent with the findings of the analysis conducted in this section.[126]

In general, the analysis conducted in this section provides support for the hypothesis 7; the effect of domestic inequality on poverty is higher in countries closer to the centre of the international system than those in the periphery. I discuss the findings of this analysis in greater detail below.

[126] The coefficient is positive when using income share of the bottom 20 percent and not negative, as is the case when using the Gini coefficient, because an increase in the former measure indicates a reduction in domestic inequality, while an increase in the Gini coefficient indicates an increase in domestic inequality.

8.5. Discussion

In this chapter, I have examined the impact of domestic inequality on poverty, and furthermore, the analysis has considered whether the effect of domestic inequality on poverty varies according to the levels of international inequality a country faces. In the first part of the chapter, I conducted a cross-country analysis of the effects of domestic inequality on poverty, which provides a number of interesting and important findings. As I have highlighted above, insufficient attention has been given to analysing the relationship between domestic inequality and poverty based on cross-country evidence, with the inclusion of appropriate country control variables. The results of the OLS regression analysis find that domestic inequality is associated with higher levels of poverty. This is found to be the case both when using Gini levels to measure domestic inequality and when using the share of income of the bottom 20 per cent to measure domestic inequality. The examples of Mexico and Sri Lanka, discussed, in this chapter highlight the manner in which differences in countries' domestic inequalities can lead to significant differences in the levels of poverty these countries experience. As such, the findings support the move towards greater incorporation of the issue of inequality within countries into the analysis of poverty (Mosse 2010; Wade 2007; Pogge 2007).

An interesting finding of the analysis of the effect of domestic inequality on poverty is that each time domestic inequality is included in the regression model, the effect of *latitude* on poverty is no longer statistically significant. This differs from the results of the analysis of international inequality on poverty, where latitude has a statistically significant relationship with poverty. This would suggest that the impact of geography on poverty may principally

occur through the effect of geography on domestic inequality. This result provides support for Engerman and Sokoloff's (1997) argument that the fundamental legacy of geography on economic development is the manner in which geography, specifically factor endowments, has shaped current inequality through institutional development (see also Easterly 2002).[127]

The findings of this chapter also shed some light on the channel through which domestic inequality impacts poverty. As discussed previously, much of the focus in the development economics literature has tended to look at the relationship between inequality and growth (see Ravallion 1997). However, I suggest here that the key mechanism through which higher levels of domestic inequality lead to higher poverty levels is through the effect that domestic inequality has on politics and redistributive policies, as a number of scholars have argued (Dréze and Sen 1995; Mosse 2010; Bourguignon et al. 2006). The analysis conducted here provides some support for the argument that within-country inequality impacts poverty through the 'policy channel' rather than the 'growth channel'. We find that the relationship between domestic inequality and poverty changes very little when *economic growth* is included in the regression analysis, or when it is not, suggesting economic growth is not a key factor in the relationship between inequality and poverty.

An additional finding of the analysis, which adds weight to this argument, is that when the interaction term, *domestic inequality x democracy*, is included in the regression model; the regression coefficient for the interaction term is positive and statistically significant at the 95 per cent confidence level. This suggests that the effect of domestic inequality on poverty

[127] Engerman and Sokoloff (1997) focus on land endowments, arguing that in Latin America land endowments lent themselves to the producing commodities, such as sugar cane, which featured economies of scale and promoted the use of slaves, which led to higher inequality levels. In North America, land endowments lent themselves to crops grown on family farms, such as wheat, which promoted a strong middle class and lower inequality. As discussed previously, land endowments are strongly shaped by tropical location (see Sachs 2001).

is higher in democracies than in non-democracies, which is consistent with the argument that domestic inequality impacts poverty through its effect on policies, as the public, in a democracy, is able to influence the policy process more than is the case in a non-democracy. Furthermore, I find that this relationship exists when using a continuous measure of democracy instead of a binary measure. However, it is important to point out that the relationship between domestic inequality and poverty is still positive and statistically significant in non-democracies. This may be due to a number of reasons. It may be because inequality affects poverty through processes other than shaping policy outcomes. Another explanation is that even in non-democracies; the decisions taken by rulers are still influenced by the public (see Wintrobe 1996; Acemoglu and Robinson 2006). Therefore the effects of inequality on policy outcomes may be not differ greatly between democracies and non-democracies. Another possible reason is that a number of non-democracies in the time period analysed are socialist countries, where there tends to be both lower levels of inequality and higher access to healthcare (see Sen 1999; Farmer 2005). Therefore, in such political systems we would expect lower inequality to be associated with lower infant mortality rate.

While the OLS regression with clustered standard errors, the OLS with PCSE, and the time fixed effects model demonstrate a positive and statistically significant relationship between domestic inequality and poverty; when country fixed effects are included in the regression model, the relationship no longer holds. In fact, somewhat bizarrely, the results of the fixed effects regression models suggest that domestic inequality has a small negative relationship with infant mortality rate. In other words, an increase in domestic inequality is associated with a small decrease in poverty when controlling for time and country fixed effects. One

possible reason for this is because income inequality does not vary very much from one year to another (see Kanbur and Squire 2001). As I have discussed in Chapter 4, when using a regression model and include variables that change very gradually over time (as with Gini levels), the results of a time fixed effects model are likely to be highly unreliable (Clark and Linzer 2012). The potential unreliability of the fixed effects regression is supported by an additional counter-intuitive result when using the fixed effects model; economic growth has a statistically significant positive effect on poverty. In other words, the results of the fixed effect regression suggest that an increase in economic growth is associated with an increase in infant mortality rate, which is somewhat surprising.

The results of the fixed effects regression may cast some doubts on the relationship between domestic inequality and poverty, and the theoretical argument linking the two in Chapter 3. Although it is important to note that in examining the relationship between domestic inequality and poverty, we are concerned with the cross-sectional variation, and not just the temporal changes. The results of the analysis in this chapter suggest that the differences *between* countries in their levels of domestic inequality – which are far greater than changes in countries' inequality levels over time – significantly account for differences in poverty levels between these countries. An important point that follows from this has been made by Clarkwest (2008), who, in analysing the effects of income inequality on public health outcomes, argues that fixed effects models may prevent important causal mechanisms between income inequality and health from entering the analysis. Specifically, Clarkwest (2008: 1873) points out that 'if income inequality influences longevity change through its effect on investment in health enhancing resources, then it is entirely possible that cross-state differences in inequality could produce differential change in longevity even

if levels of inequality themselves remained unchanged'.[128] This is certainly relevant for the causal mechanism through which I have argued income inequality affects poverty. If large differences in inequality between countries explain differences between countries in changes in the levels of public spending and pro-poor policies; a fixed effect model will not capture this. An additional argument that Blakely et al. (2001) make regarding the effect of income inequality on health is that it can take up to 15 years for changes in income inequality to lead to changes in health outcomes. Therefore, a fixed effects model for a 28 year period of analysis, as is the case here, may not be able to adequately capture the effects of changes in income inequality over time.

The analysis in this chapter also suggests that that the relationship between domestic inequality and poverty is dependent upon the measure of poverty used. When using GDP per capita instead of infant mortality rate to measure poverty in the OLS regression, domestic inequality does not have a statistically significant effect on GDP per capita; a result that confirms previous findings (see Kanbur and Squire 2001). The absence of a clear relationship between domestic inequality and per capita national income is not surprising, given the mechanism through which I have argued domestic inequality affects poverty. The argument made here is that domestic inequality has an impact on poverty because of the political implications of within-country inequality; higher levels of domestic inequality affect the *distribution of resources* within a country through the policy process, as has been described in the case of Mexico (see de Ferranti et al. 2003). GDP per capita fails to take into account within-country distribution of resources. Therefore, we would not expect domestic inequality to affect the overall level of resources available. Hence, this suggests that the

[128] See Clarkwest (2008); Zimmerman (2008); and Glymour (2008) for further discussion of this argument regarding income inequality and fixed effects models.

effect of domestic inequality on infant mortality rate is not related to changes in income levels or growth rates, but rather, is more likely to be due to public spending levels and other redistributive policies. This is further supported by a statistically significant positive relationship between domestic inequality and *maternal mortality rate*.

The analysis in this chapter has also considered the relationship between international and domestic inequality, as well as looking at how the interaction of international and domestic inequality affects poverty. As highlighted in the theoretical argument in Chapter 3, a number of underdevelopment scholars posited that international and domestic inequality are endogenously related; international inequality produces an elite class in developing countries that are able to prosper at the expense of the majority of the population, while this domestic inequality reinforced the unequal structure of the international system (see Frank 1969; Cardoso and Faletto 1979). The analysis in this chapter does not provide definitive results on the extent to which international and domestic inequalities are related. On the one hand, we see higher levels of domestic inequality as international inequality increases, whereby the average Gini levels increase as network position increases (from core to periphery). This is depicted in Figure 6.1 and supported by the level of correlation between the two. On the other hand, however, the relationship is not particularly strong; average Gini levels for countries in the core are 32 percent, compared to 45 percent for countries in the periphery. The level of correlations between international inequality and domestic inequality is around 39 percent. Hence, the results suggest a weak but statistically significant relationship between the two.

In order to further examine the structuralist arguments on the endogenous link between international inequality and domestic inequality, I also consider the results of the regression

analysis on the effect of international and domestic inequalities on poverty, and whether there is support for the view that international and domestic inequalities affect poverty through the same channel.

We find that when conducting a regression analysis of poverty which includes both international and domestic inequality, the point estimates produced on each experience a small change from the regression models in which international and domestic inequality are included separately. Again, we find some weak evidence of a relationship between international and domestic inequality. However, the results do not provide support for the view that international and domestic inequalities affect poverty through the same channel. Instead, I find that, overall, the results support the argument laid out in Chapter 3, that international inequality and domestic inequality affect poverty through different channels.

Furthermore, the analysis in this chapter also tests hypothesis 4.1 – that the effect of domestic inequality on poverty will be greater in countries occupying more central positions in the international system than in those occupying more peripheral positions. As I have pointed out previously, this hypothesis is largely drawn from the theoretical arguments made on the relationship between international inequality and poverty, and domestic inequality in poverty. While international inequality is seen to largely impact poverty through its effect on the resources available to countries, domestic inequality is largely seen to affect poverty through the distribution of available resources within a country. As such, I argue that poverty in countries occupying more central positions in the international system is not likely to be due to insufficient resources available, but rather the distribution of resources in a country. In the same vein, countries occupying more peripheral positions may

not have sufficient resources available to avoid high levels of poverty, irrespective of within-country distribution.

The results provide support for this argument. The inclusion of the interaction term, *domestic inequality x international inequality*, in the regression model suggests that as countries face higher international inequality (a move from more central network positions to more peripheral network positions), the effect of domestic inequality on poverty decreases. This is demonstrated in Figure 8.3, by the negative slope of the marginal effects curve. The results holds when using an alternative measure of domestic inequality (share of income received by bottom quintile) and with the inclusion of a time dummy. As such, the results provide support for hypothesis 7, and the theoretical argument made in Chapter 3. In terms of the question posed in the introduction, on whether domestic inequality has a different impact on poverty in Mexico compared with Zambia; the results of the analysis demonstrate that domestic inequality has a greater impact on poverty in Mexico, which is mainly in the core (Position 1) than the impact of domestic inequality on poverty in Zambia, which is Position 3 and Position 4 during the time period of the analysis.

Furthermore, the analysis demonstrates that this decline in effect of domestic inequality on poverty as international inequality increases, leads to their being a statistically insignificant relationship between domestic inequality and poverty in the periphery (Position 4) countries. This is a particularly important finding, especially given that countries in the periphery have the highest levels of domestic inequality. The results are highly significant, as much of the debate on the relationship between domestic inequality and poverty fails to consider the manner in which this relationship may vary in different contexts. More broadly speaking, this result demonstrates that the effect of domestic factors on poverty may

depend on the international context a country faces. This finding has important policy implications as I discuss in Chapter 9.

It is also important to highlight limitations of the analysis conducted in this chapter. As noted in Chapter 4, an important limitation of the analysis concerns the use of Gini coefficients as the principal measure of domestic inequality. It is worth pointing out that the Gini coefficient is a measure of individual-based income inequality, and does not target inequality between groups in a country. This is significant as the argument put forward in Chapter 3 largely focuses on how inequalities between groups impacts poverty. As such, there is some question over the validity of Gini level as a measure of domestic inequality. There are also a number of data limitations, which I have also discussed in Chapter 4. Specifically, the SWIID income inequality data uses an imputation method for some of the country-years for which there are missing observations. Such an approach relies on a number of assumptions regarding the nature of income inequality, such as assuming inequality does not change sharply in a country over time. I discuss these issues, together with some of the broader limitations of the analysis in more detail in Chapter 9.

8.6. Concluding Remarks

This chapter has examined the impact of domestic inequality on poverty. Furthermore, this chapter has also considered how the effect of domestic inequality on poverty varies according to the level of international inequality a country faces. In doing so, the analysis further contributes towards moving beyond the extreme positions that have dominated development analysis; between those that argue poverty is the result of internal factors

alone and those that argue it is solely the result of external factors. In general, the analysis has provided support for the arguments made in Chapter 3. Domestic inequality is found to have a significant impact on poverty, and in addition, the findings provide support for the view that this effect occurs through the 'policy channel'. It is, however, worth noting again that the results of fixed effects analysis suggest that a small reduction in domestic inequality within a country is not associated with a reduction in poverty. The analysis also demonstrates that the relationship between domestic inequality and poverty varies according to the levels of international inequality a country faces.

In the next chapter – the concluding chapter of this study – I summarise the main findings and the contributions of this research project. I also outline some of the policy implications of this study. Furthermore, the chapter highlights limitations and future directions of the research.

9. Conclusion

This study has examined the effects of inequality between and within countries on poverty through the use of quantitative cross-country analyses. The study has reached a number of conclusions that confirm that inequality between and within countries influence poverty levels around the world. In this chapter I summarise the main findings of this thesis and discuss the implications. This chapter is outlined as follows. I begin by discussing the main findings of this analysis. Second, I consider the policy implications of this study. This is followed by a discussion of the overall contributions of this research project. Finally, I highlight the limitations of the analysis conducted here and offer some sense of the future direction that the research central to this study will take.

9.1. Summary of Findings

This study addresses two important gaps identified in the existing literature on the causes of poverty. The first is that international factors tend to be overlooked. The second is that domestic inequality has been under-analysed as a cause of poverty. Both of the limitations, it is argued, are linked to the broader issue of the lack of attention given to the role of the non-poor in the creation and perpetuation of poverty. In Chapter 3, I provided a theoretical argument on how international and domestic inequalities affect poverty, drawing on existing structural approaches. In doing so, a number of hypotheses were developed, which

are presented in table 9.1. The table outlines the empirical findings for each of the hypotheses.

Table 9.1. Hypotheses and Findings

Hypothesis	Findings
1.1. The international system is characterised by a hierarchical structure.	The network analysis of countries' positions in international trade networks demonstrates a clear hierarchy in the structure of the international system based on the application of SNA to international trade networks.
1.2. Countries' positions in the international system are stable over time.	The analysis confirms that three conditions are met. Countries tend to be in the same positions over short periods of time. There are no examples of countries moving more than one position in consecutive years. The results of the *ordered logit* regression analysis, demonstrate that countries' position in the previous year is strongly linked to positions in the current year. The analysis also suggests that countries' positions in 1965 have an impact on current positions.
1.3. The structure of economic and political relations between countries is stable over time.	The block models of the different economic and political ties demonstrate a clear structure in the different relations between and within the four positions, which remain stable over time.
2.1. Former colonies are in more peripheral position in the international system than countries that are not former colonies.	The results of the ordered logit regression analysis on countries' network positions demonstrates that a country being a former colony has a strong and statistically significant impact on it being in more peripheral position.
2.2. Former colonies where European settlers faced higher mortality rates are in more peripheral positions than former colonies with lower settler mortality rates.	The results of the ordered logit regression analysis demonstrate that European settler mortality has a strong and statistically significant impact on international inequality, controlling for GDP per capita and the quality of domestic institutions. Therefore, strong support for this hypothesis is found.
3. Countries in more peripheral positions experience higher poverty than those in more central positions.	The results demonstrate that international inequality has a strong and statistically significant effect on poverty. The use of *fixed effects* regression models demonstrates that changes in international inequality over time lead to changes in poverty.
4.1. International inequalities increase domestic poverty and this effect is stronger with increasing levels of globalisation.	The results of the regression analysis show that as globalisation increases, the effect of international inequality on poverty is stronger, providing clear support for this hypothesis.
4.2. Periphery countries' integration into the international system increases as globalization increases.	The results suggest that periphery countries are not less integrated as globalisation increases; however, there is not a clear increase in periphery countries' integration as globalisation increases. As such, the analysis is inconclusive with regard to this hypothesis.
5. Countries with higher domestic inequality levels experience higher poverty than those with lower domestic inequality.	The results of the regression analysis provide support for this hypothesis when considering differences between countries. However, a change in the level of inequality within countries over time is not found to reduce poverty when a fixed effects regression model is used.

6. *The effect of higher domestic inequality increasing poverty levels is stronger in democracies than in non-democracies.*	The results of the regression analysis show that the impact of domestic inequality on poverty is greater in democracies than in non-democracies. Therefore, the results provide support for this hypothesis.
7. *The effect of domestic inequality on poverty is higher in countries in more central positions than in more peripheral countries.*	The results of the regression analysis show that the impact of domestic inequality on poverty decreases as we move from countries in central positions to those in the periphery, providing support for the hypothesis. However, as is the case with hypothesis 5, the results of the fixed effects regression analysis do not provide support for the hypothesis when considering changes within countries over time.

The data and methodological approach used to conduct the quantitative cross-country analysis is discussed in Chapter 4. In analysing the effects of international inequality on poverty, this study has introduced a new measure of structural international inequality created using social network analysis techniques to place countries into four hierarchical groups, based on how they are connected into international trade networks. Chapter 5 considered in detail the trends and determinants of structural inequality between countries, based on this network measure of international inequality. The analysis demonstrates that while countries do move positions over time; there is a high level of stability in countries' positions. Furthermore, I have shown that countries' positions in the international system based on the network measure used here are related to other economic and political relations between countries. In considering the determinants of countries' positions, I find that there is a strong relationship between countries' positions and the type of production occurring within the countries, in line with the argument made in Chapter 3. I also find that countries that are former colonies are more likely to be in peripheral positions than those that are not former colonies. In addition, former colonies in which European settlers faced higher mortality rates are found to be more likely to occupy peripheral positions than those in which European settlers faced lower mortality rates. Both of these factors confirm the

argument made regarding the historical roots of structural inequalities between countries and provide support for the causal argument put forward in this thesis.

Chapter 6 empirically examined the effect of international inequality on poverty using a multivariate regression analysis. The results demonstrate that countries' positions in the international system have a strong impact on poverty when controlling for a range of other factors, such as geography, regime type, institutional quality – and even GDP per capita. As such, I find strong evidence that international inequality has a significant effect on the prevalence of poverty. Furthermore, the analysis demonstrates that a shift over time in a country's position from a more central position in the international system to a more peripheral position is associated with an increase in poverty.

In Chapter 7, I considered how changes in the structure of the international system as a result of the process of globalisation have impacted the relationship between international inequality and poverty. This has been analysed using a measure of globalisation based on the density of the trade networks. In considering changes in the structure of the international system, the study moves beyond some key weaknesses of classical underdevelopment theory. The results show that the process of globalisation has increased the strength of the relationship between international inequality and poverty. In other words, the results suggest that as the world has become more globalised, countries' positions in the international system have a greater effect on poverty – and as such, globalisation has meant that countries face higher poverty through being in peripheral positions. The results of the fixed effects regression analysis also suggest that a change in a country's position leads to more change in a country's poverty levels as the world becomes more globalised.

Chapter 8 focused on the effect of domestic inequality on poverty. The results of the regression analysis suggest that domestic inequality has a significant impact on poverty, controlling for other factors associated with poverty. As such, the results suggest that differences in countries' poverty levels can be explained by differences in their levels of domestic inequality. Furthermore, the analysis shows that the inclusion of economic growth in the regression model has little effect on the findings, suggesting that the impact of domestic inequality on poverty occurs independently of any relationship between domestic inequality and economic growth. The analysis also finds that the effect of domestic inequality on poverty is greater in democracies than in non-democracies. As such, the findings provide support for the argument that the effect of domestic inequality on poverty occurs through the 'policy channel', whereby high levels of economic inequality lead to distorted policy outcomes which benefit the richer in society above other groups, and in turn impacts poverty.

The analysis, however, suggests that while differences between countries may explain some of the differences in poverty that these countries experience; reductions in domestic inequality within a country over time are not associated with reductions in poverty. I have discussed possible reasons for this, such as whether it is appropriate to use a fixed effects model. This finding may partly be explained by the fact that changes in domestic inequality over time are very small, particularly in relation to the differences in levels of domestic inequality between countries. This may suggest that changes in domestic inequality may take a longer time to impact poverty, or that the relationship between domestic inequality and poverty is more to do with much 'deeper' inequalities linked to countries' institutions, as is argued in studies highlighting the importance of institutional quality in development,

and the negative effect of unequal institutions (see Engerman and Sokoloff 1997; Acemoglu et al. 2006; Easterly 2007).

Chapter 8 also considers the relationship between domestic inequality and international inequality, and in particular, whether the effect of domestic inequality on poverty varies across countries in different positions in the international system. In doing so, the study moves beyond classical underdevelopment theory, which tended to view development as driven exclusively by external factors, and also moves beyond the contemporary mainstream development approach, whereby development outcomes are seen as linked only to domestic factors. The analysis demonstrates that domestic inequality has a bigger impact on poverty in countries that are more central in the international system than in those that are more peripheral. Of particular importance is that finding that domestic inequality does not have a statistically significant effect on poverty in countries in Position 4 (the periphery). The complete list of hypotheses developed in this study along with the findings in relation to each of the hypotheses is provided in Table 9.1.

9.2. Policy Implications

A number of policy implications follow from the findings of this study. As I have highlighted above, the analysis has demonstrated that international inequality has a strong effect on poverty levels. Furthermore, the analysis suggests that the impact of international inequality on poverty is likely to increase as the world becomes more globalised. The policy implications of this finding fall into two broad categories; the first considers developing countries development strategies, particularly focusing on industrial policy. The second

more broadly considers the issue of the harmful effects of structural inequalities in the international system for poverty, and how development policy might address such inequalities. The study has also produced some important findings regarding the effect of domestic inequality on poverty, and how this effect may vary according to the levels of international inequality a country faces. I discuss these policy areas in turn.

9.2.1. Strategic Integration and Industrial Policy

In demonstrating the importance of international inequality on poverty, the analysis provides strong empirical support for the argument made by a number of scholars on the necessity for developing countries to pay greater attention to the broader international context, rather than on domestic factors alone. Specifically, this study suggests that there is a need for developing countries to pay closer attention to their 'strategic integration' into the world economy through the use of industrial policy. This entails the tactical use of tariffs, investment in key export sectors, and a strategy regarding when and which sectors to liberalise based, in part, on information obtained by domestic firms entering new markets (see Gore 2000; Rodrik 2001; 2007; Wade 2003; Chang 2003; Lin and Chang 2009). Such an approach differs greatly from the approach to development prevalent during the Washington Consensus era, in which a blanket set of policies were promoted by developed nations and international organisations that focused on market reforms (see Chapter 2).

As discussed in greater detail below, there has been a recent structural turn in mainstream development thinking with New Structural Economics (NSE) approach promoted by former World Bank Chief Economist, Justin Lin. The policy implications of this study are in some

ways similar to those promoted in the NSE approach, particularly with regard to the importance of developing countries using industrial policy for poverty reduction. There are, however, important differences in the policies that follow from the NSE approach and those that follow from this thesis. The first, which I discuss in greater detail in the proceeding section, is recognising the manner in which inequalities in the international system restrict the implementation of effective industrial policies, which receives almost no attention in Lin's (2011) NSE approach.

The second key area of difference between the policy implications of this study and the policies recommended in the NSE approach concerns the issue of comparative advantage, as discussed above. Lin (2011) and others at the World Bank (see Brenton et al. 2012: 40) recommend that developing countries' industrial policy should conform to their comparative advantage. However, this study argues that countries' comparative advantage are, to a large extent, shaped by international inequalities, and that by strictly following their comparative advantage developing countries production will continue to focused around primary commodities and low value-added manufacturing.[129] This study demonstrates that this structural inequality in the international system, in which some countries produce high value-added manufactures, while others produce primary commodities and low-level manufactures, plays a major role in the prevalence of world poverty. As such, substantial poverty reduction requires countries to use industrial policy that defies their comparative advantage.

[129] This argument is to some extent supported by Imbs and Wacziarg' (2003) finding that poorer countries that get richer tend to do so through greater diversification in their production and employment until they are much higher income countries, after which production starts to become more concentrated.

Yet, in highlighting the importance of industrial policy in developing countries, it is worth emphasising that this study does not advocate the crude implementation of high tariffs to promote import substitution. The use of such blanket protectionism in the past has produced a range of further problems, such as inefficient industry and higher rent-seeking resulting from government failures. In fact, the example of Zambia used in this thesis demonstrates the problems that can arise from the import substitution approach, in terms of inefficient industries as Seidman (1974) has discussed. The approach taken here emphasises the need for governments to work closely with the private sector in what Peter Evans (1995) has termed 'embedded autonomy'.

In general, the results of the analysis demonstrate the need for development policy-makers to consider the manner in which developing countries are integrated into the international system and the effect this has on poverty. As Gore (2000: 798) points out, this approach:

> ...recognizes vulnerabilities associated with integration into the international economy and also external constraints due to restrictions in access to advanced country markets, falling terms of trade for primary commodities and simple manufactures, carterlization in global markers, difficulties in gaining access to technology and instabilities of the international financial system.

Yet, current development policy largely fails to address such issues. Despite, the recent structural turn in mainstream development thinking, we see little reflection of the new structural economics proposed by Justin Lin in policy documents. Instead, countries' PRSPs continue to demonstrate a largely internalist focus in terms of analysing obstacles to development, and emphasise an approach very similar to that taken during the height of the

Washington Consensus (see Dasandi 2009; Sumner 2006; Craig and Porter 2002).[130] The most recent World Bank *World Development Report* for 2013, which focuses on the theme of 'jobs', briefly mentions the use of industrial policy – though only in the form of targeted government investment – arguing that in some specific cases it may be warranted, but that the risks of such an approach are often too great (World Bank 2012: 217). In general, the discussion of trade, however, focuses on the need for greater liberalisation (World Bank 2012: 308). In making this argument, the report does add some caveats about the impact of trade liberalisation for developing countries, pointing out that 'many developing countries still lack the competitiveness to harness the benefits from global integration'; however, the report simply points towards the need for greater aid to address this issue (World Bank 2012: 308).

Returning to the example of Zambia – and its recent Poverty Reduction Strategy Paper (Republic of Zambia 2011) – helps to demonstrate the current approach in development policy and the shortcomings of this approach highlighted by this study. The report identifies five constraints to growth and poverty reduction in the country, all of which are all located internally; there is no mention of how international factors may influence poverty reduction. The constraints listed are poor infrastructure, low quality of human capital, high cost of financial services, inefficiencies in public expenditure management, and limited access to land (Republic of Zambia 2011: 7). The PRSP is largely based on the implementations of neoliberal policies; there is no mention of external constraints, nor is there any analysis of international markets in different sectors. The findings of this study

[130] Craig and Porter (2002: 54) have described the PRSPs as a 're-morphing of neoliberal approaches', while Sumner (2006) suggests that in terms of a post-Washington Consensus, the more recent PRSPs demonstrate a change in the speed of neoliberal reforms rather than a change in direction.

highlight the need to move away from such an approach based solely on domestic reforms towards considering countries' strategic integration into the world economy.

9.2.2. Targeting Structural Inequalities and 'Harms' in the International System

The findings of this study demonstrate the manner in which international inequality significantly influences levels of poverty in the world, and in doing so suggest that there may be limits to the impact that domestic policy in developing countries can have on poverty reduction, due to the external constraints these countries face. Therefore, an important implication for development policy is the need for greater focus on addressing the structural inequalities in the international system. As highlighted in this study, these structural inequalities are increasingly being reinforced through international laws and the global governance system (see Chapter 3). Hence, this is an important area in which development policy can impact poverty. The ongoing global financial crisis may provide the opportunity to enact reforms to the current global governance structure (see Wood 2010).[131]

Specifically, when considering trade relations, which have been the focus of this study, the results here suggest that the outcome of the currently unresolved Doha round of international trade negotiations is likely to have significant consequences for world poverty (see Rodrik 2007: 234-235; Charlton and Stiglitz 2005). At the present time, there are a number of aspects of the international trade system which have a harmful effect on developing country economies, as discussed in Chapter 3. These include the manner in which developed nation tariffs prevent developing country producers from accessing

[131] It is worth pointing out that Wood (2010) argues that while the financial crisis may offer the opportunity for significant change in global governance, at the present time there seem only to be limited shifts towards the engagement of major emerging economies.

markets; the use of agricultural subsidies by richer nations; forcing developing nations into rapid liberalisation preventing them from being able to use industrial policy; and the impact intellectual property right laws on technological inequalities. The findings of this study highlight the need to address issues such as these, linked to the structural inequalities in the international system.

Based on the findings of this study, an example of the kind of reform at the WTO that may benefit developing countries and have a significant impact on reducing poverty is a form of 'generalized opt-out' as proposed by Dani Rodrik (2007: 205), which would go beyond the current temporary safeguards the WTO offers, which under stringent conditions allows countries to impose temporary trade restrictions in response to a surge in imports; and instead, enable developing countries to use tariffs to promote much-needed development as part of a broader industrial policy.

While the issues regarding the consequences of the current trade system for developing countries, are widely known, in general there is a tendency in development policy not to make the connection between the unequal trade system and poverty. For example, rather than acknowledge the manner in which developed country trade policies have harmed many in the developing world; the UNDP (2003: 12) frames changes to the discriminatory trade system in terms of 'expanding market access to *help* countries diversify and expand trade'.

Furthermore, the link between the trade system and poverty reduction fails to be highlighted in the Poverty Reduction Strategy Papers that developing country governments draw up in dialogue with the IMF. Returning to the case of Zambia and its recent Poverty Reduction Strategy Paper – somewhat surprisingly – there is not a single mention of the

WTO in the 214 page report (see Republic of Zambia 2011). This is also observed in other recent PRSPs, such as Burundi's PRSP, which was published in August 2012. As pointed out in Chapter 6, Burundi features in the periphery (Position 4) for all 28 years of the analysis. Despite the country being strongly impacted by international trade rules and Doha trade negotiations – particularly through having to compete with subsidised developed country agricultural productions (see Messerlin 2002: 6; Hoekman et al. 2001); the country's 154 page PRSP features only one reference to the WTO, which highlights the need to 'improve monitoring of conventions signed under the auspices of the WTO' (IMF 2012: 76). There is no mention of the Doha round of trade negotiations.

As such, an important step in addressing such harms is to raise greater awareness of the negative impact of such policies. An example of how this can be done is the Center of Global Development's (CBD) *Commitment to Development Index*, which ranks wealthy nations according to how much help or harm their policies – in areas such as trade, aid, investment, and migration – do to poorer nations.[132]

There is also a need for developing countries to challenge the structural inequalities reinforced by international organisation, such as the WTO. However, as highlighted above, despite the importance of the WTO for poverty reduction in developing countries, the country-PRSPs place little emphasis on the WTO. Furthermore, developing nations often lack the influence to have a significant impact at the WTO. One possible way to overcome this issue, which Birkbeck and Harbourd (2011) highlight, is through weaker states developing coalitions in the WTO. An example of this is the 'Cotton Four' – a coalition consisting of the small West African countries of Benin, Burkina Faso, Chad, and Mali – who

[132] The CGD's *Commitment to Development Index* can be seen at: http://www.cgdev.org/section/initiatives/_active/cdi/ [accessed 3 December 2012].

have managed to draw attention to the issue of cotton and the harmful policies of some developed nations.[133]

As such, the findings of this study broadly highlight the need for a system of global governance that ensures richer nations 'stop doing harm' for poverty to be eradicated (Green 2008: 429; see also Pogge 2008; Linklater 2011). Yet, as discussed in the introduction, at the current time, international organisations often overlook the harms richer nations do. The prevailing view, as demonstrated by UNDP, is that poverty reduction requires 'bold reforms from poor countries' and obliges 'donor countries to step forward and support these efforts' (UNDP 2003: v). The implication here is that changes need to occur in poorer nations, while the role of the wealthier nations is simply to provide finance; there is little reflection on how wealthy nations harm poorer nations.

9.2.3. Policies for Domestic Inequality

The analysis of the effects of domestic inequality on poverty also has important policy implications. The results of the analysis highlight the relationship between domestic inequality and poverty, which I have argued occurs largely through the effect that inequality has on the policy process. In demonstrating the effect of inequality on poverty, this study provides support for the growing calls for greater incorporation of issues of inequality that have emerged in the debate on the post-MDGs development agenda, which is being led by a UN panel co-chaired by British Prime Minister, David Cameron (see Jolly 2011; and Yamin and Fukuda-Parr 2011).

[133] Although, as Birkbeck and Harbour (2011: 13) point out, to date 'the Cotton 4 countries have not obtained any meaningful reductions in subsidies' from developed nations.

A key policy implication of the finding that higher domestic inequality is associated with higher poverty is that greater attention needs to be given to redistribution (see de Ferranti et al. 2003). While considering areas such as taxation systems to redistribute income and wealth is certainly important; redistribution goes beyond a focus purely on income and wealth. The analysis suggests that a key channel through which domestic inequality impacts poverty is through the effect it has on policies that favour the wealthy over other sectors of society. Of particular importance is that high levels of economic inequality lead to a failure for poorer members of society to influence policy. An important way in which this issue can be addressed is by a focus on education provision for the less wealthy in society. Returning to the example of Mexico discussed in this thesis, there have been efforts to address such issues. In particular, the *Oportunidades* (previously *Progresa*) scheme in Mexico, which provides poorer households with small cash transfers as long as they participate in various health and education programmes, has rightly been praised for the far-reaching positive impact it has had (see Green 2008: 5). The scheme combines (small) financial transfers with an emphasis on addressing other areas of inequality, such access to education and healthcare.

It is, however, important to note that while schemes, such as the *Oportunidades* scheme in Mexico, are certainly important for addressing inequalities, there is a need for greater focus on addressing inequality – and the impact it has on poverty – in development policy. For example, the predominant focus on education in development policy tends to be on school attendance, as is the case with *Oportunidades*. Far less attention is given to the quality of education, which is certainly an issue in Mexico (see de Ferranti et al. 2003). Furthermore, in addition to the current focus on ensuring access to education for all children, providing

education for adults may also be important. This is an area that certainly requires more research; however, if inequality does impede the ability of the poor to be represented, then it follows that policies that provide less well off sectors of society with an awareness of their rights, and the tools to be able to challenge policy-makers can have significant impact on reducing poverty.

The results suggest that the manner in which inequality is addressed is also important. The analysis suggests that small changes in overall inequality over a short period of time have little impact on poverty reduction, based on the results of the fixed effects regression – and as such, this suggests that the changes that need to be made may take time, requiring a high level of commitment from different stakeholders.

The analysis has also considered international and domestic inequalities together. The results in Chapter 7 suggest that the impact of domestic inequality on poverty falls as we move from countries in the core towards those in the periphery, despite countries in the periphery on average having the highest domestic inequality levels. Furthermore, I find that domestic inequality no longer has a statistically significant impact on poverty among countries in the periphery. This is important for development policy, as it suggests that in these countries, redistribution may have little impact on poverty, because of the adverse international climate these countries face, which in turn results in insufficient resources availability. This is in line with Ravallion's (2010) argument that some developing countries may not have the resources necessary to reduce poverty through redistribution (see also Sumner 2011).[134] Hence, for these countries policies that address the international

[134] It is important to note that Ravallion (2010) does not emphasise external constraints, but focuses on the manner in which redistribution to reduce poverty may not be possible in some countries due to insufficient resource availability.

structural constraints, such as ensuring access to developed country markets and access to technology, are crucial for poverty reduction. In those countries, in the semi-periphery positions, however, we find that domestic redistribution would have a significant impact on poverty reduction.

9.3. Overall Contributions

This study makes a number of contributions to the existing literature. These contributions fall into three categories – empirical, methodological, and theoretical – which I discuss in turn. Furthermore, as indicated in the introduction, this study's theoretical contribution is to four areas of debate and discussion in the existing literature, as shown in Figure 1.2.

9.3.1. Empirical Contribution

This study makes an important empirical contribution in examining the effects of international inequality and domestic inequality on poverty using a quantitative cross-national analysis. Both of these factors – particularly international inequality – have been insufficiently analysed in the existing development literature. There has, to my knowledge, been no prior effort to analyse the effect of international inequality on poverty using a pooled time-series cross-section approach, as has been done here. Furthermore, the study makes an important empirical contribution by using a network measure of international inequality to quantitatively examine the effects of *structural inequalities* between countries on poverty.

Using a quantitative approach has enabled me to demonstrate that countries' positions in the international system significantly influence poverty, when controlling for the factors that are typically associated with poverty in the existing literature, such as geography, institutions, and regime type. As such, the analysis undertaken here demonstrates that the relationship between international inequality and poverty is not spurious.

This study also provides quantitative support for structural arguments regarding the origins of the unequal international system. This has been done by showing that former colonies are likely to be in more peripheral positions in the international system, when controlling for other factors. Furthermore, the empirical analysis conducted in this chapter has also demonstrated the effect that European settler mortality has on current international inequality, when controlling for other factors including the quality of a country's institutions. As such, the study provides quantitative cross-national evidence to demonstrate the colonial roots of the unequal international system.

While, as I have pointed out, there has been some analyses of the effects of domestic inequality on poverty. There are two significant limitations of the existing studies that the analysis conducted here addresses. The first is that analyses of the domestic inequality-poverty relationship tend to use countries' national income levels to measure poverty. As I have explained in Chapter 2 and Chapter 4, this does not accurately measure the relationship between inequality and *poverty*. Secondly, as I explain in Chapter 8, much of the existing empirical literature fails to adequately take into account the process through which domestic inequality may affect poverty and other factors associated with poverty in their statistical models.

The analysis demonstrates that domestic inequality has a significant impact on poverty, when controlling for other factors commonly associated with poverty. Furthermore, the analysis also sheds some light on how domestic inequality impacts poverty. The results demonstrate that the relationship between domestic inequality and poverty occurs independently of economic growth in a country, and furthermore this relationship is strong in democracies; thereby providing empirical support for the argument that domestic inequality impacts poverty through its effect on the policy process.

9.3.2 Methodological Contribution

This study also makes a significant methodological contribution through its use of social network analysis, which is combined with econometric techniques. SNA is used in this study to examine the structure of the international system and to incorporate this into an analysis of poverty. As I have demonstrated in Chapter 2, current quantitative analyses of development issues generally focus exclusively on countries' attributes, ignoring the broader international economic and political system that these countries are part of. This study demonstrates that using social network analysis, with its focus on relations and structures in addition to attributes, enables us to effectively take into account this broader international structure, when conducting quantitative analyses, thereby moving beyond the 'methodological nationalism' that dominates quantitative development analysis (Gore 2000).

The principal use of SNA in this study has been to create a structural measure of international inequality. This notion of structural international inequality is based on

countries' positions in the hierarchical international system, which has been proxied using SNA to calculate countries' positions in annual international trade networks. There have been previous attempts to quantitatively examine aspects of world systems analysis using SNA to measure countries' positions in trade networks (e.g. Snyder and Kick 1979; Nemeth and Smith 1985; Kick and Davis 2001). However, this study addresses a number of shortcomings of these existing studies, and also applies a more in depth assessment of the network measure of international inequality.

Firstly, the majority of the existing SNA studies of the impact of countries' positions in the world-system on development use the network analysis concept of *structural equivalence*. However, as I point out in Chapter 4, structural equivalence does not accurately capture the arguments regarding hierarchy made in various structural approaches to development. As such, there are questions regarding the validity of measures of countries' positions in the international system, based on a structural equivalence approach (Borgatti and Everett 1992; Smith and White 1992; Van Rossem 1996). In this study, I use the network concept of *regular equivalence*, which addresses the concerns raised about the existing SNA studies, and enhances the validity of the measure of position used in this research project.

A second significant shortcoming of existing SNA studies of the impact of countries' positions on development is that these studies tend to be cross-sectional studies, based on single observations or averaged data for a time period consisting of a number of years. Subsequently, the impact of changes in network position tends to be overlooked. Furthermore, using averaged data over extended time periods to conduct an OLS regression of the impact of position on economic growth, as is the case in a number of these existing studies, distorts the pooled times-series cross-sectional data (Maoz 2010). This issue is

addressed in this study, as the regression analysis is conducted using pooled times-series cross-sectional data. The measure of international inequality used is based on calculating countries' positions in international trade networks for *each year* between 1980 and 2007.

The analysis conducted in Chapter 5 examines the determinants of structural international inequality by conducting an analysis using countries' network positions as the dependent variable. This, to my knowledge, has not been done before. By examining the determinants of countries' positions, I have been able to assess whether the use of network position to measure international inequality is consistent with the structural arguments – particularly those centred on the colonial origins of the unequal international system – made in Chapter 3. In other words, the analysis conducted in Chapter 5 has served to demonstrate the validity of the network measure of structural international inequality.

Finally, in analysing the effects of countries positions in the hierarchical international structure on poverty, this study has also considered how this relationship is affected by changes in the structure and by domestic inequality. The former has been done using a network measure of globalisation, based on the density of the trade networks for each year of analysis to create an interaction term between network position and network density. The latter has been done by using an interaction term consisting of the network position measure and countries' Gini levels. In using these network analysis measures in an interaction term, this study also demonstrates how we can analyse whether the effect of domestic factors is conditioned by broader structures, and vice-versa.

This study has demonstrated how quantitative analyses can move beyond methodological nationalism consider the effects of relations between nations – and the structures created by these relations. In applying a social network analysis to examining structural inequality in

the international system, this study builds on the recent move to incorporate SNA into the study of international relations and politics (see Hafner-Burton et al. 2009; Maoz 2010).

9.3.3. Theoretical Contribution

This study also makes a theoretical contribution to the debates and discussions in the existing literature. As Figure 1.2 shows, this contribution occurs in four areas: the IPE of development, theories of development, the debate on internal and external causes of poverty, and the mechanisms through which inequality impacts poverty.

The IPE of Development

At the broadest level this thesis contributes to the project of reintegrating development analysis into the broader study of International Political Economy, which a number of scholars have called for (see Leftwich 1994; 2000; Tooze and Murphy 1996; Payne and Phillips 2010). The analysis of poverty undertaken in this study has been based on an IPE approach, by applying a global perspective to the analysis of how political and economic relations impact poverty. This approach differs significantly from the typical approaches in development studies, which tend to employ local level analyses in different developing countries.

In particular, mainstream development research has in recent times been dominated by studies using randomised control trials (RCTs) at a local level, as is demonstrated by Abhijit Banerjee and Esther Duflo's (2011) *Poor Economics*. This approach involves conducting

'experiments' in which there is a 'treatment group' which receives a specific intervention and a 'control group' that does not, with people randomly assigned to each group. The use of RCTs has been promoted as the 'gold standard' in development research – and in social science research more generally (see Deaton 2010). Furthermore, proponents of RCTs have criticised political economy approaches for their focus on politics (rather than policies) and for its concern with broader structures rather than small incremental change (see Banerjee and Duflo 2011: 253-265). The use of RCTs has been promoted as a means 'to reduce poverty by ensuring that policy is based on scientific evidence' (see Lin 2011: 200).

While there are a number of methodological issues that have been raised regarding the use of RCTs, they can certainly provide valuable information for development policy, particularly regarding the impact of local-level development projects (see Deaton 2010). Therefore, the broader global approach to analysing poverty taken in this study is seen as complementary to such studies. By taking an IPE approach to analysing poverty, this study demonstrates the impact that the broader international structure has on poverty, which local-level RCTs fail to adequately account for. In fact, proponents of RCTs criticise political economy approaches, precisely because they believe that development outcomes can be improved 'without changing the existing social and political structures' (Banerjee and Duflo 2011: 271). The findings of this study raise questions regarding the extent to which poverty can be reduced and eradicated without changing these existing hierarchical structures at the domestic and international levels. In doing so, the study also demonstrates why an IPE approach to development is important.

The work of Robert Cox helps to highlight the difference between the RCT approach and the IPE approach taken in this study. The RCT approach is as an example of what Cox (1981: 128)

terms ‘problem-solving theory’, which accepts the existing context – and the unequal economic and political relations between different actors at the international and domestic level – as the ‘given framework for action’. Such approaches, as Banerjee and Duflo point out, seek to make improvements without changing or questioning the existing structures. The IPE approach taken in this study, however, can be characterised by Cox’s notion of ‘critical theory’, as I have explained in the introduction, which questions the prevailing order, and the impact it has. The claim made by proponents of RCTs is that IPE approaches have little practical impact for dealing with problems such as poverty. However, as Cox (1981: 130) explains:

> Critical theory is, of course, not unconcerned with the problems of the real world. Its aims are just as practical as those of problem-solving theory, but it approaches practice from a perspective which transcends that of the existing order, which problem-solving theory takes as its starting point. Critical theory allows for a normative choice in favour of a social and political order different from the prevailing order, but it limits the range of choice to alternative orders which are feasible transformations of the existing world.

The findings of this study suggest that poverty is significantly influenced by the existing order, and, as such, effective poverty reduction requires feasible transformations in the existing international and domestic order. In section 9.2, above, I have presented some examples of policies that may enable such transformations, which in turn can promote poverty reduction.

Theories of Development and Structuralism

The second theoretical contribution of this project is to the debate on *theories of development*. As I have explained in Chapter 1, there is a long tradition of development theory, which, in particular, has focused on the role of trade and government intervention in the process of development. Some, such as those associated with underdevelopment theory, emphasised the importance of the need for developing country governments to pursue policies that enable such countries to move away from primary commodity production towards higher value-added manufactures, challenging the liberal view that countries should produce goods in which they have a comparative advantage. However, within the dominant neoliberal paradigm, such government interventions were seen to distort the workings of the economy, and instead the market should be left to allocated resources efficiency. From this perspective, the process of development required countries to produce goods in which they have a comparative advantage (see Lin 2011).

There has in recent times been a move away from the neoliberal view towards seeking to better understand what role governments should play in the process of development. This has occurred as a result of the decline of the Washington Consensus (see Gore 2000), and follows a number of influential studies that have highlighted the role played by governments in successful development cases, particularly in the cases of Japan and the East Asian economies (see Johnson 1972; Wade 1990; Evans 1995; Chang 2002). In particular, these studies highlighted the importance of industrial policy in these successful development cases, which has led to significant debate regarding the role of governments in pursuing development.

At the present time, a debate has emerged around Justin Lin's (2011) *New Structural Economics*, which seeks to combine aspects of structuralism with neoclassical economics.

The NSE approach states that for countries to development, the governments of developing countries need to promote industrial upgrading. From the NSE perspective, however, this industrial upgrading should be done by adhering to a country's comparative advantage, which Lin argues, is determined by its factor endowments. This has led to an important debate on whether government development strategies should be based on conforming to a country's comparative advantage as Lin (2011) proposes, or whether governments should 'defy' their comparative advantage (see Lin and Chang 2009; Rodrik 2011; Stiglitz 2011).

This study contributes to this debate – and to development theory more generally, in a number of ways. The findings certainly provide support for this new structural turn in the mainstream development thinking, particularly regarding the need for developing countries to actively pursue industrial upgrading from primary commodities production to more capital intensive industrial production. As this study demonstrates the manner in which some countries continue to be dependent on exporting primary commodities and low value-added manufactures plays an important role in explaining current development and poverty levels.

This study, however, also contributes to this debate by highlighting shortcomings of the NSE approach. The neoclassical grounding of the NSE approach leads to a focus exclusively on domestic factors in explaining underdevelopment of some countries; the approach does not consider the impact external international factors on countries' development, and as such demonstrates the 'internalist' bias that this research project has sought to address (see Lin 2011: 205-206). Based on the NSE approach, countries' comparative advantage is seen as being determined exclusively by factor endowments. Similarly, Lin attributes the failure of

recent trade liberalisation in many developing countries to the bad policies implemented by the governments of these countries in the past (Lin and Chang 2009: 493).

This thesis, however, demonstrates the significant impact that international inequalities have on development; something that is entirely missing from the NSE approach. In doing so, it has highlighted the effect of colonial policies on shaping the current structure of the international system, which raises important questions about whether it is appropriate to treat countries' comparative advantage as exclusively determined by factor endowments as Lin does. The findings of this study suggest that countries' comparative advantage are influenced by international inequalities. If production in poorer nations does simply follow these countries' comparative advantage, it is likely to perpetuate the structural inequality that currently exists. As such, the findings of this study suggest that developing countries need to diversify by implementing industrial policies, which do not adhere to their comparative advantage.

An example of how the findings of this study differ from the NPE approach can be seen when we consider the significance of globalisation for developing countries. The NSE approach sees the process of globalisation only in terms of providing new opportunities for developing countries; there is no mention of negative aspects of globalisation for developing countries (see Lin 2011: 205). The findings of this study, however, build on more 'relational' views of globalisation, showing that the impact of globalisation on poverty can vary across countries, based on their positions in the international system and the structural constraints they face as a consequence (see Chapter 7).

The External and Internal Causes of Poverty

The third contribution of this thesis, following on from the previous discussion, is to the debates on whether poverty is the result of internal or external factors (see Hettne 1995; Townsend 1993). At the present time, development policy and thinking is dominated by an 'internalist' bias regarding the cause of poverty. In the introduction, I pointed out the manner in which development policy is largely based on the view the view that poverty is the result of factors internal to a country alone, ignoring the broader international context. Furthermore, the review of the mainstream development literature on the causes of poverty in Chapter 2 highlights the manner in which the extant literature focuses on domestic factors alone in explaining poverty. The analysis conducted in this study has demonstrated that international inequality has a significant impact on poverty, when controlling for the domestic factors typically associated with poverty.

Yet in highlighting the role of the international order on poverty, this study has avoided moving to the other extreme viewpoint – as some classical underdevelopment work has done – of claiming that poverty is the result of external international factors alone. This argument has in particular been associated with dependency theorists, such as Andre Gunder Frank (1969). Instead, the findings of this study suggest that poverty results from a combination of external and internal factors; while international inequality is found to have a significant impact on poverty, so too are domestic factors, such as geography, institutions, and within-country inequality. Hence, a key contribution of this study is to examine the effect of international inequality on poverty while moving beyond important limitations of the underdevelopment approach.

In considering the effects of international inequality and domestic inequality on poverty, this study has also considered how the two interact, and what the impact of the relationship between international and domestic inequalities on poverty. The findings demonstrate that the influence of domestic inequality on poverty depends on the country's international position. As such, this study finds that the impact of domestic factors on poverty may vary according to the international context a country faces. Therefore, an important contribution of this study is to move past the biases of internal and external explanations of poverty, which have dominated development thinking as Hettne (1995) has highlighted.

The Mechanisms linking Inequality to Poverty

In addition to assessing whether international inequality and domestic inequality have an impact on poverty, this study has also considered the mechanisms through which inequality between and within countries affect poverty. The study has pointed to two mechanisms, which link inequality and poverty: exploitation and opportunity-hoarding, which can both be viewed as forms of rent-seeking (see Tilly 1998). These different mechanisms operate at both the international level and at the domestic level.

At the international level, countries are connected to one other through various economic and political ties to form an international system. The structure of these relations, I have argued, is unequal, and as such, the international system resulting from these unequal relations is hierarchical with countries occupying different positions in this hierarchy. The unequal relations between countries in different positions, particularly trade relations, are exploitative and have led to a transfer of resources from countries in lower positions to

those in higher (Wallerstein 1972; Galtung 1971). This transfer of resources has led to higher poverty in countries in lower or more peripheral positions in the international system. Furthermore, the economic and political relations between countries have also denied opportunities for countries in more peripheral positions to move into alternative, higher value-added, forms of production, which again has had a significant impact on poverty.

The structural measure of international inequality introduced in this study – based on the application of SNA to trade networks – has enabled me to examine this link between international inequality and poverty. The results of the analysis provide strong support for this argument, that international inequality impacts poverty through the exploitative relations between countries in different positions of the hierarchical international system. Furthermore, the analysis of the impact of colonial factors on current international inequality further supports the arguments made regarding the relationship between structural international inequality and poverty.

At the domestic level, groups are also connected through various economic, political and social ties. It has been argued that these relations are shaped by the inequality between the wealthier in society and the less wealth. This study has argued that the manner in which economic inequalities within a country shape political processes and policy outcomes in a country, which has a significant impact on poverty levels (see Galtung 1969; Wade 2007; Nel 2006; Rao 2006).

The empirical analysis undertaken in this study has provided support for this causal link between domestic inequality and poverty. The analysis demonstrates that higher domestic inequality is associated with poverty. Furthermore, the results of the cross-country regression show that the impact of domestic inequality occurs independently of economic

growth, providing support for view that domestic inequality affects poverty through the 'policy' channel rather than the growth channel, as proponents of the 'median-voter' hypothesis argue. The analysis also finds that domestic inequality has a larger effect on poverty in democracies rather than in non-democracies, which further supports the link between domestic inequality and poverty made in this study.

9.4. Limitations and Directions for Future Research

This concluding chapter also serves to highlight some of the limitations of this study and to outline the future directions that the research central to this study will take. An important limitation of the analysis has been, that in conducting a cross-country analysis of poverty between 1980 and 2007; this study has been limited by measurement issues and data availability as I have highlighted previously. This is relevant for the main dependent variable in this study, poverty, which I have measured using countries' infant mortality rate. As I have demonstrated in Chapter 4, IMR is strongly correlated with other indicators of poverty and has wide data coverage over the time period analysed. However, there are significant limitations to the use of IMR to measure poverty. It is important to note that while IMR is an important dimension of poverty, it is a single dimension of poverty. As Ruggeri Laderchi et al. (2003) demonstrate; different measures of poverty can produce different diagnoses of the level and severity of poverty in a country. As such, in relying on IMR to measure poverty, the analysis may overlook changes in other dimensions of poverty, which shed important light on the factors associated with poverty around the world. A second limitation of using IMR to measure poverty, discussed in Chapter 4, is that unlike other measures of poverty – such as the dollar-a-day poverty headcount – IMR does not measure poverty by aggregating

the number of individuals experiencing deprivation. As such, it is a less direct measure of poverty. However, the main reason for using IMR is that it provides an accurate reflection of the differences between countries in poverty levels, and of changes in poverty in a country over time.

Another limitation with the use of IMR as a measure of poverty is to do with data availability. While, as noted, IMR offers a extensive data coverage; the analysis is still limited by missing data issues. This is particularly important as missing observations are likely to occur more with poorer nations. A further issue woth noting is that while the IMR data is taken from official sources (see Abouharb and Kimball 2007), there is likely to be some variation in the quality of IMR data collection in different countries. However, as noted in Chapter 4, data collection for infant and child mortality rate tends to be of a better quality than other health and income based measures (see Nolan and Whelan 1996; Attaran 2005).

Both measurement and missing data issues are perhaps more significant limitations for domestic inequality, one of the key independent variables of the study. In drawing on Frederick Solt's (2009) *Standardized World Income Inequality Database*, this study has benefitted from important recent advances in the measurement on income inequality in countries across the world. However, as I have highlighted previously, there are a number of drawbacks to using the Gini coefficient to measure domestic inequality. In particular, Gini levels do not shed much light on group-based inequalities or whether we see income polarisation. This group-based inequality could be based on gender inequality, inequality between ethnic groups, or regional inequalities. The example of Mexico, used in this study, demonstrates how such group-based inequalities may be important. Therefore, an important area of further research would be to consider the effects of such horizontal

inequalities and polarisation, as these may have a bigger influence on poverty than vertical income inequality measured using the Gini coefficient, based on the theoretical argument made in Chapter 3. The main limitation of doing this is that data is available for a small number of countries, and hence I would not be able to consider the range of countries that have been included in the analysis in this study (see Østby 2008). As I have discussed in Chapter 4, the use of SWIID dataset also has its limitations. In using a method of data imputation for a number of the observations, a number of assumptions are made regarding the nature of income inequality in a country. In particular, such an approach makes the assumption that income inequality does not change sharply in a country from one year to the next. As I have pointed out, there are a number of examples to suggest that this assumption is not always valid. Furthermore, despite providing the highest income inequality data coverage, the SWIID dataset has a number of missing data points, which significantly reduces the number of observations in the analysis. This is an important limitation of this study, particularly as much of the missing income inequality data is for the poorest countries.

In considering the impact of international inequality on poverty, the research undertaken here, focuses predominantly on trade relations between countries, as too has the measure of globalisation used in the analysis. An important avenue for future research would be to consider other forms of structural inequality between countries more directly, and to analyse the development impacts of other international factors. For example, while data availability at the present time is still limited, an analysis of the impact of financial relations, such as bank loans and portfolio finance on developing countries would shed more light on the effect of international factors on poverty (see Hudson 2013). So too would an analysis

that incorporated foreign direct investment and the role of transnational corporations on poverty, using a structural approach.

The research conducted here is centred on a quantitative cross-country analysis of poverty. This approach has enabled me to demonstrate that both international and domestic inequality have a significant effect on poverty. However, an important limitation of this approach is that it does not fully establish the *processes* through which international and domestic inequalities impact poverty. In order to further understanding how the international and domestic inequalities impact poverty, and whether they do indeed operate through the channels discussed here, it is necessary to consider in greater depth the actual processes through which inequality between and within countries impact poverty. The use of qualitative methods, specifically a process-tracing approach applied to country case studies, would enable me to shed greater light on the causal mechanisms discussed in this study.[135] As such, conducting country case studies to further examine the arguments and findings of this study provides an important and potentially fruitful avenue to develop this research project.

The study has taken states to be the primary unit of analyis, whereby I have focused on countries' levels of poverty and income inequality, and on inequality between states through a network analysis of trade relations. As I have discussed in Chapter 1, the decision to focus exclusively on countries has largely been made for methodological reasons. The decision is also based on the view that the state is still the principal political actor actor in the global system (Payne 2005). However, the focus on countries alone in this study introduces a number of limitations. The first is that important non-state actors on the

[135] See Bennett and George (2005) for a discussion of process-tracing.

international stage, such as transnational corporations, are omitted from the analysis. This is a significant limitation of the analysis given the impact that transnational corporations have on global inequalities and development (see Greig et al. 2007; Nunnenkamp 2004). As such, an important area of future research would be incorporating non-state actors, such as transnational corporations, into the analysis of the impact of inequality on poverty.

A second and related limitation of the focus on states in the analysis is that it restricts what can be understood about inequality. With the process of globalisation, many have argued that the focus of inequality should be on global inequality, rather than on between-country and within country inequality (see Milanovic 2005). Some, such as Ankie Hoogvelt (2001: 64) ask whether the process of globalisation has meant that the 'geographic core-periphery polarization is being replaced by a social core-periphery divide that cuts across territorial boundaries and geographic regions?' Such a view is consistent with the notion of a 'transnational capitalist class', whereby the process of globalisation is seen to have led to the emergence of a new global elite not contrained or defined by national boundaries (see Robinson and Harris 2000; Sklaire 2002; Carroll 2010). The focus on state-level analysis has meant that the analysis has not fully addressed such arguments.

The focus on analysing countries also means that the focus on poverty in this analysis is on poverty rates, rather than on overall levels of poverty around the world. Sumner (2012) has demonstrated that most of the world's poor now live in middle income countries. Consequently, this has led to questions on whether the focus of poverty should be on 'poor people' rather than 'poor countries', as is the case in this study (see Kanbur and Sumner 2012). Again this highlights the limitations of using a country-level analysis. An additional limitation of conducting a country level analysis is that sub-national factors that impact

poverty, such as processes that occur at the regional, local, or even at the household level, have not been incorporated into this study. Furthermore, the study has not considered how international inequalities may have a greater impact at the regional or local level rather than at the national level.

As such, while this study provides an important starting point for analysing the effects of international and domestic inequalities on poverty; a key area for future research is to move beyond the focus on state-level analysis taken in this thesis in analysing the impact of inequalities on poverty. One way in which future research could attempt to deal with such factors that occur at different levels is to use a multi-level quantitative analysis, which includes factors at the international, national and local levels. This is not likely to be possible across the full range of countries that have been considered here, due to insufficient data availability; however, advances in geo-coded data provide a promising means to conduct a multi-level analysis of poverty in the future.[136]

There are a number of reasons for the persistent poverty that we can observe around the world. This study has produced considerable evidence to suggest that the inequalities that exist between countries in the international system, together with the inequality between groups within countries, are important factors in explaining current poverty. Existing research has tended to give inadequate attention to the role of international inequality and domestic inequality in producing poverty; however, this study finds evidence that both matter for poverty based on cross-country evidence. In doing so, this study has highlighted the need to consider how the non-poor, both internationally and domestically, impact world poverty.

[136] See Cederman et al. (2011) and Nordhaus (2006) for examples of studies that use geo-coded data.

Appendices

Appendix A – Countries' Positions by Year

Table A1. Countries' Positions by Year

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Afghanistan	2	2	3	3	3	3	4	3	4	4	4	4	4	3	4	4	4	4	4	4	3	4	4	4	4	3	3	3
Albania	3	4	4	3	3	4	4	4	4	4	4	4	4	3	4	3	3	4	3	3	3	3	3	3	3	3	3	3
Algeria	1	1	2	1	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2
Angola	3	3	3	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	3	2	3	3	2	2	2
Argentina	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Armenia	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	3	3	4	3	3	3	3	4	4	4	3	3	3
Australia	1	1	2	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	1	2	2	1	1	2
Austria	1	1	2	1	1	1	2	2	2	2	1	2	1	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1
Azerbaijan	-	-	-	-	-	-	-	-	-	-	-	-	3	3	4	3	3	4	3	3	3	3	3	3	3	3	2	3
Bahamas	2	2	3	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
Bahrain	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	2	3
Bangladesh	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	3	2	3	3	3	2	3
Barbados	3	3	3	3	2	3	3	4	4	4	4	4	4	3	4	4	3	4	3	3	3	4	4	4	4	4	3	3
Belarus	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2
Belgium	1	1	1	1	1	1	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1
Belize	-	-	4	3	3	4	4	4	4	4	4	4	4	3	4	4	4	4	3	3	3	4	4	4	4	4	3	3
Benin	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	3	4	3	3	3	4	4	4	4	4	3	3
Bhutan	3	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Bolivia	3	3	3	3	3	3	3	3	3	3	3	3	4	3	4	3	3	3	3	3	3	3	3	3	3	3	2	3
Bosnia & Herzegovina	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	3	3	3	3	3	3	3	3	3	3	3	2	3
Botswana	3	3	4	3	3	4	4	4	4	4	4	4	4	3	4	3	3	4	3	3	3	3	3	3	3	3	2	3
Brazil	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2
Brunei	-	-	-	-	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	3	2	3
Bulgaria	1	1	2	1	1	1	2	2	2	2	3	3	3	3	3	3	2	3	2	2	2	3	3	3	3	2	2	3
Burundi	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Cambodia	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	3	3	4	3	3	3	3	3	3	3	3	2	3
Cameroon	2	3	3	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	2	3
Canada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Cape Verde	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3
Central African Republic	3	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4
Chad	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3
Chile	2	2	2	2	2	2	3	3	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
China	1	1	2	1	1	1	2	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Colombia	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2
Comoros	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Congo	3	3	3	2	2	3	3	3	3	3	3	3	3	3	4	3	2	3	3	3	3	3	3	3	3	3	2	3
Costa Rica	2	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	2	2	3	3	2	2	3
Croatia	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	2	2	2	2	2	2	3	3	3	3	2	2	3
Cuba	1	1	2	1	1	1	2	2	2	2	3	3	3	3	4	3	2	3	3	3	3	3	3	3	3	3	2	3
Cyprus	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
Czechoslovakia	1	1	2	1	1	1	2	2	2	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Czech Republic	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2
DR Congo	2	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3	3
Denmark	1	1	2	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2
Djibouti	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	4	4	4	4	3	3
Dominican Republic	2	2	3	2	2	2	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	3	3	2	2	3
East Germany	1	1	2	1	2	1	2	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ecuador	2	2	3	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	2	2	3	3	2	2	2
Egypt	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	3	3	2	2	2
El Salvador	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	2	3	2	3	2	2	2	3	3	3	2	3
Equatorial Guinea	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	2	3
Eritrea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	4	3	3	3	2	3	2	3	2	3	3	3	3	3	2	3
Ethiopia	3	3	3	3	3	3	4	3	4	4	4	4	4	3	4	4	3	4	3	3	3	3	4	4	3	3	3	3
Fiji	3	3	3	3	3	3	4	3	3	4	4	4	4	3	4	3	3	4	3	3	3	3	4	4	3	3	3	3
Finland	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2
France	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gabon	2	3	3	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	3	3	3	3	3	3	3
Gambia	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Georgia	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	3	3	4	3	3	3	3	4	4	3	3	3	3

Germany	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ghana	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
Greece	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Guatemala	2	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	2	2	3	3	2	2	3		
Guinea	3	3	3	3	3	3	4	3	4	4	4	4	4	3	4	4	3	4	3	3	3	4	4	4	4	4	3	3		
Guinea-Bissau	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Guyana	3	3	3	3	3	4	4	4	4	4	4	4	4	3	4	4	3	4	3	3	3	4	4	4	4	4	3	3		
Haiti	3	3	3	3	2	3	3	3	3	3	3	3	4	3	4	4	3	4	3	3	3	3	4	4	4	4	3	3		
Honduras	2	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	2	2	3	3	3	2	3		
Hungary	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	
Iceland	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
India	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	
Indonesia	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	1	2	2	1	1	2		
Iran	1	1	2	1	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2		
Iraq	1	1	2	2	2	2	2	2	2	2	2	3	4	3	4	3	3	3	2	2	2	2	2	3	3	2	2	2		
Ireland	1	1	2	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2		
Israel	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2		
Italy	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Jamaica	2	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	3	2	3		
Japan	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Jordan	2	3	3	2	2	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3	2	3		
Kazakhstan	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	2	2	2	2	2	2	3	3	3	2	2	2	2		
Kenya	2	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3		
Kuwait	1	1	2	1	2	2	2	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2	2	3	3	2	2	2		
Kyrgyzstan	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	3	3	4	3	3	3	3	4	4	4	3	3	3		
Laos	3	4	4	3	4	4	4	4	4	4	4	4	4	3	4	3	3	4	3	3	3	3	4	4	3	3	3	3		
Latvia	-	-	-	-	-	-	-	-	-	-	-	-	4	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3		
Lebanon	2	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3		
Lesotho	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	4	3	4
Libya	1	1	2	1	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	3	3	2	2	2		
Liberia	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	2	3	3	3	3	3	3	2	3		
Lithuania	-	-	-	-	-	-	-	-	-	-	-	-	4	3	3	3	2	3	2	2	2	3	3	3	3	2	2	3		
Luxembourg	2	3	3	2	2	2	3	3	3	3	3	3	3	3	3	2	2	3	2	3	3	2	2	2	2	2	2	2		
Macedonia	-	-	-	-	-	-	-	-	-	-	-	-	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
Madagascar	3	3	3	3	3	3	4	3	4	4	4	4	4	3	4	4	3	4	3	3	3	3	3	3	4	3	3	3		

Malawi	3	3	3	3	3	3	4	3	3	4	4	4	4	3	4	3	3	4	3	3	3	3	4	4	4	3	3	3
Malaysia	1	1	2	1	1	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	1	2	1	1	1	2
Maldives	3	3	3	3	3	3	4	3	4	4	4	4	4	3	4	4	4	4	3	3	3	4	4	4	4	4	4	3
Mali	3	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	3	4	3	3	3	3	4	4	4	4	3	3
Malta	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Mauritania	3	3	3	3	3	3	4	3	4	4	4	4	4	3	4	4	3	4	3	3	3	4	4	4	3	4	3	3
Mauritius	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3	3
Mexico	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Moldova	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	3	2	3	3	3	3	3	4	4	3	3	3	3
Mongolia	2	2	2	2	2	2	3	3	3	3	3	3	4	3	4	3	3	4	3	3	3	3	3	4	4	3	3	3
Morocco	2	2	3	2	2	2	3	3	3	3	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2
Mozambique	3	3	3	3	3	4	4	3	4	4	4	4	4	3	4	3	3	4	3	3	3	3	4	3	3	3	3	3
Myanmar	3	3	3	3	3	3	4	3	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
Namibia	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	2	3
Nepal	4	4	4	3	3	4	4	3	3	4	4	4	4	3	4	3	3	4	3	3	3	3	4	3	3	3	3	3
Netherlands	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
New Zealand	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Nicaragua	3	3	3	3	3	3	4	3	4	4	4	4	4	3	4	3	3	4	3	3	3	3	3	4	3	3	3	3
Niger	3	3	3	3	3	3	3	3	3	4	4	4	4	3	4	4	4	4	3	3	3	4	4	4	4	4	3	3
Nigeria	1	1	2	1	2	2	2	2	2	2	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2
North Korea	2	2	3	2	2	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	4	4	3	3	3
North Yemen	2	3	3	3	3	3	4	3	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	1	1	2	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2
Oman	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	3	2	3	3	2	2	2
Pakistan	2	2	3	2	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	3	2	3	3	2	2	2
Panama	2	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	3	2	3
Papua New Guinea	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	2	3
Paraguay	3	3	3	3	3	3	4	3	3	3	3	3	4	3	3	3	2	3	2	3	3	3	3	3	3	3	2	3
Peru	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	3	3	2	2	2
Philippines	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
Poland	1	1	2	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2
Portugal	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2
Qatar	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	2	2	3	3	2	2	2
Romania	1	1	2	2	2	1	2	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2
Russia/USSR	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	1

Rwanda	3	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Saudi Arabia	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2	
Senegal	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3	4	3	3	3	3	3	3	3	3	3	3	3
Sierra Leone	3	3	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Singapore	1	1	2	1	1	1	2	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1	2	1	2	1	1	1	2	
Slovakia	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Solomon Islands	4	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Somalia	3	3	3	3	4	3	4	3	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	3	3	
South Africa	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
South Korea	1	1	2	1	1	1	2	2	2	1	1	2	1	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1		
South Yemen	2	3	3	3	3	3	4	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Spain	1	1	2	1	1	1	2	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1		
Sri Lanka	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	2	2	3	2	3	3	3	2	3	
Sudan	3	3	3	3	3	3	4	3	3	4	4	4	4	3	4	3	3	4	3	3	3	3	3	3	3	3	3	2	2	
Suriname	3	3	3	3	3	4	4	4	4	4	4	4	4	3	4	4	3	4	3	3	3	4	4	4	4	4	3	3		
Swaziland	3	4	4	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	
Sweden	1	1	2	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2		
Switzerland	1	1	2	1	1	1	2	2	2	2	1	2	1	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1		
Syria	2	2	3	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	3	2	2	3	3	3	3	3	2	3		
Taiwan	1	1	1	1	1	1	2	2	2	1	1	2	1	2	1	1	1	1	1	1	1	1	1	2	1	1	1	2		
Tajikistan	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	3	3	3	3	3	3	3	4	4	4	3	3	3		
Tanzania	3	3	3	3	3	3	4	3	3	4	4	4	4	3	4	3	3	4	3	3	3	3	4	4	3	3	3	3		
Thailand	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	1	2	2	1	1	2		
Togo	3	3	3	3	4	4	4	3	4	4	4	4	4	4	4	4	3	4	3	4	4	4	4	4	4	4	3	3		
Trinidad & Tobago	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	3	2	2	2	3	3	2	2	2		
Tunisia	2	2	3	2	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2		
Turkey	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2		
Turkmenistan	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	3	3	3	3	3	3	3	3	3	3	3	2	3		
UAE	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	1	1	2		
Uganda	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	3	3	4	3	3	3	3	4	4	4	3	3	3		
Ukraine	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2		
United Kingdom	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Uruguay	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	3	3	3	3	3	3	2	3		
USA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		

Uzbekistan	-	-	-	-	-	-	-	-	-	-	-	-	4	3	3	3	2	3	3	3	3	3	3	3	3	3	2	3
Venezuela	1	1	2	1	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	2	2
Yemen	-	-	-	-	-	-	-	-	-	-	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3
Yugoslavia/Serbia	1	1	2	1	2	1	2	2	2	2	2	2	2	3	4	3	3	3	3	3	3	3	3	3	3	3	2	3
Zambia	3	3	3	3	3	3	3	3	3	3	3	3	4	3	4	3	3	4	3	3	3	3	4	3	3	3	3	3
Zimbabwe	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3

Appendix B – Additional Tables for Chapter 5

Table B1. Annual Trade Block Models

1980

Exporting Group \ Importing Group	1	2	3	4
1	832.3	76.0	12.8	1.8
2	60.9	6.7	2.1	0.6
3	11.4	1.3	0.3	0.2
4	0.7	0.2	0.1	0.0

1981

Exporting Group \ Importing Group	1	2	3	4
1	731.4	95.8	17.9	2.4
2	72.3	8.4	2.7	0.8
3	13.4	2.1	1.0	0.2
4	1.5	0.3	0.1	0.0

1982

Exporting Group \ Importing Group	1	2	3	4
1	3617.8	490.3	46.4	5.7
2	451.3	63.2	6.6	0.8
3	38.0	4.2	0.9	0.3
4	3.1	0.6	0.1	0.0

1983

Exporting Group \ Importing Group	1	2	3	4
1	596.2	62.7	9.3	0.8
2	52.5	8.2	1.1	0.2
3	7.3	1.1	0.5	0.0
4	0.5	0.1	0.1	0.0

1984

Exporting Group \ Importing Group	1	2	3	4
1	1151.2	97.2	10.0	2.8
2	111.2	12.9	1.6	0.4
3	8.0	1.1	0.3	0.1
4	1.4	0.2	0.1	0.1

1985

Exporting Group \ Importing Group	1	2	3	4
1	806.0	81.7	14.4	2.7
2	94.0	12.2	2.4	0.6
3	10.5	1.7	0.7	0.2
4	2.1	0.3	0.1	0.0

1986

Exporting Group \ Importing Group	1	2	3	4
1	19274.4	1632.9	94.8	13.7
2	1606.5	211.3	15.0	3.4
3	109.3	12.0	1.2	0.5
4	10.8	2.0	0.2	0.1

1987

Exporting Group \ Importing Group	1	2	3	4
1	9040.1	834.3	62.1	8.0
2	907.9	112.2	9.1	0.9
3	65.4	6.2	0.9	0.3
4	6.2	0.7	0.1	0.3

1988

Exporting Group \ Importing Group	1	2	3	4
1	9869.1	925.9	70.8	13.0
2	967.7	117.3	10.0	1.7
3	74.8	7.3	1.1	0.4
4	9.0	1.1	0.2	0.1

1989

Exporting Group \ Importing Group	1	2	3	4
1	6592.2	672.8	61.7	10.6
2	694.9	118.9	10.8	2.0
3	69.7	8.5	1.3	0.6
4	7.8	1.4	0.3	0.1

1990

Exporting Group \ Importing Group	1	2	3	4
1	5717.4	678.2	64.3	9.8
2	722.4	122.2	15.6	2.3
3	76.7	13.8	2.6	0.7
4	6.5	1.6	0.3	0.1

1991

Exporting Group \ Importing Group	1	2	3	4
1	8933.2	1046.1	71.8	11.6
2	1075.1	139.7	14.4	1.9
3	74.2	10.0	1.6	0.6
4	8.2	1.4	0.2	0.1

1992

Exporting Group \ Importing Group	1	2	3	4
1	4463.6	514.9	64.2	9.4
2	562.3	76.9	13.7	2.8
3	58.6	9.9	2.4	0.9
4	6.5	2.0	0.5	0.1

1993

Exporting Group \ Importing Group	1	2	3	4
1	8897.8	1302.4	70.1	6.7
2	1271.0	176.0	13.4	1.1
3	67.9	10.4	1.5	0.3
4	3.4	0.8	0.2	0.1

1994

Exporting Group \ Importing Group	1	2	3	4
1	4583.1	617.4	76.0	9.1
2	662.8	112.7	21.0	3.2
3	82.3	16.1	3.2	1.0
4	6.8	2.1	0.6	0.3

1995

Exporting Group \ Importing Group	1	2	3	4
1	4515.7	423.5	43.0	7.7
2	446.4	75.2	9.1	0.7
3	39.0	5.9	1.4	0.4
4	5.1	0.7	0.2	0.1

1996

Exporting Group \ Importing Group	1	2	3	4
1	2009.4	138.7	18.4	2.7
2	120.5	11.8	3.3	0.4
3	11.1	1.6	0.8	0.2
4	2.2	0.3	0.1	0.1

1997

Exporting Group \ Importing Group	1	2	3	4
1	4138.0	386.1	46.1	8.7
2	401.9	74.0	11.5	2.3
3	46.8	7.9	2.4	0.8
4	6.9	1.6	0.4	0.2

1998

Exporting Group \ Importing Group	1	2	3	4
1	5133.3	338.8	25.7	2.8
2	340.9	36.2	4.7	0.5
3	17.1	3.1	0.8	0.2
4	2.7	0.5	0.2	0.0

1999

Exporting Group \ Importing Group	1	2	3	4
1	5407.8	355.5	26.3	2.6
2	409.1	42.5	5.4	0.7
3	21.6	3.8	0.9	0.2
4	2.4	0.6	0.2	0.0

2000

Exporting Group \ Importing Group	1	2	3	4
1	4222.1	344.7	34.1	4.7
2	378.0	52.3	7.8	1.1
3	31.3	5.4	1.3	0.4
4	3.7	0.8	0.3	0.1

2001

Exporting Group \ Importing Group	1	2	3	4
1	5963.7	470.7	35.9	5.8
2	589.1	72.6	10.0	0.9
3	38.2	6.1	1.2	0.3
4	3.4	0.5	0.2	0.2

2002

Exporting Group \ Importing Group	1	2	3	4
1	1543.5	108.6	26.2	4.9
2	115.3	11.9	5.8	1.3
3	20.9	3.5	1.5	0.6
4	3.0	0.5	0.3	0.2

2003

Exporting Group \ Importing Group	1	2	3	4
1	12148.9	1369.7	85.2	13.9
2	1587.2	208.6	19.4	3.2
3	113.3	13.3	2.6	0.3
4	7.9	1.6	0.4	0.3

2004

Exporting Group \ Importing Group	1	2	3	4
1	6652.7	716.7	71.1	9.8
2	926.8	155.5	21.6	3.3
3	88.0	11.1	3.0	0.8
4	9.5	1.4	0.3	0.4

2005

Exporting Group \ Importing Group	1	2	3	4
1	2560.3	219.4	33.1	5.6
2	252.6	25.2	9.0	0.8
3	28.6	4.4	1.6	0.5
4	3.9	0.4	0.2	0.6

2006

Exporting Group \ Importing Group	1	2	3	4
1	2818.7	151.5	17.2	3.1
2	177.9	12.9	3.1	0.3
3	11.9	1.2	1.0	0.2
4	1.2	0.1	0.1	0.0

2007

Exporting Group \ Importing Group	1	2	3	4
1	9969.2	1065.7	75.5	3.6
2	1187.8	177.6	16.3	0.8
3	58.2	9.4	2.4	0.3
4	3.0	0.6	0.1	0.0

Table B2. Annual ODA Block Models

1980

Donor Group \ Recipient Group	1	2	3	4
1	1.7	7.6	5.4	1.8
2	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1981

Donor Group \ Recipient Group	1	2	3	4
1	2.0	8.5	5.3	2.3
2	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1982

Donor Group \ Recipient Group	1	2	3	4
1	10.1	12.6	14.2	6.3
2	0.2	0.3	0.9	0.3
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1983

Donor Group \ Recipient Group	1	2	3	4
1	3.1	5.4	4.5	1.7
2	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1984

Donor Group \ Recipient Group	1	2	3	4
1	3.3	8.7	5.7	4.4
2	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1985

Donor Group \ Recipient Group	1	2	3	4
1	2.1	8.1	7.0	2.9
2	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1986

Donor Group \ Recipient Group	1	2	3	4
1	0.0	32.0	35.2	14.6
2	0.0	1.1	2.2	2.2
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1987

Donor Group \ Recipient Group	1	2	3	4
1	0.0	17.8	23.4	7.1
2	0.0	0.3	0.8	0.3
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1988

Donor Group \ Recipient Group	1	2	3	4
1	0.0	16.5	24.1	13.1
2	0.0	0.4	0.8	0.5
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1989

Donor Group \ Recipient Group	1	2	3	4
1	1.2	14.0	16.9	9.9
2	0.1	0.6	0.6	0.8
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1990

Exporting Group \ Importing Group	1	2	3	4
1	2.0	14.2	12.8	7.5
2	0.7	0.6	0.7	0.9
3	0.2	0.8	0.6	0.3
4	0.0	0.0	0.0	0.0

1991

Exporting Group \ Importing Group	1	2	3	4
1	4.1	20.4	17.4	9.8
2	0.3	0.8	0.7	1.0
3	0.2	0.9	0.5	0.3
4	0.0	0.0	0.0	0.0

1992

Exporting Group \ Importing Group	1	2	3	4
1	6.2	12.1	7.9	5.0
2	0.2	0.6	0.5	0.8
3	0.2	1.5	0.6	0.3
4	0.0	0.0	0.0	0.0

1993

Exporting Group \ Importing Group	1	2	3	4
1	4.0	17.6	10.3	8.7
2	0.7	1.0	0.8	0.6
3	0.1	0.5	0.2	0.1
4	0.0	0.0	0.0	0.0

1994

Exporting Group \ Importing Group	1	2	3	4
1	5.6	9.8	6.2	5.6
2	0.3	0.7	0.5	0.9
3	0.2	0.9	0.3	0.2
4	0.0	0.0	0.0	0.0

1995

Exporting Group \ Importing Group	1	2	3	4
1	4.3	6.2	4.2	3.6
2	0.2	0.3	0.5	0.3
3	0.3	0.9	0.2	0.1
4	0.0	0.0	0.0	0.0

1996

Exporting Group \ Importing Group	1	2	3	4
1	3.1	4.0	3.0	1.7
2	0.0	0.0	0.0	0.1
3	0.4	0.3	0.4	0.1
4	0.0	0.0	0.0	0.0

1997

Exporting Group \ Importing Group	1	2	3	4
1	3.2	5.3	2.8	3.4
2	0.1	0.2	0.3	0.5
3	0.4	0.4	0.2	0.2
4	0.0	0.0	0.0	0.0

1998

Exporting Group \ Importing Group	1	2	3	4
1	3.7	6.1	3.9	1.6
2	0.1	0.2	0.3	0.2
3	0.2	0.2	0.2	0.1
4	0.0	0.0	0.0	0.0

1999

Exporting Group \ Importing Group	1	2	3	4
1	3.3	7.4	3.8	1.5
2	0.1	0.2	0.4	0.2
3	0.2	0.2	0.2	0.1
4	0.0	0.0	0.0	0.0

2000

Exporting Group \ Importing Group	1	2	3	4
1	2.4	6.5	3.8	1.5
2	0.1	0.2	0.3	0.2
3	0.2	0.1	0.2	0.1
4	0.0	0.0	0.0	0.0

2001

Exporting Group \ Importing Group	1	2	3	4
1	3.0	6.4	5.4	2.6
2	0.1	0.2	0.4	0.2
3	0.1	0.2	0.2	0.1
4	0.0	0.0	0.0	0.0

2002

Exporting Group \ Importing Group	1	2	3	4
1	2.8	3.0	2.4	3.1
2	0.0	0.0	0.1	0.0
3	0.2	0.2	0.3	0.2
4	0.0	0.0	0.0	0.0

2003

Exporting Group \ Importing Group	1	2	3	4
1	7.4	7.7	11.1	7.4
2	0.3	0.4	0.8	0.6
3	0.2	0.1	0.3	0.1
4	0.0	0.0	0.0	0.0

2004

Exporting Group \ Importing Group	1	2	3	4
1	3.6	4.2	6.1	5.1
2	0.1	0.3	0.7	0.4
3	0.1	0.1	0.2	0.1
4	0.0	0.0	0.0	0.0

2005

Exporting Group \ Importing Group	1	2	3	4
1	2.0	10.2	3.7	1.5
2	0.0	0.0	0.1	0.0
3	0.1	0.7	0.2	0.1
4	0.0	0.0	0.0	0.0

2006

Exporting Group \ Importing Group	1	2	3	4
1	1.3	5.4	3.8	1.2
2	0.1	0.3	0.2	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

2007

Exporting Group \ Importing Group	1	2	3	4
1	2.7	7.8	5.2	2.4
2	0.1	0.4	0.4	0.3
3	0.1	0.2	0.1	0.0
4	0.0	0.0	0.0	0.0

Table B3. Annual UN General Assembly Voting Similarity Block Model

1980

Position	1	2	3	4
1	56.8			
2	61.0	68.8		
3	59.5	68.6	69.4	
4	52.9	61.8	63.7	58.9

1981

Position	1	2	3	4
1	60.1			
2	63.8	71.8		
3	63.4	72.3	73.1	
4	58.4	67.4	69.1	65.8

1982

Position	1	2	3	4
1	56.5			
2	52.6	69.1		
3	50.2	71.4	75.5	
4	44.5	65.8	70.8	67.8

1983

Position	1	2	3	4
1	60.2			
2	64.5	71.9		
3	64.5	73.7	76.1	
4	54.0	61.8	65.5	58.8

1984

Position	1	2	3	4
1	56.4			
2	59.0	75.8		
3	56.1	73.5	71.8	
4	56.7	76.0	75.2	77.7

1985

Position	1	2	3	4
1	56.6			
2	60.1	71.4		
3	60.1	73.5	75.7	
4	57.7	71.8	74.5	73.3

1986

Position	1	2	3	4
1	56.7			
2	42.3	63.9		
3	35.6	68.4	77.8	
4	31.7	67.4	77.0	76.8

1987

Position	1	2	3	4
1	72.1			
2	44.8	72.8		
3	39.3	75.8	81.3	
4	37.2	75.6	81.8	82.5

1988

Position	1	2	3	4
1	71.9			
2	42.0	72.4		
3	36.5	74.9	80.0	
4	32.7	75.1	80.7	82.1

1989

Position	1	2	3	4
1	66.0			
2	49.3	75.0		
3	43.6	76.4	80.4	
4	40.9	75.0	79.5	79.0

1990

Position	1	2	3	4
1	60.3			
2	56.6	71.3		
3	50.7	71.7	75.3	
4	49.4	73.0	78.2	81.3

1991

Position	1	2	3	4
1	55.3			
2	44.9	64.5		
3	40.2	66.2	70.8	
4	35.9	63.6	69.1	68.1

1992

Position	1	2	3	4
1	62.6			
2	60.8	62.4		
3	55.6	62.3	66.0	
4	46.4	53.3	58.1	53.7

1993

Position	1	2	3	4
1	59.3			
2	58.5	64.8		
3	48.7	59.9	60.8	
4	41.9	55.2	60.6	62.1

1994

Position	1	2	3	4
1	65.3			
2	66.5	68.9		
3	57.9	62.8	60.1	
4	52.0	57.6	58.4	57.6

1995

Position	1	2	3	4
1	57.3			
2	60.8	63.0		
3	58.4	60.6	58.3	
4	54.8	56.5	56.5	56.4

1996

Position	1	2	3	4
1	71.1			
2	64.6	64.0		
3	61.5	62.1	60.5	
4	49.1	54.0	54.8	54.0

1997

Position	1	2	3	4
1	66.9			
2	66.5	66.8		
3	59.1	61.7	59.2	
4	52.3	56.2	56.7	55.3

1998

Position	1	2	3	4
1	69.4			
2	65.9	67.1		
3	58.2	62.9	61.2	
4	49.2	57.3	59.0	60.6

1999

Position	1	2	3	4
1	66.9			
2	62.9	63.6		
3	57.0	60.6	59.3	
4	34.1	40.1	42.2	35.6

2000

Position	1	2	3	4
1	68.1			
2	66.3	68.6		
3	57.5	62.3	58.6	
4	44.1	51.4	51.6	47.2

2001

Position	1	2	3	4
1	68.4			
2	62.9	66.8		
3	53.0	59.9	55.9	
4	38.3	50.2	51.6	53.5

2002

Position	1	2	3	4
1	66.9			
2	65.5	72.7		
3	61.0	66.9	61.6	
4	52.3	61.9	58.3	57.9

2003

Position	1	2	3	4
1	62.0			
2	65.7	70.0		
3	58.5	65.6	66.3	
4	54.7	63.1	66.8	68.4

2004

Position	1	2	3	4
1	67.5			
2	67.1	69.0		
3	62.4	67.9	70.5	
4	54.0	61.9	68.5	70.2

2005

Position	1	2	3	4
1	69.9			
2	66.4	69.8		
3	61.0	66.6	64.9	
4	54.9	64.4	65.0	67.0

2006

Position	1	2	3	4
1	70.6			
2	66.2	69.7		
3	62.7	68.6	68.1	
4	59.1	68.3	69.2	70.5

2007

Position	1	2	3	4
1	68.0			
2	65.4	71.8		
3	60.2	70.4	70.4	
4	48.7	62.2	65.8	67.7

Table B4. Annual Troop Deployment Block Model

1980

Deployer Group \ Host Group	1	2	3	4
1	187.1	51.0	21.1	6.0
2	0.0	19.4	12.6	0.0
3	0.0	0.4	22.2	304.5
4	0.0	1.1	0.0	0.0

1981

Deployer Group \ Host Group	1	2	3	4
1	221.3	72.5	20.4	9.4
2	0.0	0.0	29.2	0.7
3	0.0	0.0	0.6	207.8
4	0.0	0.0	0.5	0.0

1982

Deployer Group \ Host Group	1	2	3	4
1	2072.2	892.5	139.1	22.5
2	0.0	0.4	20.1	0.0
3	0.0	1.0	0.1	41.3
4	0.0	0.0	0.0	0.0

1983

Deployer Group \ Host Group	1	2	3	4
1	498.1	78.3	47.5	0.0
2	13.2	0.0	8.9	1.7
3	0.1	0.7	53.4	0.0
4	0.0	0.0	0.0	0.0

1984

Deployer Group \ Host Group	1	2	3	4
1	585.6	59.4	113.9	13.6
2	10.4	17.4	7.7	8.6
3	0.0	0.0	0.5	294.1
4	0.0	20.9	11.1	0.0

1985

Deployer Group \ Host Group	1	2	3	4
1	397.5	82.5	88.5	8.2
2	13.2	0.0	28.3	1.1
3	0.0	0.8	0.1	159.4
4	0.0	0.4	0.0	0.0

1986

Deployer Group \ Importing Group	1	2	3	4
1	25829.2	622.8	60.9	0.0
2	752.9	202.4	55.0	66.4
3	0.0	4.2	5.3	2.4
4	0.0	0.0	0.0	0.0

1987

Deployer Group \ Host Group	1	2	3	4
1	7103.5	192.1	39.5	74.4
2	0.0	6.2	78.5	2.4
3	0.0	3.2	5.2	0.2
4	0.0	0.0	0.3	0.0

1988

Deployer Group \ Host Group	1	2	3	4
1	7049.2	206.9	56.1	47.0
2	0.0	6.2	75.5	64.8
3	0.0	0.1	9.8	74.7
4	0.0	0.0	0.2	0.0

1989

Deployer Group \ Host Group	1	2	3	4
1	2251.3	69.6	38.5	14.9
2	0.0	0.0	83.7	2.7
3	0.0	0.1	12.6	39.3
4	0.0	0.0	0.0	0.3

1990

Deployer Group \ Host Group	1	2	3	4
1	786.8	66.1	542.5	12.1
2	0.0	6.3	42.9	1.8
3	0.0	0.0	6.0	8.8
4	0.0	0.0	0.2	0.4

1991

Deployer Group \ Host Group	1	2	3	4
1	1006.3	169.9	696.8	20.5
2	0.0	4.7	24.4	1.4
3	0.0	0.4	10.1	6.6
4	0.0	0.0	0.3	0.0

1992

Deployer Group \ Host Group	1	2	3	4
1	433.0	17.3	291.5	7.1
2	0.0	6.4	23.1	2.3
3	0.0	0.3	10.5	1.2
4	0.0	0.0	0.0	0.4

1993

Deployer Group \ Host Group	1	2	3	4
1	1051.5	145.5	260.5	30.7
2	0.3	1.1	35.2	22.9
3	0.0	0.5	4.1	0.5
4	0.0	0.0	0.0	0.0

1994

Deployer Group \ Host Group	1	2	3	4
1	432.2	14.5	177.6	44.6
2	0.0	0.7	20.3	13.1
3	0.0	0.0	10.6	0.2
4	0.0	0.0	0.0	0.0

1995

Deployer Group \ Host Group	1	2	3	4
1	333.5	6.2	112.4	7.3
2	0.0	0.1	10.5	0.0
3	0.0	0.0	0.0	0.4
4	0.0	0.0	0.3	0.3

1996

Deployer Group \ Host Group	1	2	3	4
1	115.5	8.8	79.9	8.5
2	1.0	0.0	18.9	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1997

Deployer Group \ Host Group	1	2	3	4
1	240.3	8.0	121.4	5.2
2	0.1	0.4	14.5	0.9
3	0.7	0.0	10.9	0.0
4	0.0	0.0	0.2	0.0

1998

Deployer Group \ Host Group	1	2	3	4
1	328.7	13.3	94.6	3.0
2	0.1	0.3	12.8	0.0
3	0.0	0.0	7.2	0.0
4	0.0	0.0	0.0	0.0

1999

Deployer Group \ Host Group	1	2	3	4
1	343.6	16.5	82.6	2.9
2	0.1	0.6	13.1	0.0
3	0.8	0.0	3.1	0.0
4	0.0	0.0	3.2	0.0

2000

Deployer Group \ Host Group	1	2	3	4
1	302.5	15.5	75.5	3.7
2	0.1	0.6	17.3	0.0
3	0.0	0.0	5.3	0.0
4	0.0	0.0	0.9	0.0

2001

Deployer Group \ Host Group	1	2	3	4
1	425.4	16.0	78.6	11.9
2	0.2	0.6	5.8	0.0
3	3.0	0.3	7.1	0.0
4	0.0	0.0	10.9	0.0

2002

Deployer Group \ Host Group	1	2	3	4
1	76.0	9.8	70.1	17.0
2	0.0	0.0	2.8	0.9
3	0.2	0.0	9.7	0.0
4	0.6	0.0	1.8	0.0

2003

Deployer Group \ Host Group	1	2	3	4
1	727.1	106.6	451.5	31.4
2	0.4	0.7	14.4	9.2
3	0.3	0.0	4.6	0.1
4	0.0	0.0	0.6	0.0

2004

Deployer Group \ Host Group	1	2	3	4
1	295.0	7.6	211.4	35.0
2	0.2	0.8	16.8	8.4
3	0.2	0.0	3.1	0.1
4	0.0	0.0	0.1	0.0

2005

Deployer Group \ Host Group	1	2	3	4
1	149.7	123.3	85.5	5.8
2	0.0	1.0	0.7	0.0
3	1.9	0.4	0.5	0.2
4	0.0	0.0	0.0	0.2

2006

Deployer Group \ Host Group	1	2	3	4
1	80.6	138.2	27.5	0.4
2	0.1	0.9	1.3	0.1
3	0.0	0.3	0.2	0.7
4	0.0	0.0	0.0	0.0

2007

Deployer Group \ Host Group	1	2	3	4
1	382.9	208.6	126.0	0.6
2	0.0	2.1	8.5	0.2
3	0.2	0.4	0.5	0.5
4	0.0	0.0	0.0	0.0

Table B5. Averaged Arms Transfers Block Model

1980

Exporting Group \ Importing Group	1	2	3	4
1	12.9	7.2	1.1	0.1
2	0.1	0.1	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1981

Exporting Group \ Importing Group	1	2	3	4
1	14.7	10.1	1.6	0.2
2	0.2	0.1	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1982

Exporting Group \ Importing Group	1	2	3	4
1	46.7	36.7	7.8	0.2
2	1.7	1.1	0.3	0.0
3	0.0	0.1	0.0	0.0
4	0.0	0.0	0.0	0.0

1983

Exporting Group \ Importing Group	1	2	3	4
1	11.5	10.4	0.8	0.0
2	0.4	0.3	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1984

Exporting Group \ Importing Group	1	2	3	4
1	15.8	12.3	1.5	0.3
2	0.1	0.2	0.1	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1985

Exporting Group \ Importing Group	1	2	3	4
1	12.5	10.9	1.6	0.2
2	0.1	0.1	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1986

Exporting Group \ Importing Group	1	2	3	4
1	245.5	44.1	7.3	0.2
2	2.8	7.5	1.9	0.6
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1987

Exporting Group \ Importing Group	1	2	3	4
1	86.6	26.1	4.8	0.2
2	0.5	6.5	1.9	0.1
3	0.0	0.1	0.0	0.0
4	0.1	0.0	0.0	0.0

1988

Exporting Group \ Importing Group	1	2	3	4
1	88.3	26.2	2.9	0.6
2	0.3	5.5	1.7	0.7
3	0.0	0.1	0.0	0.0
4	0.0	0.0	0.0	0.0

1989

Exporting Group \ Importing Group	1	2	3	4
1	63.2	18.1	2.4	0.2
2	0.6	5.9	1.2	1.2
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1990

Exporting Group \ Importing Group	1	2	3	4
1	35.8	17.1	2.2	0.1
2	0.3	4.5	2.1	1.6
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1991

Exporting Group \ Importing Group	1	2	3	4
1	78.0	24.0	2.9	0.1
2	0.9	3.0	1.1	0.9
3	0.0	0.1	0.0	0.0
4	0.0	0.0	0.0	0.0

1992

Exporting Group \ Importing Group	1	2	3	4
1	28.8	15.5	3.0	0.1
2	2.3	1.2	0.4	0.0
3	0.0	0.2	0.1	0.0
4	0.0	0.0	0.0	0.0

1993

Exporting Group \ Importing Group	1	2	3	4
1	75.9	34.2	2.4	0.0
2	1.2	2.8	0.5	0.0
3	0.0	0.1	0.0	0.0
4	0.0	0.0	0.0	0.0

1994

Exporting Group \ Importing Group	1	2	3	4
1	24.8	18.5	3.4	0.1
2	1.1	1.3	0.4	0.2
3	0.1	0.1	0.1	0.0
4	0.1	0.0	0.0	0.0

1995

Exporting Group \ Importing Group	1	2	3	4
1	24.3	10.6	0.1	0.0
2	1.8	1.4	0.3	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1996

Exporting Group \ Importing Group	1	2	3	4
1	13.6	4.3	0.4	0.0
2	0.1	0.1	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1997

Exporting Group \ Importing Group	1	2	3	4
1	28.7	11.0	0.9	0.2
2	1.2	1.7	0.1	0.0
3	0.2	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1998

Exporting Group \ Importing Group	1	2	3	4
1	34.2	10.1	0.4	0.0
2	0.3	0.5	0.1	0.2
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

1999

Exporting Group \ Importing Group	1	2	3	4
1	24.9	8.8	0.2	0.0
2	1.6	1.1	0.2	0.1
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

2000

Exporting Group \ Importing Group	1	2	3	4
1	17.6	5.6	0.5	0.1
2	2.0	0.7	0.1	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

2001

Exporting Group \ Importing Group	1	2	3	4
1	18.9	5.8	0.8	0.0
2	4.0	1.2	0.3	0.1
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

2002

Exporting Group \ Importing Group	1	2	3	4
1	8.5	2.1	0.5	0.1
2	0.1	0.1	0.0	0.0
3	0.0	0.1	0.0	0.0
4	0.0	0.0	0.1	0.0

2003

Exporting Group \ Importing Group	1	2	3	4
1	27.2	14.1	2.5	0.2
2	5.4	2.0	0.2	0.1
3	0.0	0.0	0.0	0.0
4	0.0	0.1	0.0	0.0

2004

Exporting Group \ Importing Group	1	2	3	4
1	14.9	9.8	1.0	0.0
2	4.9	2.0	0.4	0.3
3	0.0	0.1	0.0	0.0
4	0.0	0.0	0.0	0.0

2005

Exporting Group \ Importing Group	1	2	3	4
1	10.6	3.7	0.3	0.3
2	0.3	0.2	0.1	0.1
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

2006

Exporting Group \ Importing Group	1	2	3	4
1	12.4	2.7	0.1	0.1
2	0.2	0.1	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

2007

Exporting Group \ Importing Group	1	2	3	4
1	29.3	17.9	0.5	0.0
2	0.5	0.4	0.1	0.0
3	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0

Table B6. OLS Regression of Settler Mortality and International Inequality

	1	2	3	4
ln(European Settler Mortality)	0.299***	0.239***	0.334***	0.280***
	(0.084)	(0.081)	(0.085)	(0.098)
Institutions (expropriation risk)	-0.252***	-0.187***	-0.255***	-0.245***
	(0.061)	(0.071)	(0.061)	(0.061)
ln(GDP per Capita)		-0.159**		
		(0.080)		
Region			0.100	
			(0.064)	
Latitude				-0.005
				(0.008)
Constant	2.996***	4.131***	2.452***	3.111***
	(0.718)	(0.857)	(0.735)	(0.790)
R^2	0.567	0.589	0.579	0.335
Root MSE	0.564	0.565	0.561	-51.497
No. of Observations	64	64	64	64

Note: Robust standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively

Table B7. Ologit Regression of Settler Mortality and International Inequality, 1980-2007.

	1	2	3	4
ln(European Settler Mortality)	0.898***	0.328***	0.808***	0.749***
	(0.052)	(0.064)	(0.053)	(0.060)
Institutions (executive constraints)	-0.012***	0.002	-0.011***	-0.012***
	(0.002)	(0.003)	(0.002)	(0.002)
ln(GDP per Capita)		-1.308***		
		(0.063)		
Region			-0.318***	
			(0.044)	
Latitude				-0.029***
				(0.005)
R^2	0.113	0.247	0.123	0.122
Log Likelihood	-2255.68	-1915.13	-2231.62	-2233.33
No. of Observations	2032	2032	2032	2032

Note: Robust standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table B7 presents the result of an ologit regression on the countries' positions in the international system for each year between 1980 and 2007. Institutional quality is measured by the Polity IV measure of *executive constraints*.

Table B8. Ologit Regression of Settler Mortality and International Inequality (excluding "Neo-Europes"

	1	2	3	4
ln(European Settler Mortality)	1.493***	1.310**	1.736***	1.415**
	(0.545)	(0.528)	(0.571)	(0.594)
Institutions (expropriation risk)	-1.041***	-0.835***	-1.122***	-1.049***
	(0.261)	(0.289)	(0.274)	(0.279)
ln(GDP per Capita)		-0.570*		
		(0.318)		
Region			0.535**	
			(0.238)	
Latitude				-0.022
				(0.027)
R^2	0.321	0.338	0.346	0.325
Log Likelihood	-46.96	-45.76	-45.23	-46.65
No. of Observations	60	60	60	60

Note: Robust standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table B8 shows the result of the ordered logit regression on international inequality excluding USA, Canada, Australia, and New Zealand.

Appendix C – Additional Tables for Chapter 6

Table C1. 2SLS and 3SLS Regression for International Inequality and GDP per Capita

	2SLS		3SLS	
	1 DV: International Inequality	2 DV: GDP per Capita	3 DV: International Inequality	4 DV: GDP per Capita
International Inequality		-0.580*** (0.026)		-0.577*** (0.025)
ln(GDP per Capita)	-0.128*** (0.015)		-0.138*** (0.015)	
Latitude	-0.002* (0.001)	0.011*** (0.001)	-0.000 (0.001)	0.010*** (0.001)
Landlocked	0.133*** (0.023)	-0.135*** (0.036)	0.130*** (0.023)	-0.133*** (0.036)
Economic Growth$_{(t-1)}$	-0.003*** (0.001)	-0.007*** (0.002)	-0.003** (0.001)	0.007*** (0.002)
Population Growth$_{(t-1)}$		0.014*** (0.012)		0.003 (0.011)
Democracy		0.318*** (0.031)		0.301*** (0.029)
ln(1950 GDP per Capita)		0.657*** (0.026)		0.662*** (0.020)
Colony	0.170*** (0.027)		0.163*** (0.025)	
International Inequality$_{(t-1)}$	0.651*** (0.016)		0.650*** (0.016)	
Region	-0.032*** (0.007)		-0.009 (0.007)	
Constant	1.962*** (0.016)	4.569*** (0.118)	1.951*** (0.150)	4.55*** (0.186)
R^2	0.770	0.747	0.769	0.747
Root Mean Square Error	0.450	0.703	0.450	0.702
No. of Observations	3192	3192	3192	3192

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

The two-stage least squares (2SLS) and three-stage least squares (3SLS) estimations are simultaneous equation models, in which internaitonal inequality and GDP per capita are endogenised and explained as a function of exogenous – instrumental – variables. The instrumental variables are the same as independent variables in the OLS regression in Chapter 5 and Chapter 6. There are three steps in the 3SLS regression, as Buhaug and Gates (2002) point out. Firstly, instrumented values of the endogenous variables (international inequality and GDP per capita) are genderated, using the exogenous variables in the model. Secondly, a cross-equation covariance matrix is estimated. Thirdly, the simultaneous equation is estimated with generalised least squares using the instrumented variables, other exogenous variables, and the estimated covariance matrix. The main difference between the 2SLS and 3SLS estimation techniques is that the latter uses a covariance matrix of disturbances, which improves the efficiency of estimation leading to smaller standard errors, although this improvement depends on the consistency of the covariance matrix estimates (Buhaug and Gates 2002; see also Biglaiser and DeRouen 2009).

Table C2. OLS with PCSE and Fixed Effects Regressions using Alternative Model

	1 (OLS with PCSE)	2 (Time Fixed Effects)	3 (Time + Country Fixed Effects)
International Inequality	0.250***	0.301***	0.023**
	(0.027)	(0.014)	(0.010)
Latitude	-0.016***	-0.016***	
	(0.001)	(0.001)	
Institutions	-0.107***	-0.087***	0.000
	(0.005)	(0.005)	(0.003)
Trade Openness	0.004***	-0.004***	-0.001***
	(0.00)	(0.000)	(0.000)
ln(1950 GDP per Capita)	-0.405***	-0.405***	
	(0.015)	(0.014)	
Constant	7.028***	6.777***	3.976***
	(0.166)	(0.118)	(0.033)
R^2	0.749	0.746	0.093
No. of Observations	3284	3284	3284

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively. For Model 2 and 3, time- and country-dummies are not reported.

Table C3. Regression Results with Additional Controls

	1	2
International Inequality	0.088**	0.246***
	(0.045)	(0.053)
Latitude	-0.005	-0.003
	(0.004)	(0.005)
Landlocked	-0.018	0.128
	(0.083)	(0.081)
Economic Growth$_{(t-1)}$	-0.008***	-0.007**
	(0.003)	(0.003)
Population Growth$_{(t-1)}$	0.165***	0.155***
	(0.036)	(0.041)
Democracy	-0.200**	
	(0.091)	
ln(1950 GDP per Capita)	-0.147***	-0.343***
	(0.065)	(0.054)
Ln(GDP per Capita)	-0.404***	
	(0.070)	
Conflict		0.257
		(0.287)
Quality of Government		-1.334***
		(0.287)
Institutions (expropriation risk)		-0.052**
		(0.023)
Constant	7.659***	6.042***
	(0.402)	(0.054)
R^2	0.799	0.776
Root Mean Square Error	0.488	0.522
No. of Observations	3114	2387

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table C4. Regression Results with Alternative Dependent Variable (GDP per Capita)

	1
International Inequality	-0.412***
	(0.068)
Latitude	-0.013**
	(0.005)
Landlocked	-0.215
	(0.155)
Economic Growth$_{(t-1)}$	0.009***
	(0.004)
Population Growth$_{(t-1)}$	0.002
	(0.041)
Democracy	0.337**
	(0.134)
ln(1950 GDP per Capita)	0.724***
	(0.091)
Constant	3.624***
	(0.608)
R^2	0.753
Root Mean Square Error	0.694
No. of Observations	3295

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table C5. Regression Results with Alternative Measures of Independent Variable

	1	2	3
International Inequality$_{(t-1)}$	0.262***		
	(0.067)		
International Inequality (three positions)		0.263***	
		(0.080)	
International Inequality (five positions)			0.202***
			(0.056)
Latitude	-0.011**	-0.012**	-0.011**
	(0.005)	(0.005)	(0.005)
Landlocked	0.067	0.098	0.067
	(0.085)	(0.085)	(0.086)
Economic Growth$_{(t-1)}$	-0.012***	-0.013***	-0.011***
	(0.003)	(0.003)	(0.003)
Population Growth$_{(t-1)}$	0.162***	0.167***	0.161***
	(0.038)	(0.038)	(0.038)
Democracy	-0.328***	-0.341***	-0.332***
	(0.105)	(0.105)	(0.104)
ln(1950 GDP per Capita)	-0.436***	-0.458***	-0.438***
	(0.060)	(0.061)	(0.061)
Constant	6.155***	6.485***	6.279***
	(0.468)	(0.449)	0.468
R^2	0.731	0.724	0.728
Root Mean Square Error	0.564	0.570	0.566
No. of Observations	3022	3125	3125

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Appendix D – Additional Tables for Chapter 7

Table D1. Regression Results using Alternative Model Specification

	1	2
International Inequality		0.134**
		(0.061)
Globalisation	-0.002***	-0.005***
	(0.001)	(0.001)
International Inequality x Globalisation		0.001**
		(0.000)
Latitude	-0.020***	-0.017***
	(0.003)	(0.003)
Institutions	-0.105***	-0.096***
	(0.023)	(0.021)
Trade Openness	-0.004***	-0.004***
	(0.001)	(0.001)
ln(1950 GDP per Capita)	-0.528***	-0.421***
	(0.067)	(0.066)
Constant	8.957***	7.677***
	(0.416)	(0.499)
R^2	0.732	0.760
Root Mean Square Error	0.561	0.532
No. of Observations	3284	3284

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table D2. Regression Results with Additional Controls

	1	2
International Inequality		0.090
		(0.072)
Globalisation	-0.003***	-0.006***
	(0.001)	(0.001)
International Inequality x Globalisation		0.001**
		(0.000)
Latitude	-0.005	-0.004
	(0.005)	(0.005)
Landlocked	0.222***	0.137*
	(0.083)	(0.080)
Economic Growth$_{(t-1)}$	-0.007*	-0.004
	(0.003)	(0.004)
Population Growth$_{(t-1)}$	0.159***	0.138***
	(0.040)	(0.039)
Democracy		
ln(1950 GDP per Capita)	-0.422***	-0.349***
	(0.050)	(0.054)
Conflict	0.193*	0.226**
	(0.108)	(0.112)
Quality of Government	-1.662***	-1.450***
	(0.343)	(0.290)
Institutions (expropriation risk)	-0.044*	-0.045*
	(0.024)	(0.023)
Constant	7.819***	6.903***
	(0.311)	(0.405)
R^2	0.769	0.788
Root Mean Square Error	0.530	0.508
No. of Observations	2387	2387

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table D3. Regression Results with Alternative Dependent Variable, ln(GDP per Capita)

	1	2
International Inequality		-0.303***
		(0.080)
Globalisation	0.002***	0.004***
	(0.000)	(0.001)
International Inequality x Globalisation		-0.001***
		(0.000)
Latitude	0.019***	0.014***
	(0.005)	(0.005)
Landlocked	-0.429***	-0.216
	(0.160)	(0.156)
Economic Growth$_{(t-1)}$	0.012**	0.006
	(0.005)	(0.004)
Population Growth$_{(t-1)}$	-0.013	0.016**
	(0.049)	(0.042)
Democracy	0.348**	0.311**
	(0.143)	(0.137)
ln(1950 GDP per Capita)	0.892***	0.730***
	(0.010)	(0.091)
Constant	1.090***	3.072***
	(0.671)	(0.693)
R^2	0.712	0.757
Root Mean Square Error	0.744	0.689
No. of Observations	3295	3295

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table D4. Regression Results using Alternative Measure of Independent Variable, Globalisation

	1	2
International Inequality	0.254***	0.151*
	(0.068)	(0.084)
Globalisation (alternative measure)	-0.004***	-0.007***
	(0.001)	(0.002)
International Inequality x Globalisation (alternative measure)		0.001*
		(0.000)
Latitude	-0.012**	-0.012**
	(0.005)	(0.005)
Landlocked	0.074	0.074
	(0.085)	(0.085)
Economic Growth$_{(t-1)}$	-0.008**	-0.008***
	(0.003)	(0.003)
Population Growth$_{(t-1)}$	0.149***	0.148***
	(0.036)	(0.036)
Democracy	-0.306***	-0.307***
	(0.105)	(0.105)
ln(1950 GDP per Capita)	-0.444***	-0.445***
	(0.060)	(0.604)
Constant	6.646***	6.909***
	(0.485)	(0.472)
R^2	0.740	0.745
Root Mean Square Error	0.553	0.548
No. of Observations	3125	3125

Note: ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Appendix E – Additional Tables for Chapter 8

Table E1. Regression Results using Alternative Model Specification

	1	2
International Inequality		0.525***
		(0.176)
Domestic Inequality	0.026***	0.041***
	(0.005)	(0.011)
International Inequality x		-0.007**
Domestic Inequality		(0.004)
Latitude	-0.008**	-0.004
	(0.003)	(0.003)
Institutions	-0.117***	-0.115***
	(0.024)	(0.023)
Trade Openness	-0.005***	-0.005***
	(0.001)	(0.001)
ln(1950 GDP per Capita)	-0.539***	-0.429***
	(0.067)	(0.076)
Constant	7.485***	5.394***
	(0.506)	(0.908)
R^2	0.780	0.805
Root Mean Square Error	0.514	0.485
No. of Observations	2332	2332

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table E2. Regression Results with Additional Controls

	1	2
Domestic Inequality	0.023***	0.020***
	(0.005)	(0.005)
Latitude	0.005	0.007
	(0.004)	(0.006)
Landlocked	-0.038	0.179
	(0.078)	(0.082)
Economic Growth$_{(t-1)}$	-0.004	-0.011**
	(0.004)	(0.005)
Population Growth$_{(t-1)}$	0.090**	0.223***
	(0.041)	(0.065)
Democracy	-0.136	
	(0.088)	
ln(1950 GDP per Capita)	-0.013***	-0.368***
	(0.070)	(0.074)
Ln(GDP per Capita)	-0.635***	
	(0.070)	
Conflict		0.201*
		(0.118)
Quality of Government		-1.595***
		(0.335)
Institutions (expropriation risk)		-0.076**
		(0.030)
Constant	7.725***	5.888***
	(0.478)	(0.553)
R^2	0.846	0.783
Root Mean Square Error	0.430	0.515
No. of Observations	2310	1855

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table E3. Regression Results with Alternative Measures of Independent Variable, Domestic Inequality

	1	2
International Inequality		-0.291**
		(0.131)
Domestic Inequality	-0.059**	-0.284***
(share of income of bottom 20%)	(0.026)	(0.061)
International Inequality x Domestic		0.086***
Inequality (share of income of bottom 20%)		(0.019)
Latitude	-0.001	0.002
	(0.006)	(0.006)
Landlocked	0.251**	0.189*
	(0.113)	(0.112)
Economic Growth$_{(t-1)}$	-0.019***	-0.016***
	(0.007)	(0.006)
Population Growth$_{(t-1)}$	0.238***	0.201***
	(0.067)	(0.062)
Democracy	-0.269*	-0.274**
	(0.125)	(0.119)
ln(1950 GDP per Capita)	-0.531***	-0.483***
	(0.108)	(0.099)
Constant	7.432***	7.860***
	(0.776)	(0.837)
R^2	0.621	0.664
Root Mean Square Error	0.541	0.511
No. of Observations	423	423

Note: country-clustered standard errors in parentheses. ***, **, *, indicates significance at the 1, 5, and 10% level, respectively.

Table E4. Regression Results with Alternative Measure of Dependent Variable, GDP per Capita

	1	2
International Inequality		-0.472***
		(0.174)
Domestic Inequality	0.002	-0.002
	(0.006)	(0.010)
International Inequality x Domestic Inequality		0.003
		(0.004)
Latitude	0.014**	0.010*
	(0.006)	(0.006)
Landlocked	-0.381***	-0.196
	(0.143)	(0.124)
Economic Growth$_{(t-1)}$	0.021***	0.015**
	(0.007)	(0.006)
Population Growth$_{(t-1)}$	-0.138**	-0.108**
	(0.055)	(0.047)
Democracy	0.346**	0.342**
	(0.152)	(0.146)
ln(1950 GDP per Capita)	0.825***	0.684***
	(0.110)	(0.104)
Constant	2.055***	4.116***
	(0.701)	(0.990)
R^2	0.779	0.813
Root Mean Square Error	0.606	0.558
No. of Observations	2401	2401

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