DETERMINANTS OF INTERNATIONAL PEACE: AN EMPIRICAL ANALYSIS

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ABSTRACT

This thesis examines the direct implications of political, economic, and socio-economic determinants of peace on the global peace level using a panel dataset covering 162 countries over the time period 2007-2016. The empirical analysis is carried out through different empirical specifications and econometric strategies. The benchmark empirical results suggest that countries with higher economic development levels, education, trade openness, and those that enjoy a democratic political system are expected to be more peaceful. On the other hand, countries endowed with natural resources are expected to be less peaceful, which supports the *resource curse hypothesis*. Supplementary empirical results show that the effects of some peace determinants (GDP per capita, trade openness, and democratic freedom) did not significantly change across the whole-time period 2007-2016, unlike other peace determinants such as primary education and natural resources which exhibited different significance levels over different time intervals. Other supplementary empirical results indicate that the effects of peace determinants on GPI's (Global Peace Index) sub-components are mostly consistent with their effects on GPI itself. Results from alternative empirical specifications indicate that the presence of a democratic political system would increase the positive effects of economic development on peace levels, reduce the negative effects of natural resource endowment on nations' peace levels, and that a larger natural resource endowment has a higher effect on increasing peace levels in rich nations compared to poor nations. Finally, the empirical analysis shows that regional alliances do indeed improve nations' peace levels and that their effects on peace vary greatly across different geo-economic regions.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF ABBREVIATIONS

ASEAN: Association of South East Asian Nations
ASP: Armed Services Personnel
ATW: Access to Weapons
BE: Between Estimator
DEC: Deaths from External Conflict
DemFr: Democratic Freedom
DIC: Deaths from Internal Conflict
DP: Displaced People
ECF: External Conflicts Fought
ECSC: European Coal and Steel Community
EFTA: European Free Trade Association
EU: European Union
GCC: Gulf Cooperation Council
GDPC: Gross Domestic Product per Capita
GLM: Generalized Linear Model
GPI: Global Peace Index
HOM: Homicide
ICF: Internal Conflicts Fought
IEP: Institute for Economics and Peace
INC: Incarceration
IOIC: Intensity of Internal Conflict
MERCOSUR: Mercado Común del Sur
MEXPEN: Military Expenditure
NAFTA: The North American Free Trade Agreement
NatResExp: Natural Resources Exports
NCR: Neighbouring Countries Relations
NHW: Nuclear and Heavy Weapons
POC: Perceptions of Criminality
POLI: Political Instability
POLS: Pooled Ordinary Least Squares
POLT: Political Terror
PrEduc: Primary Education
RTBs: Regional Trading Blocs
SADC: Southern African Development Community
SCO: Shanghai Cooperation Organisation
SOP: Security Officers & Police
TI: Terrorism Impact
TradeOpen: Trade Openness
UNPKF: UN peacekeeping funding
US: United States
VC: Violent Crime
VD: Violent Demonstrations
WEXPRT: Weapons exports
WI: Weapons Imports

CHAPTER ONE

1. INTRODUCTION

In a nuclear era with increasing forms of conflict arising from diverse acts of acquisitiveness, peace becomes a deceptively complex word. To suppress aggression and provide political, economic, and socio-economic strategies for conflict resolution, peace research and peace movements emerged from a social consciousness promising a peaceful world. Peace research is rapidly maturing through an increasing number of scholarly journals, research institutions, and university departments that are devoting their resources to investigate ongoing issues and hypotheses related to peace. The classical concept of increasing defense capabilities as principal avenues to assure national peace is no longer exclusively valid. A wide range of political, economic, and socio-economic variables are affecting the complex peace status of nations, bringing peaceful nations to war and those at war to peace. Therefore, the defense concept was complemented by the concept of deterrence which accounts for all the present political, economic, and socio-economic variables. Treating peace research as any other social science, and providing quantitative measurements for peace and for its sub-components and determinants allowed researchers to empirically investigate peace-related questions.

The aim of peace research is to achieve an impartial state of international peace, a goal based on the assumption that peace is a natural condition, while war is not (Kumar, 1989). This assumption is derived from the fact that war is an evil act associated with undesirable outcomes, whereas peace is the rational choice that man should seek to attain higher welfare levels. This explains why after the devastating outcomes of World War I, peace thirst arose and became one of the primary objectives of major nations. At that time

two researchers Lewis Fry Richardson and Quincy Wright studied and investigated the means to control war and reduce its occurrence. Until World War II, the possibility of controlling war was still maintainable. However, after the existence and usage of atomic power, an unprecedented political tension took place between major world powers. The destruction capacity of the atomic bomb emphasized the importance of international coordination for peaceful resolutions. In 1955, Bertrand Russell notably appealed for nations to rely on peaceful methods of conflict resolution. Following Russell emerged the *Pugwash Movement* that focused on world peace. Many scholars (including Boulding, Kelman, Kluckhohn, Lasswell, Rapaport, and Richardson Jr.) further developed a behavioral approach that complemented the predominant social science methodologies (Kumar, 1989). The endeavours were published through *Research Exchange of Prevention of War* and the *Journal of Conflict Resolutions*. All theoretical and empirical work that emerged at that time raised the hopes that peace research would serve in reducing violence and promoting international peace. Concepts such as the *ipso facto* economic development that linked peace with social justice and economic development arose recently, capturing various socio-economic variables that influence national peace.

Economic power has always been a means for countries to obtain political esteem in a world where absolute peace rarely exists. We continuously observe cases where the stronger invades the weaker for exploitation. This world order created fear for weaker countries, inducing them to rush into militarization to prevent any anticipated invasion and to seek an alliance with powerful nations. There exist several factors that affect a country's national political stability and its peaceful international relationships. Military capabilities may be one direct indicator of a country's strength on the power scale, promoting its ability

to protect itself and to exist peacefully. This hypothesis is supported by some empirical studies. For instance, Oneal *et al.* (2003) find that increasing military capability ratio from the 10^{th} percentile to the 90^{th} percentile would decrease deadly conflicts by 73%. However, as mentioned earlier after the concept of deterrence complemented the concept of defense, different variables emerged to accurately model global peace. Variables such as trade openness and natural resource endowment became significant indicators to explain a nation's peaceful position in the new globalized system. In parallel, variables that capture nations' welfare, education levels, and development levels are regularly included within the socio-economic determinants of peace levels. Finally, variables that describe nations' political structure and regional/multilateral associations are used as supplementary political-economic determinants of peace levels.

1.1. Thesis Objective

The objective of this thesis is to examine the direct implications of political, economic, and socio-economic determinants of peace on the global peace level. The specific objectives of this thesis are five-fold:

(i) To examine the effects of political, economic, and socio-economic factors on global peace levels, depicted by the Global Peace Index (GPI) using a panel dataset covering 163 countries over the time period 2007-2016;

(ii) To examine whether the direction or magnitudes of political, economic, and socio-economic determinants of peace have changed over time. Therefore, the empirical regressions will be implemented for three different sub-periods, and their estimated coefficients will be compared to those obtained from benchmark regressions;

(iii) To probe into the *resource curse hypothesis* and to assess the importance of international trade in sustaining international peaceful relationships;

(iv) To empirically analyze the effects of political, economic, and socio-economic determinants of peace on the individual sub-components of GPI to determine whether the effect of these determinants on GPI's sub-components exhibit variations compared to their effect on the overall GPI itself.

(v) To implement an empirical analysis that examines whether variations in peace levels exists across different regional trade blocs (RTBs) and international alliances/organizations such as the Association of South East Asian Nations (ASEAN), the European Union (EU), European Free Trade Association (EFTA), the Gulf Cooperation Council (GCC), the Mercado Comun del Sur (MERCOSUR), the North American Free Trade Agreement (NAFTA), the Southern African Development Community (SADC), and the Shanghai Cooperation Organisation (SCO).

1.2. Thesis Contributions

The contribution of this thesis to the empirical literature is represented by the following points:

(i) There exists a wide range of empirical literature that examines the effects of one or few determinants of peace on conflict (*e.g.*, Weede, 1984; Sørensen, 1986; Maoz & Abdolali, 1989; Dixon, 1994; Reuveny & Kang, 1996; Morrow, 1997; Von Berneuth, 2000; Regan, 2002; Lujala, 2010; Taydas & Peksen, 2012; Wegenast & Basedau, 2014). This thesis uses a comprehensive approach by examining the effect of distinct political, economic, and

socio-economic determinates on peace levels jointly through an inclusive empirical specification.

(ii) This thesis contributes methodologically to the empirical literature by conducting our empirical investigation using three different econometric methodologies given the characteristics of our dataset and variables, such as limited variations over the years, and categorical nature of the dependent variables. These econometric methodologies include pooled regressions with cluster-adjusted standard errors, between-groups regressions, and generalized linear model regressions;

(iii) This thesis also contributes methodologically to the empirical literature by going a step further and examining the effect of political, economic, and socio-economic determinants of peace on the elementary sub-components of GPI;

(iv) Finally, this thesis contributes to literature drawing an exclusive conclusion for whether regional alliances promote peace in member countries, and whether variations in peace levels exist across different geo-economic regions.

1.3 Thesis Organization

This thesis is structured as follows, Chapter 2 includes a literature review and a critical analysis of different works conducted within the field of this study. Chapter 3 presents and discusses the empirical models used to examine the effect of peace determinants on GPI and its sub-components. Furthermore, Chapter 3 provides a detailed description of variables, data, and three different econometric methodologies used to conduct our empirical investigation. Chapter 4 presents the benchmark empirical results for the effect of our political, economic, and socio-economic determinants of peace on

global peace index. In addition, it presents results for three different time periods, and for peace determinants based on individual sub-components of the GPI. Chapter 5 discusses some supplementary empirical results of models used to analyze alternative empirical specifications and provides empirical results that examine variations in peace levels across different geo-economic regions. Chapter 6 summarizes the thesis and provide some potential policy recommendations based on our results.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Trade Openness & Peace

Peace is a state that occurs when the needs for survival, welfare, and identity are fulfilled simultaneously (Galtung, 1967). Problems of peace should be studied at three distinct levels, individual, state, and system (Sørensen, 1986). At the individual level, factors such as wealth, health, freedom, and the overall welfare of individuals are crucial for maintaining stability. As for the state level, states are expected to enforce security by implementing policies that promote economic and political stability in a democratic environment. Finally, the system is what shapes economic and political international relationships. Systems are normally subjected to continuous changes, and states are expected to form economic and political policies accordingly (Buzan, 1983).

Previous literature has widely discussed the relationship between trade, economic interdependence, and peace. In the past few decades, several studies have investigated the importance of trade openness for establishing international peaceful relationships (*e.g.*, Mansfield, 1994; Oneal *et al.*, 1996; Domke, 1988; Kim, 1998; Reuveny & Kang, 1996; Oneal & Ray, 1997; Way, 1997; Oneal & Russett, 1998; Russett et al., 1998). According to Polachek (1980), significant trading relationships between countries would lead to lower likelihoods of engaging in any sort of conflict due to the fear of possible welfare losses. Polachek (1980) indicates that doubling the amount of trade between countries will reduce possible hostility by 20% on average, *ceteris paribus*. The main logic behind this relationship is that countries are less likely to fight if the price of fighting is associated with an additional opportunity cost to that of military force expenses (Gartzke *et al.*, 2001). In

this case, the opportunity cost is any sort of benefit that used to exist or that is lost due to the dispute.

According to Kilchevsky *et al.* (2007), political conflicts affect financial gains and economic relations in general. Therefore, major domestic actors seek political pressure to prevent such conflicts. Another argument by Hirschman (1980) and Stein (1993) emphasizes that trade leads to enhanced communication and contact between nations, consequently increasing political cooperation among trading partners. Similarly, Deutsch *et al.* (1957) claim that trade openness favors inter-cultural exchange, which increases the sense of community among trading partners. Countries would usually restrict trade with possible rivals, especially in cases when trade includes natural resources that are essential to economic growth and/or that could be used to build or fuel militarized equipment. In this context, states cannot only consider the absolute gains from trade because other countries' benefits might be threatening if there is a serious military significance (Grieco, 1998). Moreover, Gartzke *et al.* (2001) show that capital interdependence has the highest contribution to peace, compared to other variables, complementing similar results which were previously found by Oneal (1999) in a study covering the time period 1950-1992. Kilchevsky *et al.* (2007) indicate that Middle Eastern countries enjoy more peaceful relationships with countries with which they are economically interdependent. This observation supports the 'classic liberals' idea that increasing political participation and expanding economic interdependence through trade promotes peace. Polachek (1980) states that the deterrent effect of trade on conflict is directly related to the dependence and the strategic extent of trade. On the other hand, some studies still insist that in a multilateral trading system the opportunity cost of a dispute faced by countries seeking strategic

commodities decreases (Martin *et al.*, 2008). Their argument is based on the fact that the change of the world's trading system from bilateral to multilateral facilitated the flow of goods and services across regions.

Interdependence refers to the cases where economic interests are vulnerable for both parties, and it is usually defined as symmetric dependence. On the other hand, asymmetric dependence refers to the cases where one actor finds the relationship more vulnerable or non-substitutable (Kilchevsky *et al.*, 2007). Crescenzi (2003) develops an exit model that clearly presents how possible exit costs in cases of asymmetric dependence might be used as tools to manipulate political decisions. The analysis of the exit model indicates that states might use economic exit costs as a means to obtain powers without risking war. Yet, this model generated three equilibria: constraint equilibrium, bargaining power equilibrium, and escalation equilibrium. These outcomes indicate that economic interdependence might prohibit conflict, hold no effect on conflict, or promote conflict, respectively.

Most leaders still believe that tying economic interests will result in stronger political relationships that eliminate the risk of armed conflicts (Barbieri & Scchneider, 1999). However, Marxist critics reject the 'classic liberals' idea and argue that in a globalized system, interdependence has a negligible effect or even might promote international conflict in some cases. Dependency theorists argue that asymmetric trade relationships had a significant effect in promoting conflict, especially for the dependent state. Weede (1996) further argues that trade dependency has previously led to several conflicts between developing countries. Some prominent studies point out that asymmetric ties promote conflict, while symmetric dependence promotes peace (Wallensteen, 1973; Gasiorowski, 1986; Barbieri, 1999). Critics of commercial Liberalism argue that the

relationship between trade and conflict varies based on the net benefit earned because of such economic relationships. In some cases, trade provides net benefits sufficient to deter conflict, while in other cases it might not be sufficient to do so. Also, Grieco (1988) claims that the magnitude of relative gains is the principal determinant of trade's effect on conflicts. For instance, if short-term gains outweigh long-term gains, trade might not act as a significant deterrent; however, the opposite is true.

Aside from expected benefits, Murshed & Gates (2005) argue that the effect of trade on conflicts does change depending on the type of traded goods. Consumption goods are expected to have a different impact than goods that increase a country's military capability. For instance, trade in military goods is expected to have the highest effect in promoting peace compared to other types of traded goods, given its strategic importance. The *trade-leads-to-peace* argument has received wide support and criticism in the literature. The most important supporting argument is that trade leads to specialization according to the Ricardian model. Cobden (2003) argues that international specialization that is achieved by allocating scarce resources into sectors with high comparative advantage prevents nations from producing all required goods, and thereby from becoming self-sufficient enough to initiate war with trading partners they are economically dependent on for the access of those goods and services. Trade openness unites international communities with natural interests such as the flow of cheaper goods and services that are more valuable than greedy incentives, bringing welfare and prosperity to all cooperating parties. As for those who wish not to cooperate, we paraphrase the famous maxim that is often attributed to Frederic Bastiat, "if goods are prohibited from crossing borders, soldiers will".

2.2. Regions, Alliances, & Peace

States tie alliance obligations with economic agreements for two reasons: first, to deter aggression; and second, to promote further economic agreements (Powers, 2006). Previous literature presents a significant relationship between alliances and trade (Gowa & Mansfield, 1993, 2004; Gowa, 1994; Mansfield & Bronson, 1997). Alliances might serve as an insurance for trading dyads that the gains from trade will not be threatening if used to strengthen military capabilities. Therefore, allied governments will view their partners' gains from trade as an increase in the overall alliance's power (Long & Leeds, 2006). In the presence of political coordination, economic exchange is expected to increase, especially when it serves to eliminate trading problems. Firms are motivated to invest in trade whenever the fear of future conflict between the home country and its trading partners is eliminated by alliance obligations that will promote peace and commerce. Alliances might also promote trade through reducing trade barriers. This could happen when trade benefits gained by the security-providing state are not attractive enough. As a result, countries seeking external security would reduce trade restrictions as compensation, making the offer more attractive. Similarly, a country with strong military capabilities might be able to convince another state to open its markets through security promises, particularly when economic interests are not sufficiently attractive. In this context, Long & Leeds (2006) find that 18% of treaties require the presence of economic ties or economic cooperation between nations.

The continuous development of the globalized system over the recent decades has generated new concerns and challenges, which contributed to promoting regional cooperation (Zwartjes *et al.*, 2012). Global approaches were adopted after the failure of

individual efforts to tackle a complex range of growing economic and political issues. Regional organizations, which often lead to the creation of Regional Trading Blocs (RTBs), are formed by independent states to govern a specific geographical region of which they are part of, based on uniform policies agreed upon by coordination. In most cases, regional organizations are created to reach economic goals that are difficult to attain when each state operates independently. Promoting trade and enhancing regional security are usually the principal goals for regional organizations. Yet, in some cases, regional organizations participate in actions beyond the regional borders. For instance, the European Union (EU) is a regional organization engaging in different global actions and, thus, it is naturally qualified as a global power.

Kingah & Langenhove (2012) argue that the effective role of regional organizations is based on three determinants. The willingness to act is the first determinant that differs among regional organizations. This determinant varies according to the presence of active leaders willing to act and allocate resources to make a difference. Some regional organizations would limit their interventions to their regional borders, while others would go beyond that. The extent of intervention is based on the second determinant which is the acceptance of their actions beyond their geographic borders. The presence of institutional collaboration with the United Nations (UN) allows the UN Security Council to accept engagements beyond borders. However, the third determinant, which is capability, remains a constraint for both within and beyond borders' interventions. Some regional organizations lack sufficient financial resources and suffer from weak institutions that sometimes keep intervention within borders minimal. In addition to the three determinants, drivers that initiate the formation of regional organizations might also have a vital role in determining

the degree of intervention. For instance, the African Union (AU), which was initially known as the Organization of African Unity (OAU), has always been driven by political initiatives to combat colonialism and apartheid. This reality prevented the AU from allocating any of its limited resources into economic planning. On the other hand, the EU is an economically driven union, which was initiated as the European Coal and Steel Community (ECSC) in 1957, and which has kept economic planning as its primary goal since then.

According to Russet & Oneal (2001), a peaceful regional order is established through the rise of three liberal principles known as democracy, economic interdependence, and institutions. Their argument covers the fundamental prerequisites of a peaceful region. Democracy is the first principle since democracies are less likely to fight each other (Ray, 1998). Therefore, establishing a region with all members being democracies provides a suitable political environment for deterring aggression. As mentioned earlier, economic interdependence is a key promoter for peaceful cooperation among states (Krasner, 1983). Finally, well-functioning international institutions play a key role in promoting cooperation and the sustainability of formalized rules among members (Martin, 1999). These liberal principles, if combined with the previously mentioned determinants (willingness to act, acceptance of actions, and capability), allows us to understand why regions like the EU are peaceful, while regions like South Asia (Indian sub-continent) are still struggling to maintain their peace levels (Chamka, 2014). Holsti (1995) defines the characteristics of weak, strong, and failed states, and reaches the conclusion that regions comprising strong states enjoy higher peace levels compared to those comprising weak and failed states.

2.3. Natural Resources

Dozens of studies have investigated the effect of natural resource endowment on conflict. Some authors view resource endowment as a curse (Sachs & Warner, 1995; Auty, 2001; Fearon & Laitin, 2003; Ross, 2004; Lujala *et al.*, 2005; Lujala, 2010), while other authors believe that countries endowed with natural resources are more capable of maintaining internal political stability (Basedau & Lay, 2009). For instance, Wirl (2009) indicates that Organization of the Petroleum Exporting Countries (OPEC) members use the oil as a mean to acquire political payoffs in the form of support and/or popularity. These political payoffs are usually used to counter the West and collect economic gains in the short-run. This happens due to oil's inelastic demand in the presence of constantly growing market demand. A reduction in oil supply would elicit political obedience. This obedience stems from the implications of higher price levels which would hurt the importer and would increase the suppliers' profits. However, political tension might also arise because of reductions in oil supply. For instance, if a major oil exporter decides to reduce its supply, importers might incur welfare losses, which could induce aggressive reactions. Paust & Blaustein (1974) emphasize the negative impact of cuts in oil supply on peoples' well-being. They emphasize that food, health, security, jobs, and the whole economic system are threatened because of cuts in oil supply. The *scarce-resource-wars* hypothesis indicates that scarcity of resources necessary for survival might drive nations and people to fight for its access (Brown, 1977; Bennett, 1991; Renner, 1996; Homer-Dixon, 1999). Therefore, using oil as a weapon to realize political gains is considered a violation of international law for its harmful impacts on wealth and well-being, and it could become a threat to international peace.

Between 1960 and 2002, oil-rich and diamond-rich countries witnessed a steady increase in the number and risks of conflicts (Ross, 2006). The 1960-1973 period witnessed a global rate of less than one war per year. However, this rate spiked between 1974 and 2002 to reach an average of 4.9 wars per year. This spike is believed to be driven by two factors. First, oil prices and the geographical extraction of oil increased in several oil-rich countries to reach 42 nations in 1980 compared to only 15 in 1973. Second, the rate of civil wars increased progressively through intra-national conflicts in many countries (*e.g.*, Angola, Indonesia, Iran, Peru, and South Africa), reaching 0.184 wars between 1995 and 2002. Also, Ross (2003) indicates that an average of one out of three resource abundant countries is at war.

In several studies that investigate peace and war, resource endowment is viewed as a curse for its ability to provide finance and motive for armed conflicts (Fearon, 2005; Humphreys, 2005). Rustad & Binningsbø (2012) argue that there exist three main mechanisms that link the presence of natural resources to internal conflict. First, the presence of natural resources may be a significant factor to initiate rebellion movements. Second, the presence of natural resources might worsen existing conflicts through third-party interventions. Finally, the disagreement over the distribution of natural resource revenues and grievance might trigger rebellion movements. Resource wealth motivates rebellion movements through increasing the perceived gains of capturing a nation's assets, therefore making resource-rich countries more attractive than resource-poor countries (Englebert & Ron, 2004). Aside from increasing the perceived gains, natural resources (especially those that are easily extracted) are easy targets for rebel takeover and constitute significant sources for start-up funding of their movements (Collier & Hoeffler, 2004). For

instance, Colombia's precious stones and metals financed its internal conflict through the formation of groups like the violent Emerald Cartels that controlled two production areas (Cundinamarca and Boyaca) to cover their costs (Lavaux, 2007). The economic motivation is highly attractive to the extent that rebels in countries like Sierra Leone were, for an extended period of time, focusing more on mining diamonds and spreading terror among civilians than trying to overthrow the government by fighting its army.

In addition to natural resources' role in increasing armed conflicts through financing and motivation, some empirical evidence suggests that resource endowment increases the risks of conflicts by weakening the ability of a nation's political institutions to resolve conflicts peacefully (Ross, 1999; Collier, 2000). This argument is supported by the evidence that regions such as the Middle East, Gulf of Guinea, and Caspian Region have always been more vulnerable to risks of conflict (Le Billon, 2001). Furthermore, there are several case studies linking the presence of natural resources to separatist movements in many countries (*e.g.*, Angola, Nigeria, and Sudan) (Ross, 2004; Maxted, 2006; Le Billon, 2010).

The *abundant resource war* argument claims that resource abundance represents a prize for the ruling elites and their competitors for its high potential tax revenues. Hence, the resource abundance raises the risk of greed-driven wars (Le Billon, 1997; Collier, 2000; Fairhead, 2000). Aside from the tax returns, internal violence launched by elites could be funded by claiming the rights to sell the resources in the future (Wegenast & Basedau, 2014). As for those who are currently in power, resource rents incentivize leaders to stay in power and to establish a patronaged system that rewards supporters of their system while repressing those who do not (Bates, 1981; Bryant & Parnwell, 1996).

In many cases, natural resources might create an incentive for third parties to intervene. These third parties would defend their intervention through conflict-resolving motives, while the underlying reason is the extraction of profits. For instance, Uganda and Rwanda looted Congo's precious stones, gold, and timber while claiming to resolve Congo's internal conflict throughout their intervention (Willum, 2001; Ross, 2004). In many cases, it has been witnessed that third parties are intervening on both sides of the conflict, leading to aggravated negotiation problems. Such double-sided interventions have often extended the conflict duration, benefiting the intervening third parties and increasing their returns (Regan, 2002). Findley & Marineau (2015) argue that the third parties may intend to use revenues to invigorate conflicts and to increase their duration, with a plan to reach a specific outcome that offsets costs and maximizes profits. They also indicate that, in 89% of the cases, third parties will intervene to support rebels whenever they had access to natural resources. Arguably, the most popular victims of third party interventions are Sierra Leone, Senegal, and Democratic Republic of Congo. The civil wars in these three Sub-Saharan African countries were viewed as sources of gains for several third parties. The war in Senegal lasted for 20 years (1984-2003), and many countries (including Guinea-Bissau, Libya, Iraq, USA, Gambia, and France) intervened to obtain revenues from its natural resources (mainly timber and diamonds). Five periods of the Democratic Republic of Congo's civil war were recorded by The Uppsala Conflict Data Program. During these periods, many countries (including Angola, Belgium, Chad, France, Namibia, Republic of the Congo, Rwanda, Sudan, Uganda, USA, and Zimbabwe) intervened to access the Democratic Republic of Congo's diamonds, gold, narcotics, oil, uranium, timber, cobalt, copper, coltan, and precious gems (Clark, 2001; Global Witness, 2009). Similarly, Sierra Leone witnessed intervention from many countries (including Liberia, Nigeria, United

Kingdom, USA, Burkina Faso, and Guinea) that were motivated by diamond mining (Berneuth, 2000).

Basdedau & Lay (2009) argue that there exists a distinction between resource wealth per capita and resource dependency. They indicate that large revenues from resources can be used to maintain internal security and to establish generous wealth distribution policies. However, they also note that countries are required to cross a high threshold of per capita wealth to implement such costly policies. According to Le Billon (2001), resource dependence is often accompanied by poor economic performance and increased grievance levels. The main reason behind economic instability for resource-dependent countries is the exposure to price shocks (Auty, 2001). Over-optimistic resource revenues predictions that do not account for price shocks often lead to high debt and political instability (Le Billon, 2001). Fluctuation in resource prices prohibits effective fiscal policies and increases income inequality, poverty, and grievance. Sachs & Warner (1995) argue that resource-poor countries such as Japan usually enjoy faster economic growth than resource-rich countries. The '*Dutch Disease*' is more likely to affect resource-rich countries, where high export revenues are associated with currency appreciation, which in return worsens non-resource sectors' performance (Ross, 1999).

A corrupted political control of natural resources will increase the gap between the ruling and the ruled, whereby accumulation of wealth does not occur outside the patronage. The severe grievance that results due to this gap leads to social tension and decrease people's opportunity cost to join a rebellion movement (Le Billon, 2001). Several rebellion movements, such as the Maoist insurgents in Nepal, blame their act of aggression on the government's unfair distribution of resource revenues (Murshed & Gates, 2006).

Many studies agree on the fact that distinct natural resource types have different conflict potentials. While the presence of oil is found to significantly promote interstate violence (Fearon and Latin, 2003; Hegre and Sambanis, 2006; Ross, 2006; Lujala, 2010), the internal conflict potentials increase by 50% when oil is being produced on-shore and reachable (Lujala, 2010). Resources are viewed as being lootable when extraction is reachable and easily achieved by unskilled workers, and when it does not require sophisticated equipment (Ross, 2003). Mining and refining metals require sophisticated equipment along with a coordinated labor division, unlike diamond gathering which is known for its ease of extraction (Lujala, 2003). Auty (2004) adds that the value-to-weight ratio also affects the conflict potentials of a given resource. Therefore, minerals, such as lootable diamonds, are expected to have higher conflict potentials compared to some metals such as non-lootable iron.

According to Ross (2004), oil rents create an incentive to initiate conflicts especially separate ones; while lootable resources are not likely to trigger conflict, yet it significantly extends the duration of existing conflicts. Lujala (2010) argues that the presence of natural resources would finance the rebellion, and would increase the odds of rebel success. This is particularly prevalent in the presence of diamond and gemstones that tend to double the conflict duration within the war zone. Unlike oil, the diverse characteristics of non-fuel minerals have made their effects on peace ambiguous, and have rendered their studies less likely in the literature (Ross, 2004). For instance, many studies *(e.g.,* Collier & Hoeffler, 2002; Fearon & Laitin, 2003) investigate the effect of oil on conflict without testing for non-fuel minerals. Other studies (*e.g.*, Herge, 2002; Soya, 2002) have merged fuel and non-fuel minerals into one category.

2.4. Education & Peace

There must be a relationship between physically dis-arming fighters and mentally disarming them, such that violence is no longer a choice to be used in any difference of opinion (Lahai *et al.*, 2013). Education is viewed as a strong mean to maintain peace by enhancing mutual understanding, and by increasing social respect for diversity through improving social cohesion (Agbor, 2015). Agbor (2015) finds that primary education in Africa has a significant contribution in alleviating conflicts. In addition, Acemoglu & Robinson (2001) stress on the importance of education for the redistribution of wealth to maintain equality and social stability. Collier & Hoeffler (2004) suggest that increasing the level of secondary education reduces the probability of joining rebel militia by increasing its opportunity cost. Furthermore, education changes the time preference of individuals where long-run consumption becomes more attractive than the short-run consumption. Therefore, such implications would prohibit participation in criminal activities that satisfy only short-run needs (Becker & Mulligan, 1997).

Akoki *et al.* (2002) suggest that education significantly contributes to reducing aggression and in decreasing inequality and grievance levels in society, especially when governments actively and proportionately spend on primary, secondary, and tertiary education. On the other hand, many studies (Huntington, 1968; Choucri, 1974; Boyden & Ryder, 1996; Goldstone, 2001; Lange, 2003; Lia, 2005; Urdal, 2006) indicate that the mismatch between education and jobs is the main reason for increasing inequality and threatening social peace. Also, some authors (Sommers, 2001; Davis, 2004) claim that certain educational curricula of violent nature are to be blamed for promoting extremism and aggressiveness. Aside from exceptional cases, economists have often emphasized that

education is capable of lifting nations from poverty by broadening the middle class and by enforcing laws that promise peaceful societies (McMahon, 2003).

In many cases, countries could achieve higher peace levels through the promotion of their educational systems. For instance, Botswana is one nation that maintained its peace level since its independence in 1966 and is recognized as the most peaceful African country (Dryden-Peterson & Mulimbi, 2017). Despite its high ethnic diversity, Botswana's leaders maintained high peace levels through the development of a formal educational system that constituted a principal component for national progress. Prior to independence, Botswana's economy, which is dependent on natural resource revenues, suffered extreme poverty levels and was one of the least educated countries, similar to most surrounding countries that experienced civil wars (Angola, Namibia, Mozambique, South Africa, and Zimbabwe). However, after its independence and over the past two decades, Botswana's spending on education was steadily revolving around 10% of its gross domestic product, leading to its transition in becoming the most peaceful Sub-Saharan African country (Dryden-Peterson & Mulimbi, 2017).

Inequalities in the allocation of educational resources among ethnic group might be a significant factor in triggering conflicts. For instance, the literacy rate among Nepal's ruling Brahmins in 2001 reached 70% compared to only 10% among lower classes (Novelli & Smith, 2011). In this context, the case of Batswana suggests that implementing an educational structure that equally benefits all social classes based on civic principles of social harmony is expected to build a national identity and to promote peace. Also, the government of Mauritius provides generous funding to its educational system, motivated

by the fact that children's education is a key factor in maintaining democracy, economic growth, and thereby social stability (Odit *et al.*, 2010).

Various models of economic growth (Solow, 1957; Lucas, 1988; Romer, 1990; Bils & Klenow, 2000) stress the importance of education for human capital accumulation to maintain sustainable economic growth. Reza & Widodo (2013) estimates a panel model to study the relationship between workers' education level and productivity. Their results indicate that a 1% increase in a worker's average education raises productivity by 1.56%. The relationship between education and economic growth is critical for maintaining peace since education by itself in the absence of economic growth is not enough to prevent violence (Hoffman, 2011).

2.5. Economic Welfare & Peace

Underdeveloped nations with prevalent poverty levels are more vulnerable to conflicts, given that individuals of such nations face low opportunity costs when joining rebellion movements (Collier *et al.*, 2003; Walter, 2004). Rich countries that generously spend on social welfare tend to enjoy higher peace levels by minimizing poverty and inequality, therefore reducing grievances (Taydas & Peksen, 2012). Welfare spending on education, health, and social security improve living standards, particularly for poor classes. This, in return, provides a clear indication that the government is concerned about its people's well-being, leading to less political opposition, and to higher opportunity costs of joining rebellion movements.

Most scholars agree that there exists a positive relationship between economic prosperity and peace. Higher social spending is associated with lower poverty rates and

with higher social stability (Moon & Dixon, 1992; Adeola, 1996; Lanjouw *et al.*, 2001). Developed nations with high income tend to have better means and higher capacities for conflict resolution. This is in contrast with developing countries where wars are more likely to occur (McBride *et al.*, 2011). Quinn *et al.* (2007) argue that following periods of civil war, economic growth decreases the probability of recurring war regardless of its drivers. Several studies (*e.g.*, Fearon & Laitin, 2003; Collier & Hoeffler, 2004; Sambanis, 2004) use economic development indicators such as Gross Domestic Product (GDP) per capita as a predictor for peace and conflict. This further supports the fact that economic growth reflected by high income per capita and social welfare significantly affects nations' peace levels through increases in state capacities and higher opportunity costs to join rebellion movements (Fearon & Laitin, 2003). Inglehart & Welzel (2009) argue that, for the economic development to maintain high peace levels, democratization in the presence of effective democratic institutions must prevail.

2.6. Democracy & Peace

Previous literature (Small & Singer, 1976; Zinnes, 1980; Rummel, 1983; Chan, 1984; Weede, 1984, 1992; Maoz & Abdolali, 1989; Bremer, 1992; Maoz & Russett, 1992; Russet, 1994) discusses and stresses the importance of democracy and political freedom for achieving high levels of peace. According to Gartzke *et al.* (2001), democratic states share more peaceful relationships with other democracies, compared to non-democratic states. This literature supports this fact by arguing that democratic norms shared among democracies lead to a common culture that promotes willingness to bargain, compromises, and the absence of military violence intervention. Democracies favour the development of democratic institutions such as, separation of power, transparent public policy, and regular

elections that play a key role in maintaining internal political stability and in constraining states from using violence against one another (Babst, 1972; Morgan & Campbell, 1991; Bueno de Mesquita & Lalman, 1992). Public opinion is highly valued in democratic nations; the public is capable of restricting leaders from using military violence (Luttwak, 1996). Researchers who investigated civil-military relations claim that democratic systems characterized by civilian supremacy are less likely to approach conflicts with military violence (Janowitz, 1981; Diamond, 1999; Feaver & Gelpi, 2004). Van de Haar (2010) notes that democracies form peace zones that share common national interests and, therefore, a world ruled by democracies is expected to be more peaceful. Feierabend & Klicperova-Baker (2015) argue that the social-psychological prerequisites attained by democratic institutions through the enforcement of principles of freedom and equality promote social stability. On the other hand, oppression through economic exploitation and social domination prevents people from fulfilling their basic needs which leave them with frustration and aggression (Christie *et al.*, 2001). Civil war is less likely to occur in democracies, given that opposition groups can freely and peacefully fight inequality by expressing their preferences through electoral mechanisms (Quinn *et al.*, 2007). Rebellion movement and aggression are therefore meaningless tools when democratic institutions provide people with peaceful means to make changes and to express freely (Henderson & Singer, 2000; Hegre *et al.*, 2001).

CHAPTER THREE

3. EMPIRICAL MODEL

3.1. Empirical Specifications

There is a wide range of empirical literature that examines the determinants of peace and war (*e.g.*, Weede, 1984; Sørensen, 1986; Maoz & Abdolali, 1989; Dixon, 1994; Reuveny & Kang, 1996; Morrow, 1997; Von Berneuth, 2000; Regan, 2002; Lujala, 2010; Taydas & Peksen, 2012; Wegenast & Basedau, 2014). Following this literature, the principal variables that determine the peace level are determined.

Let GPI_{it} represent the Global Peace Index (GPI) for country i with $(i = 1, \dots, N)$ at time period t with $(t = 1, \dots, T)$ derived from the Institute for Economics and Peace - Vision of Humanity database (the following section 3.2 provides more details), where lower GPI_{it} reflect higher peace level. The basic GPI_{it} ranges from 1 for the highest peace level to 5 for the lowest peace level. The benchmark empirical equation is specified as:

(1) $$GPI_{it} = \alpha_0 + \alpha_1 lnGDPC_{it} + \alpha_2 PrEduc_{it} + \alpha_3 DemFr_{it} + \alpha_4 TradeOpen_{it} + \alpha_5 lnNatResExp_{it} + \epsilon_{it}$$

where $lnGDPC_{it}$ is the log of gross domestic product (GDP) per capita, $PrEduc_{it}$ is the primary education ratio, $DemFr_{it}$ is democratic freedom index, $TradeOpen_{it}$ captures trade openness as a ratio of total trade to GDP, and $lnNatResExp_{it}$ is the log of the value of total exports of natural resources.

The empirical analysis goes a step further to assess the effect of our previously mentioned explanatory variables on the following 23 elementary peace indicators (GPI's sub-components) that were used to construct the dependent variable (GPI). A general empirical equation is specified, and it is used to carry out the estimation for each of the 23

elementary peace indicators. Let EPI_{it} depict a representative elementary peace indicator, we get:

$$(2) \quad EPI_{it} = \alpha_0 + \alpha_1 lnGDPC_{it} + \alpha_2 PrEduc_{it} + \alpha_3 DemFr_{it} + \alpha_4 TradeOpen_{it} + \alpha_5 lnNatResExp_{it} + \epsilon_{it}$$

Let SOP_{it} represent the ascending Security Officers & Police Index for country i at time period t, where a lower SOP_{it} reflects a higher corresponding peace level. This dependent variable refers to the civil police force as distinct from national guards or local militia. The basic SOP_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let POC_{it} represent the ascending Perceptions of Criminality Index for country i at time period t, where a lower POC_{it} reflects a higher corresponding peace level. This dependent variable is a qualitative assessment of the level of perceived criminality in society. The basic POC_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let HOM_{it} represent the ascending Homicide Index for country i at time period t, where a lower HOM_{it} reflects a higher corresponding peace level. This dependent variable refers to the death deliberately inflicted on a person by another person, including infanticide. The basic HOM_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let INC_{it} represent the ascending Incarceration Index for country i at time period t, where a lower INC_{it} reflects a higher corresponding peace level. This dependent variable refers to prison population rates per 100,000 of the national population. The basic INC_{it}

ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let ATW_{it} represent the ascending Access to Weapons Index for country i at time period t, where a lower ATW_{it} reflects a higher corresponding peace level. This dependent variable is a qualitative assessment of the accessibility of small arms and light weapons. The basic ATW_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let $IOIC_{it}$ represent the ascending Intensity of Internal Conflict Index for country i at time period t, where a lower $IOIC_{it}$ reflects a higher corresponding peace level. This dependent variable is a qualitative assessment of conflict intensity within the country. The basic $IOIC_{it}$ ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let VD_{it} represent the ascending Violent Demonstrations Index for country i at time period t, where a lower VD_{it} reflects a higher corresponding peace level. This dependent variable is a qualitative assessment of the likelihood of violent demonstration within the country. The basic VD_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let VC_{it} represent the ascending Violent Crime Index for country i at time period t, where a lower VC_{it} reflects a higher corresponding peace level. This dependent variable is a qualitative assessment of the level of violent crime within the country. The basic VC_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let $POLI_{it}$ represent the ascending Political Instability Index for country i at time period t, where a lower $POLI_{it}$ reflects a higher corresponding peace level. This dependent variable is a qualitative assessment of the political instability within the country. It addresses the degree to which political institutions are sufficiently stable to support the needs of its citizens, businesses and overseas investors. The basic $POLI_{it}$ ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let $POLT_{it}$ represent the ascending Political Terror Index for country i at time period t, where a lower $POLT_{it}$ reflects a higher corresponding peace level. This dependent variable refers to the level of terror described in the previous year in Amnesty International and US Department Country Reports. The basic $POLT_{it}$ ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let WI_{it} represent the ascending Weapons Imports Index for country i at time period t, where a lower WI_{it} reflects a higher corresponding peace level. This dependent variable refers to the transfer of equipment or technology from another country, rebel force, or international organisation. Major conventional weapons include, aircrafts, armoured vehicles, artillery, radar systems, missiles, ships, and engines. The basic WI_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let TI_{it} represent the ascending Terrorism Impact Index for country i at time period t, where a lower TI_{it} reflects a higher corresponding peace level. This dependent variable is calculated based on a weighted average of the number of fatalities, injuries, and property

damaged caused by terrorism in the past five years. The basic TI_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let DIC_{it} represent the ascending Deaths from Internal Conflict Index for country i at time period t, where a lower DIC_{it} reflects a higher corresponding peace level. This dependent variable refers to the number of battle deaths from internal conflict, which is defined as a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in a year. The basic DIC_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let ICF_{it} represent the ascending Internal Conflicts Fought Index for country i at time period t, where a lower ICF_{it} reflects a higher corresponding peace level. This dependent variable refers to the number and duration of conflicts fought within a country. This includes civil, interstate, one-sided and non-state conflicts. The basic ICF_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let $MEXPEN_{it}$ represent the ascending Military Expenditure Index for country i at time period t, where a lower $MEXPEN_{it}$ reflects a higher corresponding peace level. This dependent variable refers to the cash outlays of central or federal government to meet costs of national armed forces – including strategic, land, naval, air, command, administration and support forces as well as paramilitary forces, customs forces and border guards if these are trained and equipped as a military force. The basic $MEXPEN_{it}$ ranges from 1 for the

highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let ASP_{it} represent the ascending Armed Services Personnel Index for country i at time period t, where a lower ASP_{it} reflects a higher corresponding peace level. This dependent variable refers to the active armed services personnel, comprising all serviceman and women on full time duty in the army, navy, air forces and joint forces (including conscripts and long-term assignments from the reserves). The basic ASP_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let $UNPKF_{it}$ represent the ascending UN Peace Keeping Funding Index for country i at time period t, where a lower $UNPKF_{it}$ reflects a higher corresponding peace level. This dependent variable is a calculation of percentage of countries' outstanding contributions versus annual assessment to the budget of the current peacekeeping missions over an average of three years. The basic $UNPKF_{it}$ ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let NHW_{it} represent the ascending Nuclear & Heavy Weapons for country i at time period t, where a lower NHW_{it} reflects a higher corresponding peace level. This dependent variable refers to the number nuclear and heavy weapons owned by a nation's military forces. The basic NHW_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let $WEXPRT_{it}$ represent the ascending Weapons Exports Index for country i at time period t, where a lower $WEXPRT_{it}$ reflects a higher corresponding peace level. This

dependent variable refers to the transfer of equipment or technology from one country, rebel forces or international organisation, to another country, rebel force or international organisation. Major conventional weapons include, aircrafts, armoured vehicles, artillery, radar systems, missiles, ships, and engines. The basic $WEXPRT_{it}$ ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let DP_{it} represent the ascending Displaced People Index for country i at time period t, where a lower DP_{it} reflects a higher corresponding peace level. This dependent variable refers to refugees by territory of origin, this variable also includes the number of internally displaced people as a percentage of the county's total population. The basic DP_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let NCR_{it} represent the ascending Neighbouring Countries Relations Index for country i at time period t, where a lower NCR_{it} reflects a higher corresponding peace level. This dependent variable is a qualitative assessment of relations with neighbouring countries. The basic NCR_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let ECF_{it} represent the ascending External Conflicts Fought for country i at time period t, where a lower ECF_{it} reflects a higher corresponding peace level. This dependent variable refers to the number, duration, and role in conflicts fought in another country. The basic ECF_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Let DEC_{it} represent the ascending Deaths from External Conflict for country i at time period t, where a lower DEC_{it} reflects a higher corresponding peace level. This dependent variable refers to the number of battle deaths from external conflicts, which is defined as a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in a year. The basic DEC_{it} ranges from 1 for the highest sub-component related peace level to 5 for the lowest sub-component related peace level.

Estimating the effects of our previously mentioned explanatory variables on these elementary peace indicators (GPI's sub-components) allows us to determine which explanatory variables hold the highest/lowest effects on different aspects of peace. This will provide a better understanding of the determinants of peace level by uncovering the causal relationships that exist between peace's political, economic, and socio-economic determinants and each elementary indicator of peace.

3.2. Variables and Data

The dataset used through the empirical investigation is derived from multiple sources. The Global Peace Index (GPI) was launched in 2007 by the Institute for Economics and Peace (IEP), and it is updated annually. The index is constructed using 23 elementary peace indicators to measure the peacefulness level of 162 developed and developing countries based on a score that ranges from 1 to 5, where 1 indicates the highest peace level attainable and 5 reflects the lowest peace level attainable. The empirical analysis uses these indicators in their basic forms, and they are also rescaled to a score that ranges from 0 to 1,

rendering the variation of these indicators more tractable and transparent within a range of one. This is realized by subtracting 1 for all observations and dividing by 4, rendering 1 as the lowest peace level attainable and 0 as the highest peace level attainable. All empirical results were interpreted based on the original (non-rescaled) GPI, however empirical results using rescaled GPI are also presented.

Using the United Nations Commodity Trade Statistics Database (UN COMTRADE) database that covers trade values of different natural resource products, we derive the Natural Resource Exports variable by summing up oil, minerals, and metals export values in million of constant 2010 US$ to be used as a proxy for natural resource endowment. Trade openness variable is derived from World Bank Development Indicators, and it is expressed as a percentage of GDP. we use three essential variables that exercise significant impacts on GPI: (1) the GDP per capita (GDPC) derived from World Bank Development Indicators and expressed in constant 2010 US$ to be used as a proxy for economic development, and institutions, welfare, and well-being; (2) a dummy variable for democratic freedom constructed using Freedom House datasets (Gastil Index); (3) gross enrollment ratio of primary education for both sexes derived from World Bank Development Indicators. Both GDPC and Natural Resources variables are included in their logarithmic values to smooth out outliers in the dataset and to ease the interpretation of results. Although peace is a long-term process and the effect of peace determinants is lagged by nature, we lagged our variables one year to lessen endogeneity problems. Finally, to examine the distinct and varying effects of different political and regional associations/international organizations on peace levels, we construct a list of corresponding dummy variables for Association of South East Asian Nations (ASEAN),

European Union (EU), European Free Trade Association (EFTA), Gulf Cooperation Council (GCC), Mercado Común del Sur (MERCOSUR), North American Free Trade Agreement (NAFTA), Southern African Development Community (SADC), and Shanghai Cooperation Organisation (SCO). These dummy variables take the value of one when countries are a member of these regional associations/organizations, and take the value of zero otherwise.

The datasets mentioned above are used to construct a panel dataset that covers observations for 162 countries over the time period 2007-2016. Table 3.1 provides descriptive statistics for the dependent and for explanatory variables used throughout the empirical investigation. GPI has a mean of 2.085 with a standard deviation of 0.4533. Given that GPI's mean is 2.085 out of 5, indicates that on average the world is not enjoying absolute peace on average. In addition, the presence of very peaceful nations such as Iceland (GPI of 1.089 in 2008), and very un-peaceful nations such as Syria (GPI of 3.806 in 2016) further supports the importance of peace research. The presence of such deviations and gaps among nations can be explained through economic, political, and socio-economic determinants of peace that are presented in Table 3.1. For instance, the mean of GDPC is 11,001.65 constant 2010 US$ with a standard deviation higher than the mean itself, reaching 16,510.33 constant 2010 US$. Also, the minimum and maximum recorded values of GDPC are 123.72 constant 2010 US$ and 98,808.48 constant 2010 US$, respectively. The story is the same for primary education, democratic freedom, resource endowments, and trade openness. Such significant variations could be associated with inequality in economic development, socio-economic standards, wealth, resource endowments, and political stability, and thereby leads to substantial variations in nations' peace levels.

Table 3.1 Descriptive Statistics

(i)	(ii)	(iii)	(iv)	(v)	(vi)
Variable	Unit	Mean	Std. Dev	Min	Max
GPI_{it}	Scale of 1 to 5	2.0853	0.4533	1.089	3.806
$GDPC_{it}$	Constant 2010 US$	11,001.65	16,510.33	123.72	98,808.48
$PrEduc_{it}$	Enrollment (% of Population)	101.89	15.56	22.20	150.78
$DemFr_{it}$	Dummy Variable	0.37	0.48	0	1
$TradeOpen_{it}$	% of GDP	84.55	45.31	0.16	439.65
$NatResExp_{it}$	Million of Constant 2010 US$	21,352.7	42,318.85	0.0210	402,976.9

3.3. Empirical Methodology

The GPI and the elementary peace indicators exhibit little variations over time within-groups (within-countries), where most variations in the dataset are attributed to between country-groups. This outcome is expected given that peace levels are generally long-term outcomes (in the absence of shocks) that results from the implications of political, economic, and socio-economic changes over time. After all, peace-related institutional changes do not occur through prompt short-run responses to changes in political, economic, and socio-economic factors, but it rather endures continuous long-run adjustments to reach the current level/status. A look into our dataset shows that around 92.1% of the variation in GPI is between-groups variations and 7.9% of the variations in GPI is within-groups variation. Also, the variation of the explanatory variables is primarily

associated with between-group variation. For example, GDPC variation is around 90% between-group variation and 10% within-group variations. Then, using the fixed effects (FE) model would control for time-invariant unobserved characteristics of each country, and uses time variation within groups. However, it ignores the between-groups variations leading to inefficiency, particularly when variations primarily stem from between-groups variations (Greene, 2012). Also, FE models will generate large standard errors when variables' variation between groups is larger than their variation within the same group (Cameron & Trivedi, 2009). The between-groups estimator is used as the benchmark estimator using the between-groups variations. Averaging over all years yields the between-groups estimator which captures the average variation within the bloc (Cameron & Trivedi, 2005). The following illustration characterizes the decomposition of the parameters into within-groups estimator and between-groups estimator (Greene, 2012):

$$b^{within} = [S_{xx}^{within}]^{-1} S_{xy}^{within}.$$

where S_{xx}^{within} is the within group moment matrix, and S_{xy}^{within} is the matrix weighted average of the within-groups estimator, and

$$b^{between} = [S_{xx}^{between}]^{-1} S_{xy}^{between}.$$

where $S_{xx}^{between}$ is the between group moment matrix, and $S_{xy}^{between}$ is the matrix weighted average of the between-groups estimator. When variables exhibit within-group correlations over time, cluster-adjusted standard errors would account for these correlations within each cluster and assumes that correlations do not prevail between clusters (Wooldridge, 2010). The following model illustrates an empirical specification where observations are stacked by cluster:

$$y_g = x_g'\beta + \varepsilon_g \qquad \text{where g} = 1, \ldots, \text{G},$$

The corresponding cluster-adjusted standard error is depicted as:

$$\hat{Var}(\hat{\beta}) = [X'X]^{-1} \left[\sum_{i=1}^{G} x_g' \, \hat{\varepsilon}_g \hat{\varepsilon}_g' x_g \right] [X'X]^{-1}.$$

Finally, we employ a Generalized Linear Model (GLM) that fits models using maximum quasi-likelihood optimization, assuming a logit binomial distribution. The GLM allows the linear model to be related to the dependent variable using a link function, where the magnitude of the variance of each measurement is a function of its predicted value (Nelder & Baker, 1972). This model uses the scaled GPI and GPI sub-component variables and corresponds to the fractional logit model of Papke & Wooldridge (1996) that is implemented in many studies (*e.g.*, O'Doherty *et al.*, 2008; Fakih & Ghazalian, 2015). This model takes into account the bounded nature of our dependent variables (GPI and GPI sub-components) that is set by definition and not by censoring (Wagner 2001; Ramalho et al. 2011; Fakih & Ghazalian, 2014), and ensures that the predicted GPI and GPI sub-components fall between zero and one. Furthermore, we account for the within-groups variations over time through cluster-adjusted standard errors as discussed earlier.

CHAPTER FOUR

4. BENCHMARK EMPIRICAL RESULTS

This section discusses the benchmark empirical results. We first examine the effects of political, economic, and socio-economic determinants of peace on Global Peace Index (GPI) between 2007-2016, according to equation (1). Second, we examine the same political, economic, and socio-economic determinants of peace on GPI for three distinct time intervals 2007-2010, 2010-2013, and 2013-2016. Then, we analyze the effects of the same political, economic, and socio-economic determinants of peace on the sub-components of GPI, according to the representative equation (2) in section 3.1.

4.1. Effects of Determinants of Peace on GPI

Table 4.1a and Table 4.1b display the effects of peace determinants on GPI. The difference between Table 4.1a and Table 4.1b is that the first displays results using the between estimation techniques which considers the between-groups cross-sectional variations of the panel observations (variations across countries in our case) (see sub-section 3.3), while the latter displays results using Pooled Ordinary Least Squares (POLS) with cluster-adjusted standard errors (henceforth, POLS Cluster), which account for the variation/correlation within each cluster (see sub-section 3.3). Both Table 4.1a and Table 4.1b progress from a basic empirical model to gradually become a complete model. Columns (3) and (3') of Table 4.1a and Table 4.1b, respectively, present the results from a complete model with all variables mentioned in Chapter 3 included. Table 4.1a and Table 4.1b show that all estimated coefficients of the explanatory variables in the models have the expected signs and are statistically significant. Table 4.1c, Table 4.1d, and Table 4.1e

display the results when employing the rescaled GPI (0<GPI<1) using the Between Estimator, POLS Cluster, and GLM estimation techniques, respectively. Results in Table 4.1c, Table 4.1d, and Table 4.1e are found to be consistent with those in Table 4.1a and Table 4.1b. Henceforth, we will focus on the results derived from the complete empirical specifications in columns (3) and (3') of Table 4.1a and Table 4.1b, respectively, to carry out the discussion of the empirical results.

Table 4.1a

Effects of Determinants of Peace on GPI (Benchmark Models, BE)

Dependent Variable: GPI

	(1)	(2)	(3)
ln GDPC_1	-0.0962a (0.022)	-0.0734a (0.0222)	-0.1356a (0.0303)
Primary Education_1	-0.0037c (0.002)	-0.0043b (0.0019)	-0.0057a (0.002)
Democratic Freedom_1	-0.2709a (0.0708)	-0.3036a (0.0687)	-0.2452a (0.071)
Trade Openness_1		-0.0025a (0.0006)	-0.0022a (0.0006)
ln Natural Resources_1			0.0337b (0.0129)
Number of Observations	1,246	1,220	1,089
R-squared	0.3514	0.4125	0.4302

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Table 4.1b

Effects of Determinants of Peace on GPI (Benchmark Models, POLS Cluster)

Dependent Variable: GPI

	(1')	(2')	(3')
ln GDPC_1	-0.0910a (0.0221)	-0.0769a (0.0219)	-0.1188a (0.0326)
Primary Education_1	-0.0033 (0.002)	-0.0041c (0.0021)	-0.0039c (0.0023)
Democratic Freedom_1	-0.2674a (0.0647)	-0.2811a (0.0601)	-0.2497a (0.0622)
Trade Openness_1		-0.0025a (0.0005)	-0.0022a (0.0006)
ln Natural Resources_1			0.0288c (0.0152)
Number of Observations	1,246	1,220	1,089
R-squared	0.3515	0.4128	0.433

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

As shown in Table 4.1a and Table 4.1b, the log of GDPC, which is a proxy for economic development, infrastructure, and wealth, has a negative effect on GPI’s value. This result indicates that higher levels of GDPC are associated with higher peace levels, and it is consistent with some initial findings (*e.g.*, Moon & Dixon, 1992; Adeola, 1996; Lanjouw *et al.*, 2001). The coefficients of the log of GDPC are statistically significant at the 1% level across estimators, and they take the values of -0.136 and -0.119 in columns

(3) and (3') of Table 4.1a and Table 4.1b, respectively. Based on these findings, we can say that increasing GDPC by 10% would decrease GPI by 0.0136 and 0.0119 points, respectively, *ceteris paribus*. As an illustration using statistics for Lebanon in 2015, a 300% increase in GDPC from approximately 7,405.49 Constant 2010 US$ to approximately 29,621.96 constant 2010 US$ will reduce GPI from 2.756 to 2.351 and 2.402 based on the estimates in columns (3) and (3') of Table 4.1a and Table 4.1b, respectively.

The effect of primary education shown in Table 4.1a and Table 4.1b indicates that increasing the gross enrollment percentage of primary education would reduce GPI and, thereby, would increase peace levels. This is consistent with some initial findings in the empirical literature (*e.g.*, Akoki *et al.*, 2002; Collier & Hoeffler, 2004; Lahai *et al.*, 2013; Agbor, 2015). The estimated coefficients on primary education are -0.006 (statistically significant at the 1% level) and -0.004 (statistically significant at the 10% level) in columns (3) and (3') of Table 4.1a and Table 4.1b, respectively. Based on these findings, we can say that increasing primary education by 10 percentage point would decrease GPI by 0.06 and 0.04 points, respectively, *ceteris paribus*. As an illustration, using statistics for Somalia in 2007, an increase in the gross enrollment ratio in primary education for both sexes from approximately 30% to approximately 100% will reduce GPI from 3.321 to 2.971 based on the estimated in column (3) of Table 4.1a, and to 3.111 based on the estimated in column (3') of Table 4.1b, respectively, *ceteris paribus*.

The effect of democratic freedom shown in Table 4.1a and Table 4.1b indicates that the presence of a democratic political system would reduce GPI and, thereby, would increase peace levels. This result is consistent with some many initial findings in the empirical literature (*e.g.*, Small & Singer, 1976; Zinnes, 1980; Rummel, 1983; Chan, 1984; Weede, 1984, 1992; Maoz & Abdolali, 1989; Bremer, 1992; Maoz & Russett, 1992; Russet,

1994). The estimated coefficients on Democratic Freedom are -0.245 and -0.250 in columns (3) and (3') of Table 4.1a and Table 4.1b, respectively, and they are both statistically significant at the 1% level. Based on these findings, we can say that presence of a democratic political system would decrease GPI by 0.245 points on average based on the estimated in column (3) of Table 4.1a, and by 0.250 points on average based on the estimated in column (3') of Table 4.1b, respectively, *ceteris paribus*. As an illustration, using statistics for Afghanistan in 2016, the prevalence of a free democratic nation would decrease GPI from 3.538 to 3.293 based on the estimated in column (3) of Table 4.1a, and to 3.288 based on the estimated in column (3') of Table 4.1b.

The effect of trade openness shown in Table 4.1a and Table 4.1b indicates that an increase in the trade value as a percentage of GDP would reduce GPI and, thereby, would increase peace levels. This result is consistent with some initial findings in the empirical literature (*e.g.*, Mansfield, 1994; Oneal *et al.*, 1996; Domke, 1988; Kim, 1998; Reuveny & Kang, 1996; Oneal & Ray, 1997; Way, 1997; Oneal & Russett, 1998; Russett et al., 1998). Trade Openness coefficients are -0.0022 in both column (3) of Table 4.1a and column (3') of Table 4.1b, and they are statistically significant at the 1% level. Based on these findings, we can say that an increase in trade openness by 10 percentage points would decrease GPI by 0.022 points, ceteris paribus. As an illustration, using statistics for Sudan in 2015, an increase in trade openness as a percentage of GDP from approximately 20% to approximately 80% will *ceteris paribus* reduce GPI from 3.35 points to approximately 3.21 points.

The log of natural resources exports which is a proxy for natural resource endowment shown in Table 4.1a and Table 4.1b indicates that higher natural resources exports would increase GPI and, thereby, would decrease peace levels. This result is

consistent with some initial findings in the empirical literature that support the *resource curse hypothesis* (*e.g.*, Sachs & Warner, 1995; Auty, 2001; Fearon & Laitin, 2003; Ross, 2004; Lujala *et al.*, 2005; Lujala, 2010). The log of the Natural Resources Exports coefficients is 0.034 in column (3) of Table 4.1a that is statistically significant at the 5% level, and 0.029 in column (3') of Table 4.1b that is statistically significant at the 10% level. Based on these findings, we can say that an increase in natural resources exports by 10% would increase GPI by 0.0029 based on column (3) of Table 4.1a and 0.0034 based on column (3') of Table 4.1b. As an illustration using statistics for Iraq in 2014, doubling natural resource exports from approximately 78,510.1 Constant 2010 million US$ to 157,020.2 million US$ will increase GPI from 3.35 to 3.383 based on column (3) of Table 4.1a and to 3.378 based on column (3') of Table 4.1b.

Based on our findings in column (3) of Table 4.1a and column (3') of Table 4.1b, we can observe a variation in our explanatory variables' magnitudes. The GDPC has a high impact on increasing peace levels. This is consistent with our *a priori* expectations since underdeveloped nations with prevalent poverty levels are more vulnerable to conflicts, given that individuals of such nations face low opportunity costs when joining rebellion movements (Collier *et al.*, 2003; Walter, 2004). In addition, rich countries that generously spend on social welfare tend to enjoy higher peace levels (Taydas & Peksen, 2012). Furthermore, developed nations with high income tend to have better means and higher capacities for conflict resolution. This is in contrast with developing countries where wars are more likely to occur (McBride *et al.*, 2011).

Primary education, which reflects human capital, has a high impact on increasing peace levels. This is also consistent with our *a priori* expectations since education is viewed as a strong means to maintain peace by enhancing mutual understanding, and by increasing

social respect for diversity through improving social cohesion (Agbor, 2015). In addition, education changes the time preference of individuals where long-run consumption becomes more attractive than the short-run consumption. Therefore, such implications would prohibit participation in criminal activities that satisfy only short-run needs (Becker & Mulligan, 1997). Furthermore, education significantly contributes to reducing aggression and to decreasing inequality and grievance levels in society, especially when governments proportionately spend on primary, secondary, and tertiary education (Akoki *et al.* 2002). Finally, various models of economic growth (Solow, 1957; Lucas, 1988; Romer, 1990; Bils & Klenow, 2000) stress the importance of education for human capital accumulation to maintain sustainable economic growth.

Democracy, which is depicted through the prevalence of democratic free political system, also has a high impact on increasing peace levels. This might not be surprising since democracies favour the development of democratic institutions such as, separation of power, transparent public policy, and regular elections that play a key role in maintaining internal political stability and in constraining states from using violence against one another (Babst, 1972; Morgan & Campbell, 1991; Bueno de Mesquita & Lalman, 1992). Furthermore, civil war is less likely to occur in democracies, given that opposition groups can freely and peacefully fight inequality by expressing their preferences through electoral mechanisms (Quinn *et al.*, 2007). Rebellion movements and aggression are therefore meaningless (or less-likely) tools when democratic institutions provide people with peaceful means to make changes and to express freely (Henderson & Singer, 2000; Hegre *et al.*, 2001).

Trade openness has a negative effect on GPI whereby it increases peace levels. Its effect on peace is consistent with our *a priori* expectations since significant trading

relationships between countries would lead to lower likelihood of engaging in any sort of conflict due to the fear of possible welfare losses (Polachek, 1980), given that conflicts affect financial gains and economic relations in general (Kilchevsky *et al.*, 2007). Therefore, major domestic actors seek political pressure to prevent such conflicts. Hirschman (1980) and Stein (1993) emphasize that international trade leads to enhanced communication and contact between nations, consequently increasing political cooperation among trading partners. Similarly, Deutsch *et al.* (1957) claim that trade openness favors inter-cultural exchange, which increases the sense of community among trading partners. In addition, researchers who investigated world politics have always claimed that peace is a positive externality of global commerce, given that it enhances communication and contact between nations (Gartzke *et al.*, 2001).

The extent of natural resources exports holds a positive effect on GPI whereby it decreases peace levels. This is consistent with our *a priori* expectations and supports the *resource curse hypothesis* that is widely discussed in the literature. Resource endowment is viewed as a curse for its ability to provide finance and motive for armed conflicts (Fearon, 2005; Humphreys, 2005). Rustad & Binningsbø (2012) argue that there exist three main mechanisms that link the presence of natural resources to internal conflict. First, the presence of natural resources may be a significant factor to initiate rebellion movements. Second, the presence of natural resources might worsen existing conflicts through third-party interventions. Finally, the disagreement over the distribution of natural resource revenues and grievance might trigger rebellion movements. Furthermore, the *abundant resource war* argument claims that resource abundance represents a prize for the ruling elites and their competitors for its high potential tax revenues. Hence, the resource abundance raises the risk of greed-driven wars (Le Billon, 1997; Collier, 2000; Fairhead,

2000). Aside from the tax returns, internal violence launched by elites could be funded by claiming the rights to sell the resources in the future (Wegenast & Basedau, 2014). In summary, we note that all estimated coefficients in column (3) of Table 4.1a and in column (3') of Table 4.1b are statistically significant and present signs that are generally consistent with our *a priori* expectations.

These results indicate that countries with higher welfare levels, education, trade openness, and those who enjoy a democratic political system are expected to be more peaceful. On the other hand, countries endowed with natural resources are expected to be less peaceful, which further supports the *resource curse hypothesis*.

Table 4.1c

Effects of Determinants of Peace on Rescaled GPI (Benchmark Models, BE)

Dependent Variable: Rescaled GPI

	(1)	(2)	(3)
ln GDPC_1	-0.0240a (0.0055)	-0.0183a (0.0055)	-0.0339a (0.0075)
Primary Education_1	-0.0009c (0.0005)	-0.0010b (0.0004)	-0.0014a (0.0005)
Democratic Freedom_1	-0.0677a (0.0177)	-0.0759a (0.0171)	-0.0613a (0.0177)
Trade Openness_1		-0.0006a (0.0001)	-0.0005a (0.0001)
ln Natural Resources_1			0.0084b (0.0032)
Number of Observations	1,246	1,220	1,089
R-squared	0.3514	0.4125	0.4302

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Table 4.1d

Effects of Determinants of Peace on Rescaled GPI (Benchmark Models, POLS Cluster)

Dependent Variable: Rescaled GPI

	(1')	(2')	(3')
ln GDPC_1	-0.0227a (0.0055)	-0.0192a (0.0054)	-0.0297a (0.0081)
Primary Education_1	-0.0008 (0.0005)	-0.0010c (0.0005)	-0.0009c (0.0005)
Democratic Freedom_1	-0.0668a (0.0161)	-0.0702a (0.015)	-0.0624a (0.0155)
Trade Openness_1		-0.0006a (0.0001)	-0.0005a (0.0001)
ln Natural Resources_1			0.0072c (0.0038)
Number of Observations	1,246	1,220	1,089
R-squared	0.3515	0.4128	0.433

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Table 4.1e

Effects of Determinants of Peace on Rescaled GPI (Benchmark Models, GLM)

Dependent Variable: Rescaled GPI

	(1")	Marginal Effect	(2")	Marginal Effect	(3")	Marginal Effect
ln GDPC_1	-0.1182a (0.0295)	-0.0225a (0.0055)	-0.0982a (0.0292)	-0.0186a (0.0055)	-0.1574a (0.0439)	-0.0293a (0.0080)
Primary Education_1	-0.0038 (0.0024)	-0.0007 (0.0004)	-0.0046c (0.0025)	-0.0008c (0.0004)	-0.0045 (0.0027)	-0.0008 (0.0005)
Democratic Freedom_1	-0.3698a (0.0896)	-0.0692a (0.0164)	-0.3864a (0.0841)	-0.0721a (0.0153)	-0.3439a (0.0848)	-0.0636a (0.0156)
Trade Openness_1			-0.0035a (0.0008)	-0.0006a (0.0001)	-0.0032a (0.0009)	-0.0006a (0.0001)
ln Natural Resources_1					0.0393b (0.0199)	0.0073b (0.0036)
Number of Observations	1,246	1,246	1,220	1,220	1,089	1,089

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

4.2. Effects of Determinants of Peace on GPI – Distinct Time Intervals

The results in Section 4.1 are obtained from a panel data spanning over the time period 2007-2016. It would be interesting to find out whether restricting the data to three distinct time intervals will reveal different trends for the effects of peace determinants on GPI. Revealing different trends for the effects of peace determinants allows policymakers to identify the various reasons behind the determinants’ variability in terms of significance and magnitude for each time period. This is realized by relating to each time period ‘s

events and policies, and thereby becoming capable of implementing current and future policies accordingly. We carry out the regressions for three-time intervals 2007-2009, 2010-2012, and 2013-2016 and come out with results using BE and POLS with cluster estimations as displayed in Table 4.2a and Table 4.2b, respectively. Appendices 1, 2, and 3 display the results when employing the rescaled GPI when using BE, POLS with cluster estimation, and GLM estimation, respectively. Results in Appendices 1, 2, and 3 are consistent with those in Table 4.2a and Table 4.2b. Then, we will focus on the results derived from BE and POLS Cluster estimation that are displayed in Table 4.2a and Table 4.2b, respectively, to carry out the discussion of the empirical results.

Table 4.2a

Effects of Determinants of Peace on GPI (Time Intervals, BE)

Dependent Variable: GPI

	2007-2009 (1)	2010-2012 (2)	2013-2016 (3)
ln GDPC_1	-0.1347a (0.0278)	-0.1217a (0.033)	-0.1292a (0.0331)
Primary Education_1	-0.0025 (0.002)	-0.0041c (0.0023)	-0.0066a (0.0024)
Democratic Freedom_1	-0.21a (0.0679)	-0.2448a (0.0756)	-0.2846a (0.0763)
Trade Openness_1	-0.0014b (0.0006)	-0.0025a (0.0007)	-0.0027a (0.0008)
ln Natural Resources_1	0.037a (0.0125)	0.022 (0.0145)	0.0302b (0.0151)
Number of Observations	346	357	386
R-squared	0.4189	0.4396	0.4479

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Table 4.2b

Effects of Determinants of Peace on GPI (Time Intervals, POLS Cluster)

Dependent Variable: GPI

	2007-2009 (1')	2010-2012 (2')	2013-2016 (3')
ln GDPC_1	-0.1224a (0.0307)	-0.1263a (0.0374)	-0.1144a (0.0342)
Primary Education_1	-0.0028 (0.0022)	-0.0043 (0.0027)	-0.0045c (0.0027)
Democratic Freedom_1	-0.2284a (0.0658)	-0.229a (0.0686)	-0.2768a (0.0625)
Trade Openness_1	-0.0015a (0.0005)	-0.0026a (0.0007)	-0.0026a (0.0006)
ln Natural Resources_1	0.0323b (0.0142)	0.0217 (0.0176)	0.0336b (0.0157)
Number of Observations	346	357	386
R-squared	0.4198	0.4399	0.4513

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

The results displayed in Table 4.2a and Table 4.2b are consistent in terms of signs and magnitudes with our benchmark models in Table 4.1a and 4.2b, respectively. Limited variations in coefficient magnitudes can be observed across the time-interval columns of Table 4.2a and Table 4.2b. The only notable difference is in the change in significance levels for primary education and natural resources variables in both Table 4.2a and Table 4.2b compared to our benchmark models in Table 4.1a and Table 4.2b, respectively. For

instance, Primary Education was significant at 1% and 10% in columns (3) and (3') of Table 4.1a and 4.1b, respectively. After restricting the data to three distinct time intervals, the estimated coefficient on Primary Education became statistically insignificant in both columns (1) and (1') of Table 4.2a and Table 4.2b, respectively. Meanwhile, the estimated coefficient on Primary Education remained statistically insignificant in column (2'), but it attains a statistical significance level at the 10% level in column (2). Columns (3) and (3'), which present the results for the time period 2013-2016, show a match with our benchmark models' significance level for Primary Education. The estimated coefficients on Primary Education have 1% statistical significance level in columns (3) of both Tables 4.1a and Table 4.2a, and 10% statistical significance level in both Table 4.2a, and Table 4.2b. Natural Resources Exports was significant at 5% and 10% in columns (3) and (3') of Table 4.1a and 4.1b, respectively. After restricting the data to three distinct time intervals, the significance level on the estimated coefficient of Natural Resources Exports increased to 1% and 5% in column (1) and (1') of Table 4.2a and 4.2b, respectively. However, for period 2010-2012 Natural Resources Exports was statistically insignificant in both columns (2) and (2') of the same tables. As for period 2013-2016, column (3) in Table 4.2a shows equivalent statistical significance at the 5% level compared to our benchmark model (3) in Table 4.1a. Meanwhile, the statistical significance is higher in column (3') of Table 4.2b at 5% level compared to 10% in the benchmark column (3) of Table 4.1b.

Results in Table 4.2a and Table 4.2b indicate that the effects of GDPC, Trade Openness, and Democratic Freedom did not significantly change over the time period 2007-2016, while Primary Education shows a moderately higher on GPI in the latest time interval 2013-2016 compared to previous time intervals. Also, Natural Resources Exports

significance level changed over time from not statistically significant during 2010-2012 to statistically significant during 2013-2016.

4.3. Effects of Determinants of Peace on Sub-Components of GPI

In this section, we analyze the effects of determinants of peace on individual sub-components of GPI based on the representative equation (2) that is specified in section 3.1, to determine whether the effects of those determinants on GPI's sub-components exhibit variations compared to their effects on the overall GPI itself. Columns (1) to (23) distributed through Tables 4.3a, 4.3b, 4.3c, and 4.3d display the results using the BE Techniques, which considers the cross-sectional variation between observations (countries in our case). Tables A4 to A23 in the Appendix display results using POLS with cluster-adjusted standard errors, in addition to the results associated with the rescaled dependent variable GPI using BE, POLS Cluster, and GLM estimation techniques. We will focus on discussing the results derived using the BE Technique in Tables 4.3a, 4.3b, 4.3c, and 4.3d since the results from all other models are consistent with our findings using this estimation technique.

Most of the results displayed through columns (1) to (23) of Tables 4.3a, 4.3b, 4.3c, and 4.3d are generally consistent in terms of signs and magnitude with the results from our benchmark model that is presented in section 4.1. However, significance levels significantly vary across columns (1) to (23) of the same tables. This is expected since different peace determinants are expected to have different effects, and in some cases opposing effects on GPI's sub-components. For instance, doubling GDPC would decrease homicides & intensity of internal conflict by 0.25 and 0.37 points based on columns (3) and (6) of Table 4.3a, respectively, *ceteris paribus*. Also, doubling GDPC would decrease

violent crime, political instability, and political terror by 0.43, 0.27, and 0.42 points based on columns (8), (9), and (10) of Table 4.3b, respectively, *ceteris paribus*. This is consistent with our *a priori* expectations since higher GDPC is expected to increase the level of well-being, decrease violence, and increase political stability (Taydas & Peksen, 2012). On the other hand, doubling GDPC would increase security officers and police and weapons imports by 0.21 and 0.32 points based on columns (2) and (11) of Tables 4.3a and 4.3b, respectively, *ceteris paribus.* Also, doubling GDPC would increase armed service person, and weapon exports by 0.18 and 0.32 points based on columns (16) and (19) of Tables 4.3c and 4.3d, respectively, *ceteris paribus*. Rich nations usually afford having higher numbers of police and armed service personnel that would maintain low crime rate and border safety. In addition, rich nations have higher capabilities for producing weapons to be exported, and they are most likely the ones that can afford to buy weapons by importing them from other (usually rich) nations.

Increasing primary education by 20 percentage point would *ceteris paribus* decrease security officers and police, access to weapons, and intensity of internal conflict by 0.20, 0.18, and 0.30 based on columns (2), (5), and (6) of Table 4.3a, respectively. Also, increasing primary education by 20 percentage point would decrease both political instability and political terror by 0.16 based on columns (9) and (10) of Table 4.3b, respectively, *ceteris paribus.* Similarly, increasing primary education by 20 percentage point would *ceteris paribus* decrease internal conflicts fought and improve relations with neighboring countries by 0.32 and 0.20 based on columns (14) and (21) of Tables 4.3c and 4.3d, respectively. These results are consistent with our *a priori* expectations since education is viewed as a strong means to maintain peace by enhancing mutual understanding, and by increasing social respect for diversity through improving social

cohesion (Agbor, 2015). On the other hand, increasing primary education by 20 percentage point would *ceteris paribus* increase incarceration by 0.11 points. This could be explained by the rebel movements that occur in developing countries lead by the rise of educated elites and/or newly educated generation to overthrow corrupted leaders or governments and/or to install governments with different political ideology. In addition, certain educational curricula of violent nature are to be blamed for promoting extremism and aggressiveness (Sommers, 2001; Davis, 2004).

The results show that countries with a democratic political system have lower security officers and police, access to weapons, and intensity of internal conflict by 0.39, 0.30, and 0.57 based on columns (1), (5), and (6) of Table 4.3a, respectively, *ceteris paribus*. Also, they have lower political instability and political terror by 0.95 and 0.67 based on columns (9) and (10) of Table 4.3b, respectively, *ceteris paribus. Similarly,* countries with a democratic political system have lower weapons imports, deaths from internal conflict, and better relations with neighboring countries by, 0.33, 0.32, and 0.45 based on columns, (11), (13), and (21) of Tables, 4.3c, and 4.3d, respectively, *ceteris paribus*. These results are consistent with our *a priori* expectations since democracies favour the development of democratic institutions such as, separation of power, transparent public policy, and regular elections that play a key role in maintaining internal political stability and in constraining states from using violence against one another (Babst, 1972; Morgan & Campbell, 1991; Bueno de Mesquita & Lalman, 1992). Furthermore, civil war is less likely to occur in democracies, given that opposition groups can freely and peacefully oppose inequality by expressing their preferences through electoral mechanisms (Quinn *et al.*, 2007). Rebellion movement and aggression become therefore meaningless tools when democratic institution provide people with peaceful means to make changes and to express

freely (Henderson & Singer, 2000; Hegre *et al.*, 2001). On the other hand, democracies tend to increase the index of external conflicts fought by 0.60 points as shown in column (22) of Table 4.3d. This outcome can be explained by wars launched and military interventions by developed democratic nations on developing nations to overthrow dictators, remove governments with hostile political ideology, or exploit their resources. It is commonly observed that democracies are less likely to fight each other, but are more likely to engage in conflicts with non-democracies (Ray, 1998).

The results show that increasing trade openness by 10 percentage point would *ceteris paribus* decrease intensity of internal conflict, political instability, and political terror by 0.05, 0.02, and 0.06 points based on columns (6), (9), and (10) of Tables 4.3a and 4.3b, respectively. Also, increasing trade openness by 10 percentage point would decrease both deaths from internal conflict and internal conflicts fought by 0.05 points according to columns (13) and (14) of table 4.3c, respectively, *ceteris paribus.* Similarly, increasing trade openness by 10 percentage point would *ceteris paribus* decrease the number of nuclear and heavy weapons and deaths from external conflict by 0.06 and 0.02 points based on columns (18) and (23) of Tables 4.3c and 4.3d, respectively. This is consistent with our *a priori* expectations since significant trading relationships between countries would lead to lower likelihoods of engaging in any sort of conflict due to the fear of possible welfare losses (Polachek, 1980), given that conflicts affect financial gains and economic relations in general (Kilchevsky *et al.*, 2007). Therefore, major domestic actors seek political pressure to prevent such conflicts. Hirschman (1980) and Stein (1993) emphasize that trade leads to enhanced communication and contact between nations, consequently increasing political cooperation among trading partners. Similarly, Deutsch *et al.* (1957) claim that trade openness favors inter-cultural exchange, which increases the sense of community

among trading partners. However, increasing trade openness by 10 percentage point would also increase weapons imports by 0.03 points based on column (11) in Table 4.3b. This can be explained by the fact that trade openness not only promotes the flow of consumption goods, but will also promote the flow of strategic and military commodities, especially among trading partners.

Doubling natural resources exports would *ceteris paribus* increase intensity of internal conflicts by 0.06 based on column (6) of Table 4.3a. Also, doubling natural resources exports would increase violent demonstration, political terror, and terrorism impact by 0.08, 0.13, and 0.12 based on columns (7), (10), and (12) of Table 4.3b, respectively, *ceteris paribus.* Similarly, doubling natural resources exports would *ceteris paribus* increase deaths from internal conflict, internal conflicts fought, and the number of nuclear and heavy weapons by 0.07, 0.11, and 0.15 based on columns, (13), (14), (18) of Table 4.3c, respectively. This is consistent with our *a priori* expectations since resource endowment is viewed as a curse for its ability to provide finance and motive for armed conflicts (Fearon, 2005; Humphreys, 2005). Rustad & Binningsbø (2012) argue that there exist three main mechanisms that link the presence of natural resources to internal conflict. First, the presence of natural resources may be a significant factor to initiate rebellion movements. Second, the presence of natural resources might worsen existing conflicts through third-party interventions. Finally, the disagreement over the distribution of natural resource revenues and grievance might trigger rebellion movements. Furthermore, the *abundant resource war* argument claims that resource abundance represents a prize for the ruling elites and their competitors for its high tax revenues. Hence, the resource abundance raises the risk of greed-driven wars (Le Billon, 1997; Collier, 2000; Fairhead, 2000). Aside from the tax returns, internal violence launched by elites could be funded by claiming the

rights to sell the resources in the future (Wegenast & Basedau, 2014). However, doubling natural resources exports would decrease UN peacekeeping funding by 0.09 based on column (17) in Table 4.3c. This can be explained by the fact that third-party interventions that we previously discussed might be a replacement for UN peacekeeping funding regardless of its true intention. Furthermore, resource-endowed nations might be viewed as rich nations given the value of their endowment and, therefore, they may not be qualified for receiving UN aid (or they tend to receive lower levels of such aids).

After analyzing the effects of determinants of peace on individual sub-components of GPI based on the results presented in Tables 4.3a, 4.3b, 4.3c, and 4.3d, we can conclude that the effects of our peace determinants on GPI's sub-components are mostly consistent with their effects on overall GPI itself. However, not all explanatory variables have the same significance level and magnitude since it is expected that each distinct peace determinants have varying effects across GPI sub-components. We also find variations in some of our peace determinants' signs, which are also explained by logical scenarios knowing that peace determinants might act in both directions.

Table 4.3a

Effects of Determinants of Peace on Sub-Components of GPI (BE)

	POC (1)	SOP (2)	HOM (3)	INC (4)	ATW (5)	IOIC (6)
ln GDPC_1	-0.2224a (0.0708)	0.2083a (0.0765)	-0.2519b (0.1051)	0.0513 (0.0745)	-0.3615a (0.0774)	-0.3665a (0.0753)
Primary Education_1	-0.0014 (0.0047)	-0.0096c (0.0050)	-0.0052 (0.0069)	0.0105b (0.0049)	-0.0085c (0.0051)	-0.0153a (0.0050)
Democratic Freedom_1	-0.2678 (0.1642)	-0.3936b (0.1774)	-0.1017 (0.2437)	0.1384 (0.1729)	-0.3030c (0.1795)	-0.5738a (0.1747)
Trade Openness_1	-0.0029c (0.0015)	0.0011 (0.0016)	-0.0019 (0.0022)	0.0024 (0.0015)	-0.0037b (0.0016)	-0.0045a (0.0015)
ln Natural Resources_1	0.0196 (0.0303)	-0.0488 (0.0327)	0.0022 (0.0449)	0.0329 (0.0319)	0.0114 (0.0331)	0.0571c (0.0322)
Number of Observations	990	990	990	990	990	990
R-squared	0.2596	0.0895	0.1566	0.0687	0.4461	0.4241

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. POC: Perceptions of Criminality, SOP: Security Officers & Police, HOM: Homicide, INC: Incarceration, ATW: Access to Weapons, IOIC: Intensity of Internal Conflict.

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Table 4.3b

Effects of Determinants of Peace on Sub-Components of GPI (BE)

	VD (7)	VC (8)	POLI (9)	POLT (10)	WI …(11)	TI (12)
ln GDPC_1	-0.420a (0.0620)	-0.431a (0.0818)	-0.2668a (0.0505)	-0.4204a (0.0590)	0.3229a (0.0659)	-0.1727b (0.0689)
Primary Education_1	-0.0031 (0.0041)	0.0047 (0.0054)	-0.0080b (0.0033)	-0.0081b (0.0039)	-0.0030 (0.0043)	-0.0105b (0.0045)
Democratic Freedom_1	-0.2113 (0.1438)	0.0850 (0.1897)	-0.9478a (0.1171)	-0.6716a (0.1369)	-0.3324b (0.1529)	-0.3726b (0.1598)
Trade Openness_1	-0.0019 (0.0013)	-0.0017 (0.0017)	-0.0021b (0.0010)	-0.0055a (0.0012)	0.0027c (0.0013)	-0.0069a (0.0014)
ln Natural Resources_1	0.0809a (0.0265)	0.0485 (0.0349)	0.0085 (0.0216)	0.1343a (0.0252)	0.0049 (0.0282)	0.1190a (0.0294)
Number of Observations	990	990	990	990	990	990
R-squared	0.4391	0.2869	0.6408	0.5668	0.2657	0.2959

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. VD: Violent Demonstrations, VC: Violent Crime, POLI: Political Instability, POLT: Political Terror, WI: Weapons Imports, TI: Terrorism Impact.

Table 4.3c

Effect of Determinants of Peace on Sub-Components of GPI (BE)

	DIC (13)	ICF (14)	MEXPEN (15)	ASP (16)	UNPKF (17)	NHW (18)
ln GDPC_1	-0.1602b (0.0679)	-0.2949a (0.0816)	0.0895 (0.0688)	0.1834a (0.0563)	-0.1775b (0.0753)	0.0201 (0.0858)
Primary Education_1	-0.0144a (0.0045)	-0.0164a (0.0054)	-0.0053 (0.0045)	-0.0062c (0.0037)	0.0057 (0.0050)	0.0005 (0.0057)
Democratic Freedom_1	-0.3164b (0.1575)	-0.1472 (0.1894)	-0.5721a (0.1595)	-0.4037a (0.1307)	-0.4179b (0.1746)	-0.0589 (0.1991)
Trade Openness_1	-0.0048a (0.0014)	-0.0054a (0.0017)	0.00008 (0.0014)	0.0013 (0.0011)	-0.0012 (0.0015)	-0.0055a (0.0018)
ln Natural Resources_1	0.0726b (0.0290)	0.1053a (0.0349)	0.0067 (0.0294)	-0.0131 (0.0241)	-0.0887a (0.0322)	0.1460a (0.0367)
Number of Observations	990	990	990	990	990	990
R-squared	0.1935	0.2125	0.0716	0.1489	0.277	0.2491

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. DIC: Deaths from Internal Conflict, ICF: Internal Conflicts Fought, MEXPEN: Military Expenditure, ASP: Armed Services Personnel, UNPKF: UN Peace Keeping Funding, NHW: Nuclear & Heavy Weapons.

Table 4.3d

Effects of Determinants of Peace on Sub-Components of GPI (BE)

	WEXPRT (19)	DP (20)	NCR (21)	ECF (22)	DEC (23)
ln GDPC_1	0.3165a (0.0844)	-0.0128 (0.0667)	-0.1818b (0.0803)	0.1017 (0.1041)	0.0228 (0.0246)
Primary Education_1	-0.0005 (0.0056)	-0.0112b (0.0044)	-0.0100c (0.0053)	-0.0038 (0.0069)	-0.0013 (0.0016)
Democratic Freedom_1	-0.0269 (0.1957)	-0.1378 (0.1548)	-0.4514b (0.1863)	0.6050b (0.2415)	0.0729 (0.0571)
Trade Openness_1	-0.0025 (0.0017)	-0.0020 (0.0014)	-0.0018 (0.0017)	-0.00006 (0.0022)	-0.0016a (0.0005)
ln Natural Resources_1	0.0023 (0.0361)	-0.0390 (0.0285)	0.0249 (0.0343)	0.0143 (0.0445)	0.0088 (0.0105)
Number of Observations	990	990	990	990	990
R-squared	0.2238	0.037	0.1892	0.115	0.12

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. WEXPRT: Weapons Exports, DP: Displaced People, NCR: Neighbouring Countries Relations, ECF: External Conflicts Fought, DEC: Deaths from External Conflict.

CHAPTER 5

5. SUPPLEMENTARY EMPIRICAL RESULTS

This section discusses the results from alternative empirical specifications and implements empirical analysis by region. We first examine alternative empirical specifications by adding some interaction variables that further explain the relationship between peace and its determinants. Second, we add eight main economic and political regions (ASEAN, EFTA, EU, GCC, MEROSUR, NAFTA, SADC, and SCO) to investigate the effects of regional partnerships on peace.

5.1 Alternative Empirical Specifications

In this section, we examine the results from alternative empirical specifications by adding some interaction variables (GDPC with Democratic Freedom, GDPC with Natural Resource, and Natural Resources with Democratic Freedom) that further explain the relationship between peace and its determinants. The results are presented in Tables 5.1a, 5.1b, and 5.1c. Additional results derived from empirical specifications that employ the rescaled dependent variable GPI are included in Tables A25, A26, And A27 of the Appendix for BE, POLS Cluster, and GLM estimation techniques, respectively. Additional interaction terms were tested, but were mostly insignificant which warrants their absence in our results.

Table 5.1a displays the results from the BE and POLS Cluster, showing the effects of determinants of peace including the interaction of GDPC with Democratic Freedom on GPI. Both models in column (1) and (2) are consistent with our benchmark models and with our *a priori* expectations. The interaction term indicates that doubling GDPC in the

presence of a democratic system would decrease GPI by 0.19 in the case of BE in column (1) and by 0.18 in the case of POLS Cluster in column (2). Doubling GDPC in the absence of a political democratic system would still decrease GPI, but with a lower magnitude of 0.08 and 0.05 as shown in column (1) and (2), respectively. Therefore, we can conclude that the presence of a democratic political system would increase the positive effects of economic development on nations' peace levels. This is consistent with our *a priori* expectations which is associated with the argument of Inglehart & Welzel (2009) which indicates that, for the economic development to maintain high peace levels, democratization in the presence of effective democratic institutions must prevail.

Table 5.1b displays the results from the BE and POLS Cluster, showing the effects of the determinants, including the interaction between GDPC and Natural Resources, on GPI. The results are consistent with our benchmark results and with our *a priori* expectations. However, column (1) using the BE shows insignificant estimate on the interaction terms. Therefore, we will be interpreting the significant estimate on the interaction term of column (2) obtained from the POLS Cluster. The interaction term indicates that doubling natural resource exports in a poor country such as Nigeria with a GDPC of 2,302 constant US$ in 2010 will reduce GPI by 0.03 according to the results in column (2). While doubling natural resource exports in a rich country such as Qatar with a GDPC of 94,574 constant US$ in 2013 will even have a higher impact by reducing GPI by 0.07 according to the results column (2). Therefore, we can conclude that natural resource endowments have a higher effect on increasing peace levels in rich nations compared to poorer nations. This is consistent with our *a priori* expectations. For instance, Basdedau & Lay (2009) argue that there exists a distinction between resource wealth per capita and resource dependency. They indicate that large revenues from resources can be used to

maintain internal security and to establish generous wealth distributional policies. However, they also note that countries are required to cross a high threshold of per capita wealth to implement such costly policies. On the other hand, according to Le Billon (2001), resource dependence, which is more common among poor nations endowed with natural resources, is often accompanied by poor economic performance and increased grievance levels. The main reason behind economic instability for resource-dependent countries is the exposure to price shocks (Auty, 2001). Over-optimistic resource revenues predictions that do not account for price shocks often lead to high debt and political instability (Le Billon, 2001). Fluctuation in resource prices prohibits effective fiscal policies and increases income inequality, poverty, and grievance. Sachs &Warner (1995) argue that resource-poor countries such as Japan usually enjoy faster economic growth than resource-rich countries. The '*Dutch Disease*' is more likely to affect resource-rich countries, where high export revenues are associated with currency appreciation, which in return worsens non-resource sectors' performance (Ross, 1999). The results presented in this section do not contradict with our finding in the benchmark results for three main reasons. First, as previously mentioned, a country must cross a high threshold of per capita wealth to implement effective policies that would significantly increase peace levels. Second, the estimated coefficient on the interaction term between GDPC and Natural Resource is statistically significant at only 10% significance levels which indicates the existence of some variability in its effect on GPI. Finally, the variable Natural Resources present in column (2) is still positive, which is consistent with the benchmark results.

Table 5.1c displays the results from the BE and POLS Cluster for the effects of the determinants of peace including the interaction between Natural Resources with Democratic Freedom on GPI. The estimates in both models in columns (1) and (2) are

consistent with the estimates from the benchmark models, and our *a priori* expectations. Column (1) that reports the results from the BE technique indicates insignificant estimate on the interaction term. Therefore, we will be interpreting the significant coefficient on the interaction term in column (2) which reports the results from the POLS Cluster. The estimate on the interaction term indicates that doubling natural resource exports in the presence of a democratic political system would increase GPI by 0.0017 which is almost negligible compared to 0.039 in the absence of a democratic political system. Therefore, we can conclude that the presence of a democratic political system would reduce the negative effects of resource endowment on nations' peace levels. This is consistent with our *a priori* expectations since resource rents incentivize leaders to stay in power, and to establish a patronaged system that rewards supporters of their system while repressing those who do not (Bates, 1981; Bryant & Parnwell, 1996). The presence of a democratic political system associated with democratic institutions would prevent leaders from staying in power and establishing patronaged system given the opposition groups' right to express their preferences through repetitive electoral mechanisms (Quinn *et al.*, 2007).

Based on the results obtained from our alternative empirical specifications in this section we reach three main conclusions. First, the presence of a democratic political system would increase the positive effects of economic development on nations' peace levels. Second, the presence of a democratic political system would reduce the negative effects of resource endowment on nations' peace levels. Finally, natural resource endowment tends to have a higher effect on increasing peace levels in rich nations compared to poorer nations.

Table 5.1a

Effect of Determinants of Peace on GPI (BE & POLS Cluster)

Dependent Variable: GPI

	BE	POLS Cluster
	(1)	(2)
ln GDPC_1	-0.0833b (0.0376)	-0.0544 (0.0433)
Primary Education_1	-0.0059a (0.0020)	-0.0038c (0.0021)
Democratic Freedom_1	0.20386 (0.2088)	0.2898 (0.1797)
Trade Openness_1	-0.0025a (0.0006)	-0.0026a (0.0006)
ln Natural Resources_1	0.0271b (0.0131)	0.0209 (0.0151)
ln GDPC_1 X Democratic Freedom_1	-0.1073b (0.0470)	-0.1285a (0.0437)
Number of Observations	1,089	1,089
R-squared	0.4603	0.465

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Table 5.1b

Effects of Determinants of Peace on GPI (BE & POLS Cluster)

Dependent Variable: GPI

	BE	POLS Cluster
	(1)	(2)
ln GDPC_1	-0.0917b (0.0435)	-0.0597 (0.0468)
Primary Education_1	-0.0056a (0.0020)	-0.0037c (0.0021)
Democratic Freedom_1	-0.2607a (0.0716)	-0.2694a (0.0603)
Trade Openness_1	-0.0023a (0.0006)	-0.0025a (0.0006)
ln Natural Resources_1	0.0622b (0.02411)	0.0692b (0.0289)
ln GDPC_1 X ln Natural Resources_1	-0.0094 (0.0067)	-0.0128c (0.0071)
Number of Observations	1,089	1,089
R-squared	0.4432	0.4477

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Table 5.1c

Effect of Determinants of Peace on GPI (BE & POLS Cluster)

Dependent Variable: GPI

	BE	POLS Cluster
	(1)	(2)
ln GDPC_1	-0.1302a (0.0304)	-0.1160a (0.0336)
Primary Education_1	-0.0057a (0.0020)	-0.0038c (0.0022)
Democratic Freedom_1	-0.1202 (0.1128)	-0.1014 (0.0973)
Trade Openness_1	-0.0024a (0.0006)	-0.0025a (0.0006)
ln Natural Resources_1	0.0403a (0.0137)	0.0392b (0.0174)
Democratic Freedom_1 X ln Natural Resources_1	-0.0333 (0.0234)	-0.0375c (0.0204)
Number of Observations	1,089	1,089
R-squared	0.4407	0.4438

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

5.2 Empirical Analysis by Region

In this section, we add eight main economic and political regions (ASEAN, EFTA, EU, GCC, MEROSUR, NAFTA, SADC, and SCO) to investigate the effects of regional partnerships on peace. Table 5.2 displays results using the BE technique. Tables A28 to A32 of the Appendix display similar models using POLS Cluster, as well as the results from the empirical equations that employ rescaled dependent variable GPI through BE,

POLS Cluster, and GLM estimation techniques. We will focus on the results derived using the BE Techniques in Table 5.2 since all other models are consistent with our findings obtained when using this estimation technique. Results in Table 5.2 show that as we move from the complete model in column (1) to column (4), we are gradually dropping our explanatory variables that are the main determinants of peace. Although those explanatory variables are critical determinants for peace levels, we believe that they are also critical determinants for the formation of the previously mentioned regions. For instance, high-income nations with large economic capabilities, high trade openness, highly educated population, and common free and democratic political systems tend to be clustered in the same geographic region, forming economic regional alliance such as the EU. Similarly, for low-income nations with poor economic performance, low trade openness, low education, and common less free and democratic political systems tend to be clustered in the same geographic region forming other alliances such as the SADC. The same applies to high natural resource-endowed nations clustered in the same geographic region forming other alliances such as the GCC. This fact is reflected in our empirical results especially in our complete model in column (1) where peace determinants are absorbing the effects and significance of our regional dummy variables on GPI. Therefore, if we take a closer look and compare the results of column (1) to those in column (5) where all peace determinants are dropped, we will observe that the estimated coefficients on the regions' variables increased in terms of magnitude and improved or gained statistical significance. For instance, EU's magnitude was -0.21 in column (1) with a statistical significance level of 5%, after dropping all peace determinants in column (5), its magnitude increased in absolute terms to -0.61 and the statistical significance level improved to 1%. Similarly, the estimated coefficient on EFTA's variable increased in absolute terms from -0.44 to -0.91,

and its statistical significance level from 5% to 1%. As for GCC, ASEAN, MERCOSUR, and SADC, they were also subject to increase in magnitudes in absolute terms, however, they all went from being statistically insignificant to statistically significant at the 5% or 10%. The only two regional alliances that were subject to an increase in magnitude in absolute terms, but remained statistically insignificant are SCO and NAFTA. Results of column (5) indicate that regional alliances do indeed improve nations' peace levels and that their effects on peace vary greatly across different geo-economic regions. All regional variables are associated with negative estimated coefficients of varying magnitudes that indicates lower GPI levels, except for SCO which is positive and statistically insignificant. Regions whose members' peace levels tend to be affected the most by their regional alliance are the EFTA and the EU, which are associated with reduced GPI by 0.91 and 0.61 points, respectively, *ceteris paribus*. On the other hand, the region whose members' peace levels tend to be affected the least by their regional alliance is the SADC, which is associated with reduced GPI by only 0.22 points.

Our empirical analysis by region is consistent with our *a priori* expectations that states tie alliance obligations with economic agreements for two reasons: first, to deter aggression, and second, to promote further economic agreements (Powers, 2006). Furthermore, the fact that our variables vary greatly in terms of magnitude is also expected. For instance, Kingah & Langenhove (2012) argue that the effective role of regional organizations is based on three determinants. The willingness to act is the first determinant that differs among regional organizations. This determinant varies according to the presence of active leaders willing to act and allocate resources to make a difference. Some regional organizations would limit their interventions to their regional borders, while others would go beyond that. The extent of intervention is based on the second determinant which

is the acceptance of their actions beyond their geographic borders. The presence of institutional collaboration with the UN allows the UN Security Council to accept engagements beyond borders. However, the third determinant which is capability remains a constraint for both within and beyond borders' interventions. Some regional organizations lack sufficient financial resources and suffer from weak institutions that sometimes keep intervention within borders minimal. According to Russet & Oneal (2001), a peaceful regional order is established through the rise of three liberal principles known as democracy, economic interdependence, and institutions. Their argument covers the fundamental prerequisites of a peaceful region. Democracy is the first principle since democracies are less likely to fight each other (Ray, 1998). Therefore, establishing a region with all members being democracies provides a suitable political environment for deterring aggression. As mentioned earlier, economic interdependence is a key promoter for peaceful cooperation among states (Krasner, 1983). Finally, well-functioning international institutions play a key role in promoting cooperation and the sustainability of formalized rules among members (Martin, 1999). These liberal principles, if combined with the previously mentioned determinants (willingness to act, acceptance of actions, and capability), allows us to understand why regional blocs such as the EU are expected to have a higher magnitude on GPI compared to other regional blocs such as the SADC.

Table 5.2

Regional Analysis (BE)

Dependent Variable: GPI

	(1)	(2)	(3)	(4)
ln GDPC_1	-0.1066a (0.0361)			
Primary Education_1	-0.0053b (0.0020)	-0.0058a (0.0021)	-0.0062a (0.0022)	
Democratic Freedom_1	-0.2077b (0.0839)	-0.3245a (0.0762)		
Trade Openness_1	-0.0017b (0.0007)	-0.0023a (0.0006)	-0.0025a (0.0007)	
ln Natural Resources_1	0.0336b (0.0135)	0.0107 (0.0114)	-0.0007 (0.0118)	
EU	-0.2198b (0.0965)	-0.3023a (0.0952)	-0.5036a (0.0879)	-0.6197a (0.0823)
GCC	-0.2350 (0.1703)	-0.4278a (0.1620)	-0.2848c (0.1687)	-0.3466b (0.1561)
EFTA	-0.4431b (0.2034)	-0.6402a (0.1979)	-0.8441a (0.2045)	-0.9116a (0.2173)
ASEAN	-0.1679 (0.1297)	-0.1368 (0.1331)	-0.0153 (0.1385)	-0.2315c (0.1294)
SCO	0.1237 (0.1670)	0.1034 (0.1719)	0.2312 (0.1802)	0.1244 (0.1561)
NAFTA	-0.0632 (0.1962)	-0.1854 (0.1975)	-0.2641 (0.2093)	-0.2270 (0.2173)
MERCOSUR	-0.1052 (0.1664)	-0.1420 (0.1709)	-0.2803 (0.1786)	-0.3287c (0.1892)
SADC	-0.1571 (0.0987)	-0.0950 (0.0993)	-0.1041 (0.1057)	-0.2224b (0.1070)
Number of Observations	1,089	1,089	1,089	1,574
R-squared	0.4889	0.4608	0.3899	0.3103

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. ASEAN: Association of South East Asian Nations, EU: European Union, EFTA: European Free Trade Association, GCC: Gulf Cooperation Council, MERCOSUR: Mercado Común del Sur, NAFTA: North American Free Trade Agreement, SADC: Southern African Development Community, SCO: Shanghai Cooperation Organisation.

CHAPTER 6

6. SUMMARY AND CONCLUSION

6.1 Summary

Peace research shares common grounds with any other political, behavioral, or international relations research, while the objectivity in problem selection is based on the wish of establishing a new peaceful world order (Kumar, 1989). This thesis contributes to the existing literature by examining the relationships between peace level and different economic, political, and socio-economic factors. There exists a wide range of empirical literature that examines the effect of one or some determinants of peace on conflict (*e.g.*, Weede, 1984; Sørensen, 1986; Maoz & Abdolali, 1989; Dixon, 1994; Reuveny & Kang, 1996; Morrow, 1997; Von Berneuth, 2000; Regan, 2002; Lujala, 2010; Taydas & Peksen, 2012; Wegenast & Basedau, 2014). This thesis employs a comprehensive approach by examining the effects of distinct economic, political, and socio-economic determinants on peace levels simultaneously, instead of individual determinants on conflict number or intensity. This thesis also draws an exclusive conclusion for whether regional alliances promote peace, and whether variations in peace levels exists across different geo-economic regions.

Chapter 4, Section 4.1 examines the effects of economic, political, socio-economic determinants on global peace levels using a panel dataset covering 163 countries over the time period 2007-2016. Our results indicate that countries with higher economic development levels, education, trade openness, and those who enjoy a free democratic political system are expected to be more peaceful. On the other hand, countries endowed

with natural resources are found to be less peaceful, which supports the *resource curse hypothesis*. Chapter 4, Section 4.2 splits the original dataset used in Section 4.1 into three distinct time intervals (2007-2009, 2010-2012, and 2013-2016) to reveal whether different trends for the effects of peace determinants on GPI exist. Results indicate that the effects of most peace determinants including GDPC, trade openness, and democratic freedom did not significantly change through the time period 2007-2016. This is expected given the relatively short time period and given that the peace level reflects a long-run and often slow institutional changes. Meanwhile, primary education shows a moderately larger effect on GPI in the latest time period 2013-2016 compared to previous time intervals. Similarly, the effect of natural resources exports shows statistical significant during the latest period 2013-2016.

Chapter 4, Section 4.3 analyzes the effects of determinants of peace on individual sub-components of GPI, to determine whether the effects of those determinants on GPI's sub-components exhibit variations compared to their effects on the overall GPI itself. Results indicate that the effects of these determinants on GPI's sub-components are mostly consistent with its effects on GPI itself. However, there are important variations in significance level and magnitude, indicating that each determinant has distinct effects on different sub-components. We also found variations in some of our peace determinants' signs, which were explained by logical scenarios where these determinants might act in opposing directions.

Chapter 5, Section 5.1 examines alternative empirical specifications by adding some interaction variables (GDPC and democratic freedom, GDPC and natural resource, and natural resources and democratic freedom) that further explain the relationships

between peace and its determinants. Based on the results obtained from this section, we reach three main conclusions. First, the presence of a democratic political system would increase the positive effects of economic development on nations' peace levels. Second, the presence of a democratic political system would reduce the negative effects of resource endowment on nations' peace levels. Finally, natural resource endowment has a higher promoting effect on peace levels in rich nations compared to poorer nations. In Chapter 5, Section 5.2, we add eight main economic and political regions (ASEAN, EFTA, EU, GCC, MEROSUR, NAFTA, SADC, and SCO) to investigate the effects of regional partnerships on peace levels. Results in this section indicate that regional blocs do indeed improve nations' peace levels and that their effects on peace level vary significantly across different geo-economic regions. Regions whose members' peace levels tend to be the most positively affected by their regional alliances are the EFTA and the EU. On the other hand, the region whose members' peace levels tend to be the least positively affected by their regional alliance is the SADC.

6.2 Policy Recommendations

The empirical results contribute to peace science by identifying the essential tools required to promote peace nationally and between nations, and by determining the magnitudes of the effects of various factors on peace levels. The empirical results can be also used to encourage policy-makers to adjust their policies by:

- *Promoting economic growth* - Nations with prevalent poverty levels are more vulnerable to conflicts, given that individuals of such nations face low opportunity costs when joining rebellion movements (Collier *et al.*, 2003; Walter, 2004). Rich countries that generously spend on social welfare tend to enjoy higher peace levels by minimizing poverty and

inequality and, therefore, by reducing grievances (Taydas & Peksen, 2012). Welfare spending on education, health, and social security improve living standards, particularly for poor classes. This, in return, provides a clear indication that the government is concerned about its people's well-being, leading to less political opposition, and to higher opportunity costs of joining rebellion movements. Furthermore, developed nations with high-income levels tend to have better means and higher capacities for conflict resolution. This is in contrast with developing countries where wars are more likely to occur (McBride *et al.*, 2011).

- *Adopting democratic political systems* - Democracies favour the development of democratic institutions such as, separation of power, transparent public policy, and regular elections that play a key role in maintaining internal political stability and in constraining states from using violence against one another (Babst, 1972; Morgan & Campbell, 1991; Bueno de Mesquita & Lalman, 1992). Furthermore, civil war is less likely to occur in democracies, given that opposition groups can freely and peacefully oppose inequality by expressing their preferences through electoral mechanisms (Quinn *et al.*, 2007). Rebellion movement and aggression are therefore meaningless tools when democratic institution provide people with peaceful means to make changes and to express freely (Henderson & Singer, 2000; Hegre *et al.*, 2001).
- *Increasing trade openness* - Significant trading relationships between countries would lead to lower likelihoods of engaging in any sort of conflict due to the fear of possible welfare losses (Polachek, 1980), given that conflicts affect financial gains and economic relations in general (Kilchevsky *et al.*, 2007). Therefore, major domestic actors seek political pressure to prevent such conflicts. Furthermore, trade leads to enhanced communication

and contact between nations, consequently increasing political cooperation among trading partners (Hirschman, 1980; Stein, 1993). Also, Deutsch *et al.* (1957) claim that trade openness favors inter-cultural exchange, which increases the sense of community among trading partners. Finally, researchers who investigated world politics have always claimed that peace is a positive externality of global commerce, given that it enhances communication and contact between nations (Gartzke *et al.*, 2001).

- *Increasing educational spending* - Education is viewed as a strong mean to maintain peace by enhancing mutual understanding, and by increasing social respect for diversity through improving social cohesion (Agbor, 2015). In addition, education changes the time preference of individuals where long-run consumption becomes more attractive than the short-run consumption. Therefore, such implications would prohibit criminal participation that satisfies only short-run needs (Becker & Mulligan, 1997). Furthermore, education tends to decrease aggression and to reduce inequality and grievance levels in society, especially when governments proportionately spend on education (Akoki *et al.* 2002). Finally, various models of economic growth (Solow, 1957; Lucas, 1988; Romer, 1990; Bils & Klenow, 2000) stress the importance of education for human capital accumulation to maintain sustainable economic growth and, hence, peace level.
- *Equal resource revenue distribution* - Large revenues from resources can be used to maintain internal security and to establish generous wealth distributional policies (Basdedau & Lay, 2009). On the other hand, the disagreement over the distribution of natural resource revenues and grievance might trigger rebellion movements, since resource wealth motivates rebellion movements by increasing the perceived gains of capturing a nation's assets, therefore making resource-rich countries more attractive than resource-poor

countries (Englebert & Ron, 2004). Several rebellion movements, such as the Maoist insurgents in Nepal, blame their act of aggression on the government's unfair distribution of resource revenues (Murshed & Gates, 2006).

REFERENCES

Acemoglu, D., & Robinson, J. A. (2001). A theory of political transitions. *American Economic Review*, 938-963.

Adeola, F. O. (1996). Military expenditures, health, and education: bedfellows or antagonists in Third World development? *Armed Forces & Society*, *22*(3), 441-467.

Agbor, J. A. (2015). Effects of primary, secondary and tertiary education on conflict intensity in Africa. *Economies*, 3(4), 161-185.

Aoki, A., Barbara B., Michael D., Mmantsetsa M., Alain M., Peter M., Patrick M., Pierella P., Harry P., & Thomas J.. Christopher; Winter, Carolyn; and Yang; Hongyu (2003), *Education*, World Bank. PRSP Sourcebook.

Auty, R. M.. (2001). *Resource Abundance And Economic Development*. Oxford University Press: Oxford, UK.

Auty, R. (2004). Natural resources and civil strife: a two-stage process. *Geopolitics*, *9*(1), 29-49.

Babst, D. V., Koval, M., & Neithercutt, M. G. (1972). Relationship of time served to parole outcome for different classifications of burglars based on males paroled in fifty jurisdictions in 1968 and 1969. *Journal of Research in Crime and Delinquency*, *9*(2), 99-116.

Barbier, E. B., & Homer-Dixon, T. F. (1999). Resource scarcity and innovation: Can poor countries attain endogenous growth? *Ambio*, 144-147.

Barbieri, K., & Schneider, G. (1999). Globalization and peace: Assessing new directions in the study of trade and conflict. *Journal of Peace Research*, 36(4), 387-404.

Basedau, M., & Lay, J. (2009). Resource curse or rentier peace? The ambiguous effects of oil wealth and oil dependence on violent conflict. *Journal of Peace Research*, 46.6 757-776.

Bates R. (1981). *Markets and states in tropical Africa: the political basis of agricultural policies.* University of California Press: Oakland, CA.

Becker, G. S., & Mulligan, C. B. (1997). The endogenous determination of time preference. *The Quarterly Journal of Economics*, *112*(3), 729-758.

Bénassy-Quéré, A., Coupet, M., & Mayer, T. (2007). Institutional determinants of foreign direct investment. *The World Economy*, *30*(5), 764-782. Bennet, O. (1991). *Greenwar: Environment and Conflict*. UK: Panos Institute.

Bils, M., & Klenow, P. J. (2000). Does schooling cause growth?. *American economic review*, 1160-1183.

Boyden, J., & Ryder, P. (1996). *Implementing the right to education in areas of armed conflict.* University of Oxford, Queen Elizabeth House: Oxford, UK.

Bremer, S. A. (1992). Dangerous dyads: Conditions affecting the likelihood of interstate war, 1816-1965. *Journal of Conflict Resolution*, *36*(2), 309-341.

Brown, L.R. (1977). Redefining national security. World Watch Institute: Washington, DC.

Bueno de Mesquita, B., & Lalman, D. (1992). *War and reason*. Yale University Press: New Haven, CT.

Buzan, B. (1983). Regional security as a policy objective: the case of South and Southwest Asia. Alvin Z. Rubinstein, the great game: ivalry in the Persian Gulf and South Asia (New York: Praeger, 1983).

Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: methods and applications*. Cambridge University Press: UK.

Chan, Steve (1984). Mirror, mirror on the wall . . . are the freer countries more pacific, *Journal of Conflict Resolution* 28, 617–48.Choi, S. W., & James, P. (2008). Civil—military structure, political communication, and the democratic peace. *Journal of Peace Research*, 45(1), 37-53.

Choucri, N. (1974). *Population dynamics and international violence*. Aero Publishers Inc: US.

Clark JF (2001). Explaining Ugandan intervention in Congo: Evidence and interpretations. *Journal of Modern African Studies* 39(2): 261–287.

Collier, P. (2000). *Economic causes of civil conflict and their implications for policy* (pp. 1-23). Washington, DC: World Bank.

Collier, P., & Hoeffler, A. (2002). On the incidence of civil war in Africa. *Journal of conflict resolution*, *46*(1), 13-28.

Collier, P. (2003). *Breaking the conflict trap: Civil war and development policy*. World Bank Publications.

Collier, P., & Hoeffler, A. (2004). Greed and grievance in civil war. *Oxford economic papers*, *56*(4), 563-595.

Crescenzi, M. J. (2003). Interdependence and conflict: When does symmetry matter?. *Conflict Management and Peace Science*, 20(1), 73-92.

Davis, A. (2004). The credentials of brain-based learning. *Journal of philosophy of education*, *38*(1), 21-36.

Deutsch, K. W., *et al*. (1957), *Political community and the North Atlantic area: International organization in the light of historical experience*, Princeton, N.J.

Diamond, L. (1999). *Developing democracy: Toward consolidation.* JHU Press.

Dixon, W. J. (1994). Democracy and the peaceful settlement of international conflict. American Political Science Review, 88(01), 14-32.

Domke, W. K. (1988). *War and the changing global system*. Yale University Press: New Haven, CT.

Dryden-Peterson, S., & Mulimbi, B. (2017). Pathways toward peace: negotiating national unity and ethnic diversity through education in Botswana. *Comparative Education Review*, 61(1), 000-000.

Englebert, P., & Ron, J. (2004). Primary commodities and war: Congo-Brazzaville's ambivalent resource curse. *Comparative Politics*, 61-81.

Fairhead, J. (2000). The conflict over natural and environmental resources. War, hunger and displacement. *The origins of humanitarian emergencies*, 147-178.

Fakih, A., & Ghazalian, P. L. (2014). Which firms export? An empirical analysis for the manufacturing sector in the MENA region. *Journal of Economic Studies*, *41*(5), 672-695.

Fakih, A., & Ghazalian, P. L. (2015). Female employment in MENA's manufacturing sector: the implications of firm-related and national factors. *Economic Change and Restructuring*, *48*(1), 37-69.

Fearon, J. D., & Laitin, D. D. (2003). Ethnicity, insurgency, and civil war. *American political science review*, *97*(1), 75-90.

Fearon, J. D. (2005). Primary commodity exports and civil war. *Journal of conflict Resolution*, *49*(4), 483-507.

Feaver, Peter D. & Christopher Gelpi, (2004). *Choosing your battles: American civil–military relations and the use of force*. Princeton, NJ & Oxford: Princeton University Press: Princeton, NJ.

Feierabend, I. K., & Klicperova-Baker, M. (2015). Freedom and psychological proximity as preconditions of nonviolence: the social psychology of democratic peace. *South African Journal of Psychology*, 45(4), 564-577.

Findley, M. G., & Marineau, J. F. (2015). Lootable resources and third-party intervention into civil wars. *Conflict Management and Peace Science*, 32(5), 465-486.

Gartzke, E., Li, Q., & Boehmer, C. (2001). Investing in the peace: Economic interdependence and international conflict. *International organization*, 55(02), 391-438.

Galtung, J. (1967). Peace Research: science, or politics in disguise?. *International spectator*, *21*(19), 1573-1603.

Gasiorowski, M. J. (1986). Economic interdependence and international conflict: Some cross-national evidence. *International Studies Quarterly*, *30*(1), 23-38.

Witness, G. (2009). Natural resource exploitation and human rights in the Democratic Republic of Congo 1993 to 2003. *Global Witness Briefing Paper, December*. Goldstone, R. L., &

Steyvers, M. (2001). The sensitization and differentiation of dimensions during category learning. *Journal of experimental psychology: General*, *130*(1), 116.

Gowa, J., & Mansfield, E. D. (1993). Power politics and international trade. *American Political Science Review*, 87(02), 408-420.

Gowa, J. (2000). *Ballots and bullets: The elusive democratic peace*. Princeton University Press: Princeton, NJ

Greene, W. H. (2012). *Econometric analysis*. Pearson Education India.

Grieco, J. M. (1988). Realist theory and the problem of international cooperation: Analysis with an amended prisoner's dilemma model. *The Journal of Politics*, *50*(3), 600-624.

Hegre, H. (2001). Toward a democratic civil peace? Democracy, political change, and civil war, 1816–1992. *American political science review*, *95*(1), 33-48.

Hegre, H., & Sambanis, N. (2006). Sensitivity analysis of empirical results on civil war onset. *Journal of conflict resolution*, *50*(4), 508-535.

Henderson, E. A., & Singer, J. D. (2000). Civil war in the post-colonial world, 1946-92. *Journal of Peace Research*, *37*(3), 275-299.

Hirschman, A. O. (1980). *National power and the structure of foreign trade* (Vol. 105). University of California Press. Hoffman, Danny. 2011. *The war machines: young men and violence in Sierra Leone and Liberia*. Durham, NC Duke University Press: Durham, NC.

Holsti, K. J. (1995). War, Peace, and the State of the State. *International political science review*, 16(4), 319-339.

Humphreys, M. (2005). Natural resources, conflict, and conflict resolution: Uncovering the mechanisms. *Journal of conflict resolution*, *49*(4), 508-537.

Huntington, S.P. (1968). *Political order in changing societies*. Yale University Press: New Haven, CT.

Inglehart, R., & Welzel, C. (2009). How development leads to democracy: What we know about modernization. *Foreign Affairs*, 33-48.

Janowitz, M. (Ed.). (1981). *Civil-military relations: regional perspectives*. SAGE Publications, Incorporated.

Jeffrey A. Frankel & Ernesto Stein & Shang-Jin Wei, (1993). Continental trading blocs: are they natural, or super-natural?, NBER Working papers 4588, *National Bureau of Economic Research*, Inc.

Kilchevsky, A., Cason, J., & Wandschneider, K. (2007). Peace and economic interdependence in the Middle East. *The World Economy*, 30(4), 647-664.

Kim, S. Y. (1998). Ties that bind: The role of trade in international conflict processes, 1950-1992. (Ph.D. dissertation), Yale University: New Haven, CT.

Kingah, S., & Van Langenhove, L. (2012). Determinants of a regional organisation's role in peace and security: the African Union and the European Union compared. *South African Journal of International Affairs*, 19(2), 201-222.

Krasner, S. D. (Ed.). (1983). *International regimes*. Cornell University Press: Ithaca, NY.

Kumar, V. R. (1989). Strategies for world peace: Peace research and peace movements. *India Quarterly*, 45(2-3), 135-153.

Lahai, J. I., & Ware, H. (2013). Educating for peace: The sociocultural dimensions of grassroots peace education as a tool for national reconciliation and social forgetting in Sierra Leone. *African Conflict & Peacebuilding Review*, *3*(2), 69-90.

Lange, R. (2003) *Promoting Livelihood and Employment in Post-conflict situations*.

Lanjouw, Peter; Menno Pradhan, Fadia Saadah, Haneen Sayed & Robert A Sparrow (2001). Poverty, education and health in Indonesia: Who benefits from public spending? World Bank policy research working paper, no. 2739.

Lavaux, S. (2007). Natural resources and conflict in Colombia: Complex dynamics, narrow relationships. *International Journal*, 62(1), 19-30.

Le Billon, P. (2001). The political ecology of war: natural resources and armed conflicts. *Political geography*, 20(5), 561-584.

Leeds, B. A. (2003). Do alliances deter aggression? The influence of military alliances on the initiation of militarized interstate disputes. *American Journal of Political Science*, 47(3), 427-439.

Lia, B. (2005). *Globalisation and the future of terrorism: Patterns and predictions*; Routledge: London, UK.

Long, A. G., & Leeds, B. A. (2006). Trading for security: Military alliances and economic agreements. *Journal of Peace Research*, 43(4), 433-451.

Lucas, Robert E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22, 3–42.

Lujala, P. (2003). Classification of natural resources for conflict and growth research. *Edinburgh: European Consortium for Political Research (ECPR)*.

Lujala, P., Gleditsch, N. P., & Gilmore, E. (2005). A diamond curse? Civil war and a lootable resource. *Journal of Conflict Resolution*, *49*(4), 538-562.

Lujala, P. (2010). The spoils of nature: Armed civil conflict and rebel access to natural resources. *Journal of peace research*, 47(1), 15-28.

Luttwak, E. N. (1996). A post-heroic military policy. *Foreign Affairs.*, *75*, 33.

Mansfield, Edward. (1994). *Power, trade, and war*. Princeton University Press: Princeton, NJ.

Mansfield, E. D., & Bronson, R. (1997). Alliances, preferential trading arrangements, and international trade. *American Political Science Review*, *91*(1), 94-107.

Maoz, Z., & Abdolali, N. (1989). Regime types and international conflict, 1816-1976. *Journal of Conflict Resolution*, *33*(1), 3-35.

Maoz, Z., & Russett, B. (1992). Alliance, contiguity, wealth, and political stability: Is the lack of conflict among democracies a statistical artifact? *International Interactions*, *17*(3), 245-267.

Maoz, Z., & Russett, B. (1993). Normative and structural causes of democratic peace, 1946–1986. *American Political Science Review*, *87*(3), 624-638.

Martin, L. L. (1999). The political economy of international cooperation. *Global public goods: International cooperation in the 21st century*, 51-64.

Martin, P., Mayer, T., & Thoenig, M. (2008). Make trade not war?. *The Review of Economic Studies*, 75(3), 865-900.

Maxted, J. (2006). Exploitation of energy resources in Africa and the consequences for minority rights. *Journal of developing societies*, *22*(1), 29-37.

McBride, M., Milante, G., & Skaperdas, S. (2011). Peace and war with endogenous state capacity. *Journal of Conflict Resolution*, 55(3), 446-468.

McMahon, B. J. (2003). Putting the elephant into the refrigerator: Student engagement, critical pedagogy and antiracist education. *McGill Journal of Education/Revue des sciences de l'éducation de McGill*, *38*(002).

Moon, B. E., & Dixon, W. J. (1992). Basic needs and growth-welfare trade-offs. *International Studies Quarterly*, *36*(2), 191-212.

Morgan, T. C., & Campbell, S. H. (1991). Domestic structure, decisional constraints, and war: so why Kant democracies fight?. *Journal of Conflict Resolution*, *35*(2), 187-211.

Morrow, J. D. (1997). When do "relative gains" impede trade?. *Journal of Conflict Resolution*, *41*(1), 12-37.

Murshed, S. M., & Gates, S. (2005). Spatial–horizontal inequality and the Maoist insurgency in Nepal. *Review of Development Economics*, *9*(1), 121-134.

Nelder, J. A., & Baker, R. J. (1972). *Generalized linear models*. John Wiley & Sons, Inc..

Novelli, Mario, and Alan Smith. 2011. The role of education in peacebuilding: A synthesis report of findings from Lebanon, Nepal and Sierra Leone. New York: UNICEF.

Odit, M. P., Dookhan, K., & Fauzel, S. (2010). The impact of education on economic growth: The case of Mauritius. *International Business & Economics Research Journal (IBER)*, 9(8).

O'Doherty, J., Lyons, S., & Tol, R. S. (2008). Energy-using appliances and energy-saving features: Determinants of ownership in Ireland. *Applied Energy*, *85*(7), 650-662.

Oneal, John R.; Frances H. Oneal, Zeev Maoz & Bruce Russett, (1996). The liberal peace: interdependence, democracy, and international conflict, 1950–1985, *Journal of Peace Research* 33(1): 11–28.

Oneal, John R. & James Lee Ray, (1997a). New tests of the democratic peace controlling for economic interdependence, 1950–1985, *Political Research Quarterly* 50(4): 751–775.

Oneal, John R. & Bruce Russett, (1997b). The classical liberals were right: Democracy, interdependence, and conflict, 1950–1985, *International Studies Quarterly* 41(2): 267–294.

Oneal, John R. & Bruce Russett, (1998). The kantian peace: Assessing the pacific benefits of democracy, interdependence, and international organizations, 1885–1992. Paper presented at the 94th Annual Meeting of the Park, (1997). Testing power-transition theory using alternative measures of national capabilities, *Journal of Conflict Resolution* 41 (August): 509–528.

Oneal, J. R., & Russett, B. (1999). Assessing the liberal peace with alternative specifications: Trade still reduces conflict. *Journal of Peace Research*, 36(4), 423-442.

Oneal, J. R., & Russett, B. (2001). Clear and clean: The fixed effects of the liberal peace. *International Organization*, *55*(2), 469-485.

Oneal, J. R., Russett, B., & Berbaum, M. L. (2003). Causes of peace: Democracy, interdependence, and international organizations, 1885–1992. *International Studies Quarterly*, 47(3), 371-393.

Plassmann, H., O'Doherty, J., Shiv, B., & Rangel, A. (2008). Marketing actions can modulate neural representations of experienced pleasantness. *Proceedings of the National Academy of Sciences*, 105(3), 1050-1054.

Parnwell, M., & Bryant, R. L.(1996). *Environmental change in south-east Asia: people, politics and sustainable development*. Psychology Press.

Paust, J. J., & Blaustein, A. P. (1974). The Arab oil weapon—A threat to international peace. *American Journal of International Law*, *68*(3), 410-439. Polachek, S. W. (1980). Conflict and trade. *Journal of conflict resolution*, 24(1), 55-78.

Polachek, S. W. (1997). Why democracies cooperate more and fight less: the relationship between international trade and cooperation. *Review of International Economics*, 5(3), 295-309.

Papke, L. E., & Wooldridge, J. (1993). *Econometric methods for fractional response variables with an application to 401 (k) plan participation rates.*

Powers, K. L. (2006). Dispute initiation and alliance obligations in regional economic institutions. *Journal of Peace Research*, 43(4), 453-471.

Quinn, J. M., Mason, T. D., & Gurses, M. (2007). Sustaining the peace: Determinants of civil war recurrence. *International Interactions*, 33(2), 167-193.

Ramalho, E. A., Ramalho, J. J., & Murteira, J. M. (2011). Alternative estimating and testing empirical strategies for fractional regression models. *Journal of Economic Surveys*, 25(1), 19-68.

Rasler, K., & Thompson, W. R. (1988). Defense burdens, capital formation, and economic growth: The systemic leader case. *Journal of Conflict Resolution*, *32*(1), 61-86.

Ray, J. L. (1998). Does democracy cause peace?. *Annual Review of Political Science*, *1*(1), 27-46.

Regan, P. M. (2002). Third-party interventions and the duration of intrastate conflicts. *Journal of Conflict Resolution*, *46*(1), 55-73.

Renner, Michael, 1996: *Fighting for survival. Environmental decline, social conflict, and the new age of insecurity*, New York & London: Norton, for Worldwatch Institute.

Reuveny, R., & Kang, H. (1996). International trade, political conflict/cooperation, and Granger causality. *American Journal of Political Science*, 943-970.

Reza, F., & Widodo, T. (2013). The Impact of education on economic growth in Indonesia. *Journal of Indonesian Economy and Business: JIEB.*, 28(1), 23.

Romer, P. M. (1990). Endogenous technological change. *Journal of political Economy*, *98*(5, Part 2), S71-S102.

Ross, M. L. (1999). The political economy of the resource curse. *World politics*, *51*(2), 297-322.

Ross, M. (2003). Oil, drugs, and diamonds: How do natural resources vary in their impact on civil war. *The political economy of armed conflict: Beyond greed and grievance*, 47-67.

Ross, M. L. (2004). What do we know about natural resources and civil war?. *Journal of peace research*, 41(3), 337-356.

Ross, M. (2006). A closer look at oil, diamonds, and civil war. *Annu. Rev. Polit. Sci.*, 9, 265-300.

Rummel, R. J. (1983). Libertarianism and international violence. *Journal of Conflict Resolution*, *27*(1), 27-71.

Russett, B. (1994). *Grasping the democratic peace: Principles for a post-Cold War world*. Princeton university press: Princeton, NJ.

Russett, Bruce; John R. Oneal & David R. Davis, (1998). The third leg of the kantian tripod for peace: International organizations and militarized disputes, 1950–1985, *International Organization* 52(3): 441–467.

Rustad, S. A., & Binningsbø, H. M. (2012). A price worth fighting for? Natural resources and conflict recurrence. *Journal of Peace Research*, 49(4), 531-546.

Sachs, J. D., & Warner, A. M. (1995). Natural resource abundance and economic growth (No. w5398). *National Bureau of Economic Research*.

Sambanis, N. (2004). What is civil war? Conceptual and empirical complexities of an operational definition. *Journal of conflict resolution*, *48*(6), 814-858.

Small, M., & Singer, J. D. (1976). The war-proneness of democratic regimes, 1816-1965. *Jerusalem Journal of International Relations*, *1*(4), 50-69.

Smith, R. P. (1980). Military expenditure and investment in OECD countries, 1954–1973. *Journal of comparative economics*, *4*(1), 19-32.

Solow, R. M. (1957). Technical change and the aggregate production function. *The review of Economics and Statistics*, 312-320.

Sommers, M. (2001). Peace education and refugee youth. Geneva: UNHCR. EPAU Working Paper.

Sørensen, G. (1986). Peace and security in Europe: The context for Denmark's choices. *Cooperation and Conflict*, 21(4), 219-240.

Taydas, Z., & Peksen, D. (2012). Can states buy peace? Social welfare spending and civil conflicts. *Journal of Peace Research*, 49(2), 273-287.

Urdal, H. (2006). A clash of generations? Youth bulges and political violence. *Int. Stud. Q. 50*,

607–630.

Van de Haar, E. (2010). The liberal divide over trade, peace and war. *International Relations*, 24(2), 132-154.

Von Berneuth, Carl. (2000). Diamond registry and Sierra Leone civil war. Inventory of conflict and environment cases. The Mandala projects. American University, School of International Service.

Wagner, J. (2001). A note on the firm size–export relationship. *Small business economics*, 17(4), 229-237.

Wallensteen, Peter, (1973). *Structure and War. On International Relations 1920–1968.* Raben & Sjogren: Stockholm, Sweden.

Walter, Barbara E, (2004). War as a reputation problem. working paper.

Weede, E. (1984). Democracy and war involvement. *Journal of Conflict Resolution*, *28*(4), 649-664.

Weede, E. (1992). Some simple calculations on democracy and war involvement. *Journal of Peace Research*, *29*(4), 377-383.

Wegenast, T. C., & Basedau, M. (2014). Ethnic fractionalization, natural resources and armed conflict. *Conflict Management and Peace Science*, 31(4), 432-457.

Willum, B. (2001). Foreign aid to Rwanda: Purely beneficial or contributing to war. Political Science dissertation, University of Copenhagen: Nørregade, Denmark.

Wirl, F. (2009). OPEC as a political and economical entity. *European Journal of Political Economy*, 25(4), 399-408.

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.

Zellner, A. (1962). An efficient method of estimating seemingly unrelated regressions and tests for aggregation bias. *Journal of the American statistical Association*, *57*(298), 348-368.

Zinnes, Dina A. and Merritt, Richard L. (1990). *Democracies and war.* University of Illinois Mimeo: Springfield, IL.

Zwartjes, M., Van Langenhove, L., Kingah, S., & Maes, L. (2012). Determinants of regional leadership: is the European Union a leading regional actor in peace and security?. *Southeast European and Black Sea Studies*, 12(3), 393-405.

APPENDIX

Appendix A1: List of Countries

Afghanistan	Equatorial Guinea
Albania	Eritrea
Algeria	Estonia
Angola	Ethiopia
Argentina	Finland
Armenia	France
Australia	Gabon
Austria	Gambia
Azerbaijan	Georgia
Bahrain	Germany
Bangladesh	Ghana
Belarus	Greece
Belgium	Guatemala
Benin	Guinea
Bhutan	Guinea-Bissau
Bolivia	Guyana
Bosnia and Herzegovina	Haiti
Botswana	Honduras
Brazil	Hungary
Bulgaria	Iceland
Burkina Faso	India
Burundi	Indonesia
Cambodia	Iran
Cameroon	Iraq
Canada	Ireland
Central African Republic	Israel
Chad	Italy
Chile	Jamaica
China	Japan
Colombia	Jordan
Costa Rica	Kazakhstan
Côte d'Ivoire	Kenya
Croatia	Kosovo
Cuba	Kuwait
Cyprus	Kyrgyzstan
Czech Republic	Laos
Democratic Republic of the Congo	Latvia
Denmark	Lebanon
Djibouti	Lesotho
Dominican Republic	Liberia
Ecuador	Libya
Egypt	Lithuania
El Salvador	Macedonia (FYR)

Appendix A1 - Continued

Madagascar	Serbia
Malawi	Sierra Leone
Malaysia	Singapore
Mali	Slovakia
Mauritania	Slovenia
Mauritius	Somalia
Mexico	South Africa
Moldova	South Korea
Mongolia	South Sudan
Montenegro	Spain
Morocco	Sri Lanka
Mozambique	Sudan
Myanmar	Swaziland
Namibia	Sweden
Nepal	Switzerland
Netherlands	Syria
New Zealand	Taiwan
Nicaragua	Tajikistan
Niger	Tanzania
Nigeria	Thailand
North Korea	Timor-Leste
Norway	Togo
Oman	Trinidad and Tobago
Pakistan	Tunisia
Panama	Turkey
Papua New Guinea	Turkmenistan
Paraguay	Uganda
Peru	Ukraine
Philippines	United Arab Emirates
Poland	United Kingdom
Portugal	United States of America
Qatar	Uruguay
Republic of the Congo	Uzbekistan
Romania	Venezuela
Russia	Vietnam
Rwanda	Yemen
Saudi Arabia	Zambia
Senegal	Zimbabwe

Appendix A2

Effects of Determinants of Peace on Rescaled GPI (BE)

Dependent Variable: Rescaled GPI

	2007-2009 (1)	2010-2012 (2)	2013-2016 (3)
ln GDPC_1	-0.0336a (0.0069)	-0.0304a (0.0082)	-0.0323a (0.0082)
Primary Education_1	-0.0006 (0.0005)	-0.001c (0.0005)	-0.0016a (0.0006)
Democratic Freedom_1	-0.0525a (0.0169)	-0.0612a (0.0189)	-0.0711a (0.019)
Trade Openness_1	-0.0003b (0.0001)	-0.0006a (0.0001)	-0.0006a (0.0002)
ln Natural Resources_1	0.0092a (0.0031)	0.0055 (0.0036)	0.0075b (0.0037)
Number of Observations	346	357	386
R-squared	0.4189	0.4396	0.4479

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Appendix A3

Effects of Determinants of Peace on Rescaled GPI (POLS Cluster)

Dependent Variable: Rescaled GPI

	2007-2009 (1')	2010-2012 (2')	2013-2016 (3')
ln GDPC_1	-0.0306a (0.0076)	-0.0315a (0.0093)	-0.0286a (0.0085)
Primary Education_1	-0.0007 (0.0005)	-0.001 (0.0006)	-0.0011c (0.0006)
Democratic Freedom_1	-0.0571a (0.0164)	-0.0572a (0.0171)	-0.0692a (0.0156)
Trade Openness_1	-0.0003a (0.0001)	-0.0006a (0.0001)	-0.0006a (0.0001)
ln Natural Resources_1	0.008b (0.0035)	0.0054 (0.0044)	0.0084b (0.0039)
Number of Observations	346	357	386
R-squared	0.4198	0.4399	0.4513

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Appendix A4

Effects of Determinants of Peace on Rescaled GPI (GLM)

Dependent Variable: Rescaled GPI

	2007-2009 (1")	Marginal Effect	2010 -2012 (2")	Marginal Effect	2013-2016 (3")	Marginal Effect
ln GDPC_1	-0.1647a (0.0425)	-0.0303a (0.0076)	-0.1646a (0.0486)	-0.0313a (0.0091)	-0.1529a (0.0463)	-0.0283a (0.0085)
Primary Education_1	-0.0032 (0.0027)	-0.0006 (0.0005)	-0.0049 (0.0031)	-0.0009 (0.0006)	-0.0053 (0.0033)	-0.0009 (0.0006)
Democratic Freedom_1	-0.3164a (0.0897)	-0.0579a (0.0164)	-0.3107a (0.0909)	-0.0586a (0.0171)	-0.3857a (0.0857)	-0.0708a (0.0156)
Trade Openness_1	-0.0022a (0.0008)	-0.0004a (0.0001)	-0.0036a (0.0010)	-0.0006a (0.0002)	-0.0037a (0.0009)	-0.0006a (0.0001)
ln Natural Resources_1	0.0435b (0.0185)	0.0080b (0.0033)	0.0298 (0.0219)	0.0056 (0.0041)	0.0470b (0.0212)	0.0087b (0.0039)
Number of Observations	346	346	357	357	386	386

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Appendix A5

Effects of Determinants of Peace on Sub-Components of GPI (POLS Cluster)

	POC (1')	SOP (2')	HOM (3')	INC (4')	ATW (5')	IOIC (6')
ln GDPC_1	-0.2044a (0.0684)	0.2099a (0.0737)	-0.2206b (0.0903)	0.0692 (0.0669)	-0.3555a (0.0633)	-0.3339a (0.0760)
Primary Education_1	0.0003 (0.0050)	-0.0059 (0.0051)	-0.0037 (0.0081)	0.0107c (0.0054)	-0.0075c (0.0045)	-0.0092c (0.0050)
Democratic Freedom_1	-0.2513 (0.1607)	-0.4206b (0.1663)	-0.2195 (0.2567)	0.0748 (0.1749)	-0.3077c (0.1643)	-0.5648a (0.1758)
Trade Openness_1	-0.0036a (0.0013)	0.0019 (0.0014)	-0.0029 (0.0020)	0.0017 (0.0017)	-0.0047a (0.0016)	-0.0036b (0.0016)
ln Natural Resources_1	0.0186 (0.0326)	-0.0557 (0.0392)	-0.0047 (0.0434)	0.0193 (0.0306)	0.0083 (0.0335)	0.0375 (0.0357)
Number of Observations	990	990	990	990	990	990
R-squared	0.262	0.0944	0.1592	0.0703	0.4478	0.4294

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. POC: Perceptions of Criminality, SOP: Security Officers & Police, HOM: Homicide, INC: Incarceration, ATW: Access to Weapons, IOIC: Intensity of Internal Conflict.

Appendix A6

Effects of Determinants of Peace on Sub-Components of GPI (POLS Cluster)

	VD (7')	VC (8')	POLI (9')	POLT (10')	WI (11')	TI (12')
ln GDPC_1	-0.4290a	-0.4244a	-0.2614a	-0.3866a	0.3284a	-0.1741b
	(0.0657)	(0.0716)	(0.0534)	(0.0595)	(0.0683)	(0.0783)
Primary Education_1	-0.0048	0.0027	-0.0058c	-0.0063	-0.0017	-0.0081c
	(0.0039)	(0.0056)	(0.0031)	(0.0050)	(0.0022)	(0.0042)
Democratic Freedom_1	-0.2303c	0.0324	-0.9141a	-0.6673a	-0.3287b	-.03265c
	(0.1361)	(0.1689)	(0.1302)	(0.1243)	(0.1627)	(0.1665)
Trade Openness_1	-0.0014	-0.0019	-0.0007	-0.0057a	0.0012	-0.0069a
	(0.0013)	(0.0016)	(0.0010)	(0.0012)	(0.0020)	(0.0015)
ln Natural Resources_1	0.0808a	0.0548	0.0097	0.1157a	0.0035	0.1226a
	(0.0292)	(0.0358)	(0.0249)	(0.0303)	(0.0226)	(0.0349)
Number of Observations	990	990	990	990	990	990
R-squared	0.4403	0.288	0.6442	0.568	0.2698	0.2975

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. VD: Violent Demonstrations, VC: Violent Crime, POLI: Political Instability, POLT: Political Terror, WI: Weapons Imports, TI: Terrorism Impact.

Appendix A7

Effects of Determinants of Peace on Sub-Components of GPI (POLS Cluster)

	DIC (13')	ICF (14')	MEXPEN (15')	ASP (16')	UNPKF (17')	NHW (18')
ln GDPC_1	-0.1321c (0.0683)	-0.2675b (0.1182)	0.0934 (0.0588)	0.2071a (0 .0550)	-0.1923a (0.0693)	-0.0171 (0.1066)
Primary Education_1	-0.0079 (0.0048)	-0.0103c (0.0058)	-0.0007 (0.0027)	-0.0010 (0.0020)	0.0027 (0.0063)	-0.0023 (0.0041)
Democratic Freedom_1	-0.3092b (0.1468)	-0.0902 (0.1972)	-0.4824a (0.1603)	-0.3734a (0.0924)	-0.401b (0.1546)	0.0178 (0.2120)
Trade Openness_1	-0.0044a (0.0013)	-0.0044a (0.0014)	-0.0002 (0.0011)	0.0012 (0.0010)	-0.0006 (0.0015)	-0.0071a (0.0022)
ln Natural Resources_1	0.0766b (0.0320)	0.1048b (0.0486)	0.0157 (0.0253)	-0.0287 (0.0264)	-0.0866b (0.0353)	0.1675a (0.0472)
Number of Observations	990	990	990	990	990	990
R-squared	0.201	0.2159	0.0799	0.1643	0.2786	0.2535

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. DIC: Deaths from Internal Conflict, ICF: Internal Conflicts Fought, MEXPEN: Military Expenditure, ASP: Armed Services Personnel, UNPKF: UN Peace Keeping Funding, NHW: Nuclear & Heavy Weapons.

Appendix A8

Effects of Determinants of Peace on Sub-Components of GPI (POLS Cluster)

	WEXPRT (19')	DP (20')	NCR (21')	ECF (22')	DEC (23')
ln GDPC_1	0.3060a (0.0879)	0.0369 (0.0606)	-0.1728b (0.0847)	0.0960 (0.0940)	0.0139 (0.0268)
Primary Education_1	0.0006 (0.0029)	-0.0034 (0.0042)	-0.0083c (0.0044)	-0.0043 (0.0045)	-0.0017 (0.0013)
Democratic Freedom_1	0.0202 (0.1807)	-0.1430 (0.1247)	-0.3971c (0.2009)	0.5983b (0.2668)	0.0894 (0.0545)
Trade Openness_1	-0.0026 (0.0018)	-0.0015c (0.0009)	-0.0012 (0.0013)	0.0005 (0.0021)	-0.0019b (0.0007)
ln Natural Resources_1	0.0134 (0.0366)	-0.0537 (0.0340)	0.0070 (0.0385)	0.0185 (0.0412)	0.0146 (0.0106)
Number of Observations	990	990	990	990	990
R-squared	0.2247	0.0484	0.1918	0.1155	0.1223

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. WEXPRT: Weapons Exports, DP: Displaced People, NCR: Neighbouring Countries Relations, ECF: External Conflicts Fought, DEC: Deaths from External Conflict.

Appendix A9

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (BE)

	POC (1)	SOP (2)	HOM (3)	INC (4)	ATW (5)	IOIC (6r)
ln GDPC_1	-0.0556a (0.0177)	0.0520a (0.0191)	-0.0629b (0.0262)	0.0128 (0.0186)	-0.0903a (0.0193)	-0.0916a (0.0188)
Primary Education_1	-0.0003 (0.0011)	-0.0024c (0.0012)	-0.0013 (0.0017)	0.0026b (0.0012)	-0.0021c (0.0012)	-0.0038a (0.0012)
Democratic Freedom_1	-0.0669 (0.0410)	-0.0984b (0.0443)	-0.0254 (0.0609)	0.0346 (0.0432)	-0.0757c (0.0448)	-0.1434a (0.0436)
Trade Openness_1	-0.0007c (0.0003)	0.0002 (0.0004)	-0.0004 (0.0005)	0.0006 (0.0003)	-0.0009b (0.0004)	-0.0011a (0.0003)
ln Natural Resources_1	0.0049 (0.0075)	-0.0122 (0.0081)	0.0005 (0.0112)	0.0082 (0.0079)	0.0028 (0.0082)	0.0142c (0.0080)
Number of Observations	990	990	990	990	990	990
R-squared	0.2596	0.0895	0.1566	0.0687	0.4461	0.4241

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. POC: Perceptions of Criminality, SOP: Security Officers & Police, HOM: Homicide, INC: Incarceration, ATW: Access to Weapons, IOIC: Intensity of Internal Conflict.

Appendix A10

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (BE)

	VD (7)	VC (8)	POLI (9)	POLT (10)	WI (11)	TI (12)
ln GDPC_1	-0.1050a (0.0155)	-0.1079a (0.0204)	-0.0667a (0.0126)	-0.1051a (0.0147)	0.0807a (0.0164)	-0.0431b (0.0172)
Primary Education_1	-0.0007 (0.0010)	0.0011 (0.0013)	-0.0020b (0.0008)	-0.0020b (0.0009)	-0.0007 (0.0010)	-0.0026b (0.0011)
Democratic Freedom_1	-0.0528 (0.0359)	0.0212 (0.0474)	-0.2369a (0.0292)	-0.1679a (0.0342)	-0.0831b (0.0382)	-0.0931b (0.0399)
Trade Openness_1	-0.0004 (0.0003)	-0.0004 (0.0004)	-0.0005b (0.0002)	-0.0013a (0.0003)	0.0006c (0.0003)	-0.0017a (0.0003)
ln Natural Resources_1	0.0202a (0.0066)	0.0121 (0.0087)	0.0021 (0.0054)	0.0335a (0.0063)	0.0012 (0.0070)	0.0297a (0.0073)
Number of Observations	990	990	990	990	990	990
R-squared	0.4391	0.2869	0.6408	0.5668	0.2657	0.2959

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. VD: Violent Demonstrations, VC: Violent Crime, POLI: Political Instability, POLT: Political Terror, WI: Weapons Imports, TI: Terrorism Impact.

Appendix A11

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (BE)

	DIC (13)	ICF (14)	MEXPEN (15)	ASP (16)	UNPKF (17)	NHW (18r)
ln GDPC_1	-0.0400b (0.0169)	-0.0737a (0.0204)	0.0223 (0.0172)	0.0458a (0.0140)	-0.0443b (0.0188)	0.0050 (0.0214)
Primary Education_1	-0.0036a (0.0011)	-0.0041a (0.0013)	-0.0013 (0.0011)	-0.0015c (0.0009)	0.0014 (0.0012)	0.0001 (0.0014)
Democratic Freedom_1	-0.0791b (0.0393)	-0.0368 (0.0473)	-0.1430a (0.0398)	-0.1009a (0.0326)	-0.1044b (0.0436)	-0.0147 (0.0497)
Trade Openness_1	-0.0012a (0.0003)	-0.0013a (0.0004)	0.00002 (0.0003)	0.0003 (0.0002)	-0.0003 (0.0003)	-0.0013a (0.0004)
ln Natural Resources_1	0.0181b (0.0072)	0.0263a (0.0087)	0.0016 (0.0073)	-0.0032 (0.0060)	-0.0221a (0.0080)	0.0365a (0.0091)
Number of Observations	990	990	990	990	990	990
R-squared	0.1935	0.2125	0.0716	0.1489	0.277	0.2491

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. DIC: Deaths from Internal Conflict, ICF: Internal Conflicts Fought, MEXPEN: Military Expenditure, ASP: Armed Services Personnel, UNPKF: UN Peace Keeping Funding, NHW: Nuclear & Heavy Weapons.

Appendix A12

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (BE)

	WEXPRT (19)	DP (20)	NCR (21)	ECF (22)	DEC (23)
ln GDPC_1	0.0791a	-0.0032	-0.0454b	0.0254	0.0057
	(0.0211)	(0.0166)	(0.0200)	(0.0260)	(0.0061)
Primary Education_1	-0.0001	-0.0028b	-0.0025c	-0.0009	-0.0003
	(0.0014)	(0.0011)	(0.0013)	(0.0017)	(0.0004)
Democratic Freedom_1	-0.0067	-0.0344	-0.1128b	0.1512b	0.0182
	(0.0489)	(0.0387)	(0.0465)	(0.0603)	(0.0142)
Trade Openness_1	-0.0006	-0.0005	-0.0004	-0.00001	-0.0004a
	(0.0004)	(0.0003)	(0.0004)	(0.0005)	(0.0001)
ln Natural Resources_1	0.0005	-0.0097	0.0062	0.0035	0.0022
	(0.0090)	(0.0071)	(0.0085)	(0.0111)	(0.0026)
Number of Observations	990	990	990	990	990
R-squared	0.037	0.1892	0.115	0.12	0.2238

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. WEXPRT: Weapons Exports, DP: Displaced People, NCR: Neighbouring Countries Relations, ECF: External Conflicts Fought, DEC: Deaths from External Conflict.

Appendix A13

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (POLS Cluster)

	POC (1')	SOP (2')	HOM (3')	INC (4')	ATW (5')	IOIC (6')
ln GDPC_1	-0.0511a	0.0524a	-0.0551b	0.0173	-0.0888a	-0.0834a
	(0.0171)	(0.0184)	(0.0225)	(0.0167)	(0.0158)	(0.0190)
Primary Education_1	0.00007	-0.0014	-0.0009	0.0026c	-0.0018c	-0.0023c
	(0.0012)	(0.0012)	(0.0020)	(0.0013)	(0.0011)	(0.0012)
Democratic Freedom_1	-0.0628	-0.1051b	-0.0548	0.0187	-0.0769c	-0.1412a
	(0.0401)	(0.0415)	(0.0641)	(0.0437)	(0.0410)	(0.0439)
Trade Openness_1	-0.0009a	0.0004	-0.0007	0.0004	-0.0011a	-0.0009b
	(0.0003)	(0.0003)	(0.0005)	(0.0004)	(0.0004)	(0.0004)
ln Natural Resources_1	0.0046	-0.0139	-0.0011	0.0048	0.0020	0.0093
	(0.0081)	(0.0098)	(0.0108)	(0.0076)	(0.0083)	(0.0089)
Number of Observations	990	990	990	990	990	990
R-squared	0.262	0.0944	0.1592	0.0703	0.4478	0.4294

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. POC: Perceptions of Criminality, SOP: Security Officers & Police, HOM: Homicide, INC: Incarceration, ATW: Access to Weapons, IOIC: Intensity of Internal Conflict.

Appendix A14

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (POLS Cluster)

	VD (7')	VC (8')	POLI (9')	POLT (10')	WI (11')	TI (12')
ln GDPC_1	-0.1072a	-0.1061a	-0.0653a	-0.0966a	0.0821a	-0.0435b
	(0.0164)	(0.0179)	(0.0133)	(0.0148)	(0.0170)	(0.0195)
Primary Education_1	-0.0012	0.0006	-0.0014c	-0.0015	-0.0004	-0.0020c
	(0.0009)	(0.0014)	(0.0007)	(0.0012)	(0.0005)	(0.0010)
Democratic Freedom_1	-0.0575c	0.0081	-0.2285a	-0.1668a	-0.0821b	-0.0816c
	(0.0340)	(0.0422)	(0.0325)	(0.0310)	(0.0406)	(0.0416)
Trade Openness_1	-0.0003	-0.0004	-0.0001	-0.0014a	0.0003	-0.0017a
	(0.0003)	(0.0004)	(0.0002)	(0.0003)	(0.0005)	(0.0003)
ln Natural Resources_1	0.0202a	0.0137	0.0024	0.0289a	0.0008	0.0306a
	(0.0073)	(0.0089)	(0.0062)	(0.0075)	(0.0056)	(0.0087)
Number of Observations	990	990	990	990	990	990
R-squared	0.4403	0.288	0.6442	0.568	0.2698	0.2975

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. VD: Violent Demonstrations, VC: Violent Crime, POLI: Political Instability, POLT: Political Terror, WI: Weapons Imports, TI: Terrorism Impact.

Appendix A15

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (POLS Cluster)

	DIC (13')	ICF (14')	MEXPEN (15')	ASP (16')	UNPKF (17')	NHW (18')
ln GDPC_1	-0.0330c (0.0170)	-0.0668b (0.0295)	0.0233 (0.0147)	0.0517a (0.0137)	-0.0480a (0.0173)	-0.0042 (0.0266)
Primary Education_1	-0.0019 (0.0012)	-0.0025c (0.0014)	-0.0001 (0.0006)	-0.0002 (0.0005)	0.0006 (0.0015)	-0.0005 (0.0010)
Democratic Freedom_1	-0.0773b (0.0367)	-0.0225 (0.0493)	-0.1206a (0.0400)	-0.0933a (0.0231)	-0.1002b (0.0386)	0.0044 (0.0530)
Trade Openness_1	-0.0011a (0.0003)	-0.0011a (0.0003)	-0.00006 (0.0002)	0.0003 (0.0002)	-0.0001 (0.0003)	-0.0017a (0.0005)
ln Natural Resources_1	0.0191b (0.0080)	0.0262b (0.0121)	0.0039 (0.0063)	-0.0071 (0.0066)	-0.0216b (0.0088)	0.0418a (0.0118)
Number of Observations	990	990	990	990	990	990
R-squared	0.201	0.2159	0.0799	0.1643	0.2786	0.2535

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. DIC: Deaths from Internal Conflict, ICF: Internal Conflicts Fought, MEXPEN: Military Expenditure, ASP: Armed Services Personnel, UNPKF: UN Peace Keeping Funding, NHW: Nuclear & Heavy Weapons.

Appendix A16

Effect of Determinants of Peace on Rescaled Sub-Components of GPI (POLS Cluster)

	WEXPRT (19')	DP (20')	NCR (21')	ECF (22')	DEC (23')
ln GDPC_1	0.0765a	0.0092	-0.0432b	0.0240	0.0034
	(0.0219)	(0.0151)	(0.0211)	(0.0235)	(0.0067)
Primary Education_1	0.0001	-0.0008	-0.0020c	-0.0010	-0.0004
	(0.0007)	(0.0010)	(0.0011)	(0.0011)	(0.0003)
Democratic Freedom_1	0.0050	-0.0357	-0.0992c	0.1495b	0.0223
	(0.0451)	(0.0311)	(0.0502)	(0.0667)	(0.0136)
Trade Openness_1	-0.0006	-0.0003c	-0.0003	0.0001	-0.0004b
	(0.0004)	(0.0002)	(0.0003)	(0.0005)	(0.0001)
ln Natural Resources_1	0.0033	-0.0134	0.0017	0.0046	0.0036
	(0.0091)	(0.0085)	(0.0096)	(0.0103)	(0.0026)
Number of Observations	990	990	990	990	990
R-squared	0.2247	0.0484	0.1918	0.1155	0.1223

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. WEXPRT: Weapons Exports, DP: Displaced People, NCR: Neighbouring Countries Relations, ECF: External Conflicts Fought, DEC: Deaths from External Conflict.

Appendix A17

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (GLM)

	POC (1r")	Marginal Effect	SOP (2r")	Marginal Effect	HOM (3r")	Marginal Effect
ln GDPC_1	-0.2107a	-0.0526a	0.2207a	0.0536a	-0.2337b	-0.0570b
	(0.0715)	(0.0178)	(0.0788)	(0.0192)	(0.0969)	(0.0236)
Primary Education_1	0.0003	0.00008	-0.0063	-0.0015	-0.0039	-0.0009
	(0.0054)	(0.0013)	(0.0055)	(0.0013)	(0.0086)	(0.0021)
Democratic Freedom_1	-0.2540	-0.0634	-0.4426b	-0.1068b	-0.2296	-0.0558
	(0.1639)	(0.0408)	(0.1759)	(0.0422)	(0.2722)	(0.066)
Trade Openness_1	-0.0039b	-0.0009b	0.0020	0.0004	-0.0032	-0.0008
	(0.0015)	(0.0003)	(0.0015)	(0.0003)	(0.0024)	(0.0005)
ln Natural Resources_1	0.0187	0.0046	-0.0585	-0.0142	-0.0043	-0.0010
	(0.0342)	(0.0085)	(0.0409)	(0.0099)	(0.0461)	(0.0112)
Number of Observations	990	990	990	990	990	990

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. POC: Perceptions of Criminality, SOP: Security Officers & Police, HOM: Homicide.

Appendix A18

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (GLM)

	INC (4")	Marginal Effect	ATW (5")	Marginal Effect	IOIC (6")	Marginal Effect
ln GDPC_1	0.0867	0.0180	-0.3877a	-0.0968a	-0.4635a	-0.0874a
	(0.0823)	(0.0171)	(0.0741)	(0.0185)	(0.1104)	(0.0201)
Primary Education_1	0.0146b	0.0030b	-0.0093c	-0.0023c	-0.0101c	-0.0019c
	(0.0071)	(0.0015)	(0.0056)	(0.0014)	(0.0060)	(0.0011)
Democratic Freedom_1	0.0928	0.0192	-0.3191c	-0.0795c	-0.8172a	-0.1509a
	(0.2093)	(0.0434)	(0.1764)	(0.0437)	(0.2577)	(0.0459)
Trade Openness_1	0.0022	0.0004	-0.0057a	-0.0014a	-0.0055c	-0.0010c
	(0.0020)	(0.0004)	(0.0020)	(0.0005)	(0.0029)	(0.0005)
ln Natural Resources_1	0.0270	0.0056	0.0060	0.0015	0.0633	0.0119
	(0.0399)	(0.0083)	(0.0394)	(0.0098)	(0.0461)	(0.0085)
Number of Observations	990	990	990	990	990	990

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. INC: Incarceration, ATW: Access to Weapons, IOIC: Intensity of Internal Conflict.

Appendix A19

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (GLM)

	VD (7")	Marginal Effect	VC (8")	Marginal Effect	POLI (9")	Marginal Effect
ln GDPC_1	-0.4714a (0.0796)	-0.1160a (0.0195)	-0.4665a (0.0854)	-0.1127a (0.0207)	-0.3534a (0.0717)	-0.0725a (0.0150)
Primary Education_1	-0.0054 (0.0043)	-0.0013 (0.0010)	0.0030 (0.0061)	0.0007 (0.0015)	-0.0064c (0.0036)	-0.0013c (0.0007)
Democratic Freedom_1	-0.2422 (0.1480)	-0.0594 (0.0362)	0.0422 (0.1912)	0.0102 (0.0462)	-1.2013a (0.1968)	-0.2382a (0.0339)
Trade Openness_1	-0.0015 (0.0016)	-0.0003 (0.0004)	-0.0022 (0.0020)	-0.0005 (0.0004)	-0.0005 (0.0015)	-0.0001 (0.0003)
ln Natural Resources_1	0.0908a (0.0334)	0.0223a (0.0082)	0.0614 (0.0395)	0.0148 (0.0095)	0.0239 (0.0308)	0.0049 (0.0063)
Number of Observations	990	990	990	990	990	990

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. VD: Violent Demonstrations, VC: Violent Crime, POLI: Political Instability.

Appendix A20

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (GLM)

	POLT (10")	Marginal Effect	WI (11")	Marginal Effect	TI (12")	Marginal Effect
ln GDPC_1	-0.4781a (0.0775)	-0.1063a (0.0170)	0.8614a (0.1597)	0.0634a (0.0127)	-0.2852b (0.1259)	-0.0388b (0.0165)
Primary Education_1	-0.0072 (0.0060)	-0.0016 (0.0013)	-0.0118 (0.0126)	-0.0008 (0.0009)	-0.0106c (0.0058)	-0.0014c (0.0008)
Democratic Freedom_1	-0.8272a (0.1510)	-0.1802a (0.0318)	-0.7269b (0.3424)	-0.0527b (0.0242)	-0.6009b (0.2712)	-0.0806b (0.0371)
Trade Openness_1	-0.0083a (0.0018)	-0.0018a (0.0004)	0.0027 (0.0030)	0.0002 (0.0002)	-0.0155a (0.0035)	-0.0021a (0.0004)
ln Natural Resources_1	0.1477a (0.0371)	0.0328a (0.0081)	0.0525 (0.0789)	0.0038 (0.0057)	0.2045a (0.0613)	0.0278a (0.0079)
Number of Observations	990	990	990	990	990	990

Notes: Standard errors are reported in parentheses. In this table, "a", "b", and "c" indicate statistical significance at 1%, 5%, and 10% level, respectively. POLT: Political Terror, WI: Weapons Imports, TI: Terrorism Impact.

Appendix A21

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (GLM)

	DIC (13")	Marginal Effect	ICF (14")	Marginal Effect	MEXPEN (15")	Marginal Effect
ln GDPC_1	-0.505c	-0.0132c	-0.8610b	-0.0324b	0.1358	0.0234
	(0.2869)	(0.0085)	(0.3378)	(0.0116)	(0.0840)	(0.0149)
Primary Education_1	-0.0151	-0.0003	-0.0157	-0.0005	-0.0010	-0.0001
	(0.0105)	(0.0003)	(0.0112)	(0.0004)	(0.0040)	(0.0007)
Democratic Freedom_1	-1.790b	-0.0488b	-0.6088	-0.0226	-0.6965a	-0.1182a
	(0.8399)	(0.0278)	(0.6444)	(0.0244)	(0.2189)	(0.0382)
Trade Openness_1	-0.030a	-0.0007a	-0.0266a	-0.0010a	-0.0004	-0.00007
	(0.0096)	(0.0002)	(0.0086)	(0.0003)	(0.0015)	(0.0002)
ln Natural Resources_1	0.2985b	0.0078b	0.3429b	0.0129b	0.0208	0.0035
	(0.1315)	(0.0041)	(0.1428)	(0.0051)	(0.0374)	(0.0064)
Number of Observations	990	990	990	990	990	990

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. DIC: Deaths from Internal Conflict, ICF: Internal Conflicts Fought, MEXPEN: Military Expenditure.

Appendix A22

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (GLM)

	ASP (16")	Marginal Effect	UNPKF (17")	Marginal Effect	NHW (18")	Marginal Effect
ln GDPC_1	0.4409a	0.0521a	-0.2728a	-0.0532a	-0.1731	-0.0119
	(0.1095)	(0.0143)	(0.0949)	(0.0184)	(0.2447)	(0.0157)
Primary Education_1	-0.0024	-0.0002	0.0029	0.0005	-0.0090	-0.0006
	(0.0056)	(0.0006)	(0.0071)	(0.0014)	(0.0145)	(0.0010)
Democratic Freedom_1	-0.764a	-0.0890a	-0.5301b	-0.1020b	0.2165	0.0150
	(0.1963)	(0.0221)	(0.2089)	(0.0406)	(0.4216)	(0.0289)
Trade Openness_1	0.0018	0.0002	-0.0003	-0.00005	-0.0171a	-0.0011a
	(0.0016)	(0.0001)	(0.0024)	(0.0004)	(0.0062)	(0.0005)
ln Natural Resources_1	-0.0668	-0.0079	-0.0970b	-0.0189b	0.5569a	0.0382a
	(0.0545)	(0.0067)	(0.0436)	(0.0085)	(0.1729)	(0.0077)
Number of Observations	990	990	990	990	990	990

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. ASP: Armed Services Personnel, UNPKF: UN Peace Keeping Funding, NHW: Nuclear & Heavy Weapons.

Appendix A23

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (GLM)

	WEXPRT (19")	Marginal Effect	DP (20")	Marginal Effect	NCR (21")	Marginal Effect
ln GDPC_1	1.053a	0.0336a	0.1317	0.0062	-0.2160b	-0.0440b
	(0.3077)	(0.0204)	(0.2726)	(0.0133)	(0.1072)	(0.0216)
Primary Education_1	0.0150	0.0004	-0.0092	-0.0004	-0.0090c	-0.0018c
	(0.0278)	(0.0009)	(0.0136)	(0.0006)	(0.0050)	(0.0010)
Democratic Freedom_1	0.2817	0.0091	-0.6386	-0.0297	-0.5070c	-0.1021c
	(0.7634)	(0.0219)	(0.6952)	(0.0313)	(0.2627)	(0.051)
Trade Openness_1	-0.0024	-0.00007	-0.0072	-0.0003	-0.0014	-0.0002
	(0.0045)	(0.0001)	(0.0063)	(0.0003)	(0.0017)	(0.0003)
ln Natural Resources_1	0.2049	0.0065	-0.1836	-0.0086	0.0127	0.0025
	(0.2392)	(0.0061)	(0.1132)	(0.0061)	(0.0461)	(0.0094)
Number of Observations	990	990	990	990	990	990

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. WEXPRT: Weapons Exports, DP: Displaced People, NCR: Neighbouring Countries Relations.

Appendix A24

Effects of Determinants of Peace on Rescaled Sub-Components of GPI (GLM)

	ECF (22")	Marginal Effect	DEC (23")	Marginal Effect
ln GDPC_1	0.1525 (0.1521)	0.0222 (0.0225)	0.1035 (0.2450)	0.0015 (0.0036)
Primary Education_1	-0.0116 (0.0121)	-0.0017 (0.0017)	-0.0284c (0.0152)	-0.0004c (0.0002)
Democratic Freedom_1	0.9756b (0.4315)	0.1464b (0.0645)	0.9803c (0.5519)	0.0157c (0.0092)
Trade Openness_1	0.0012 (0.0031)	0.0001 (0.0004)	-0.0253a (0.0078)	-0.0003a (0.0001)
ln Natural Resources_1	0.0509 (0.0816)	0.0074 (0.0116)	0.1355 (0.1221)	0.0020 (0.0016)
Number of Observations	990	990	990	990

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. ECF: External Conflicts Fought, DEC: Deaths from External Conflict.

Appendix A25

Effects of Determinants of Peace on Rescaled GPI (BE, POLS Cluster, & GLM)

Dependent Variable: Rescaled GPI

	BE (1)	POLS Cluster (2)	GLM (3)	Marginal Effect
ln GDPC_1	-0.0208b (0.0094)	-0.0136 (0.0108)	-0.0630 (0.0529)	-0.0117 (0.0098)
Primary Education_1	-0.0014a (0.0005)	-0.0009c (0.0005)	-0.0044c (0.0024)	-0.0008c (0.0004)
Democratic Freedom_1	0.0509 (0.0522)	0.0724 (0.0449)	0.5200b (0.2481)	0.0975b (0.0465)
Trade Openness_1	-0.0006a (0.0001)	-0.0006a (0.0001)	-0.0037a (0.0008)	-0.0007a (0.0001)
ln Natural Resources_1	0.0067b (0.0032)	0.0052 (0.0037)	0.0266 (0.0192)	0.0049 (0.0035)
ln GDPC_1 X Democratic Freedom_1	-0.0268b (0.0117)	-0.0321a (0.0109)	-0.2069a (0.0601)	-0.0384a (0.0110)
Number of Observations	1,089	1,089	1,089	1,089
R-squared	0.4603	0.465		

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Appendix A26

Effects of Determinants of Peace on Rescaled GPI (BE, POLS Cluster, & GLM)

Dependent Variable: Rescaled GPI

	BE (1)	POLS Cluster (2)	GLM (3)	Marginal Effect
ln GDPC_1	-0.0229b (0.0108)	-0.0149 (0.0117)	-0.0713 (0.0646)	-0.0132 (0.012)
Primary Education_1	-0.0014a (0.0005)	-0.0009c (0.0005)	-0.0042c (0.0025)	-0.0007c (0.0004)
Democratic Freedom_1	-0.0651a (0.0179)	-0.0673a (0.0150)	-0.3676a (0.0815)	-0.0679a (0.0150)
Trade Openness_1	-0.0005a (0.0001)	-0.0006a (0.0001)	-0.0037a (0.0009)	-0.0007a (0.0001)
ln Natural Resources_1	0.0155b (0.0060)	0.0173b (0.0072)	0.0941b (0.0369)	0.0175b (0.0068)
ln GDPC_1 X ln Natural Resources_1	-0.0023 (0.0016)	-0.0032c (0.0017)	-0.0184c (0.0099)	-0.0034c (0.0018)
Number of Observations	1,089	1,089	1,089	1,089
R-squared	0.4432	0.4477		

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Appendix A27

Effects of Determinants of Peace on Rescaled GPI (BE, POLS Cluster, & GLM)

Dependent Variable: Rescaled GPI

	BE (1)	POLS Cluster (2)	GLM (3)	Marginal Effect
ln GDPC_1	-0.0325a (0.0076)	-0.0290a (0.0084)	-0.1523a (0.0454)	-0.0284a (0.0083)
Primary Education_1	-0.0014a (0.0005)	-0.0009c (0.0005)	-0.0044c (0.0026)	-0.0008c (0.0005)
Democratic Freedom_1	-0.0300 (0.0282)	-0.0253 (0.0243)	-0.1249 (0.1334)	-0.0232 (0.0247)
Trade Openness_1	-0.0006a (0.0001)	-0.00063a (0.0001)	-0.0036a (0.0009)	-0.0006a (0.0001)
ln Natural Resources_1	0.0100a (0.0034)	0.0098b (0.0043)	0.0513b (0.0217)	0.0095b (0.0040)
Democratic Freedom_1 X ln Natural Resources_1	-0.0083 (0.0058)	-0.0093c (0.0051)	-0.0552c (0.0288)	-0.0102c (0.0053)
Number of Observations	1,089	1,089	1,089	1,089
R-squared	0.4407	0.4438		

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively.

Appendix A28

Regional Analysis (POLS Cluster)

Dependent Variable: GPI

	(1')	(2')	(3')	(4')
ln GDPC_1	-0.0928b (0.0413)			
Primary Education_1	-0.0030 (0.0021)	-0.0032 (0.0020)	-0.0032 (0.0020)	
Democratic Freedom_1	-0.2018a (0.0717)	-0.3082a (0.0820)		
Trade Openness_1	-0.0014b (0.0006)	-0.0019a (0.0005)	-0.0020a (0.0006)	
ln Natural Resources_1	0.0283c (0.0148)	0.0072 (0.0116)	-0.0031 (0.0132)	
EU	-0.2350b (0.1021)	-0.3075a (0.0914)	-0.4911a (0.0676)	-0.6131a (0.0570)
GCC	-0.2313c (0.1374)	-0.4020a (0.1266)	-0.2588c (0.1353)	-0.3399a (0.1077)
EFTA	-0.4487a (0.1451)	-0.6166a (0.1078)	-0.7996a (0.0947)	-0.8988a (0.0850)
ASEAN	-0.1831 (0.1378)	-0.1626 (0.1332)	-0.0411 (0.1293)	-0.2228c (0.1203)
SCO	0.1161 (0.1665)	0.0956 (0.1629)	0.2262 (0.1695)	0.1341 (0.1313)
NAFTA	-0.0212 (0.2106)	-0.1173 (0.2034)	-0.1846 (0.2373)	-0.2204 (0.2510)
MERCOSUR	-0.1225 (0.0897)	-0.1507 (0.0970)	-0.2826a (0.0964)	-0.3221a (0.0901)
SADC	-0.2113b (0.1026)	-0.1491 (0.1146)	-0.1588 (0.1158)	-0.2179b (0.1027)
Number of Observations	1,089	1,089	1,089	1,574
R-squared	0.4939	0.467	0.397	0.3104

Notes: Standard errors are reported in parentheses. In this table, "a", "b", and "c" indicate statistical significance at 1%, 5%, and 10% level, respectively. ASEAN: Association of South East Asian Nations, EU: European Union, EFTA: European Free Trade Association, GCC: Gulf Cooperation Council, MERCOSUR: Mercado Común del Sur, NAFTA: North American Free Trade Agreement, SADC: Southern African Development Community, SCO: Shanghai Cooperation Organisation.

Appendix A29

Regional Analysis (BE)

Dependent Variable: Rescaled GPI

	(1)	(2)	(3)	(4)
ln GDPC_1	-0.0266a (0.0090)			
Primary Education_1	-0.0013b (0.0005)	-0.0014a (0.0005)	-0.0015a (0.0005)	
Democratic Freedom_1	-0.0519b (0.0209)	-0.0811a (0.0190)		
Trade Openness_1	-0.0004b (0.0001)	-0.0005a (0.0001)	-0.0006a (0.0001)	
ln Natural Resources_1	0.0084b (0.0033)	0.0026 (0.0028)	-0.0001 (0.0029)	
EU	-0.0549b (0.0241)	-0.0755a (0.0238)	-0.1259a (0.0219)	-0.1549a (0.0205)
GCC	-0.0587 (0.0425)	-0.1069a (0.0405)	-0.0712c (0.0421)	-0.0866b (0.0390)
EFTA	-0.1107b (0.0508)	-0.1600a (0.0494)	-0.2110a (0.0511)	-0.2279a (0.0543)
ASEAN	-0.0419 (0.0324)	-0.0342 (0.0332)	-0.0038 (0.0346)	-0.0578c (0.0323)
SCO	0.0309 (0.0417)	0.0258 (0.0429)	0.0578 (0.0450)	0.0311 (0.0390)
NAFTA	-0.0158 (0.0490)	-0.0463 (0.0493)	-0.0660 (0.0523)	-0.0567 (0.0543)
MERCOSUR	-0.0263 (0.0416)	-0.0355 (0.0427)	-0.0700 (0.0446)	-0.0821c (0.0473)
SADC	-0.0392 (0.0246)	-0.0237 (0.0248)	-0.0260 (0.0264)	-0.0556b (0.0267)
Number of Observations	1,089	1,089	1,089	1,574
R-squared	0.4889	0.4608	0.3899	0.3103

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. ASEAN: Association of South East Asian Nations, EU: European Union, EFTA: European Free Trade Association, GCC: Gulf Cooperation Council, MERCOSUR: Mercado Común del Sur, NAFTA: North American Free Trade Agreement, SADC: Southern African Development Community, SCO: Shanghai Cooperation Organisation.

Appendix A30

Regional Analysis (POLS Cluster)

Dependent Variable: Rescaled GPI

	(1')	(2')	(3')	(4')
ln GDPC_1	-0.0232b (0.0103)			
Primary Education_1	-0.0007 (0.0005)	-0.0008 (0.0005)	-0.0008 (0.0005)	
Democratic Freedom_1	-0.0504a (0.0179)	-0.0770a (0.0205)		
Trade Openness_1	-0.0003b (0.0001)	-0.0004a (0.0001)	-0.0005a (0.0001)	
ln Natural Resources_1	0.0070c (0.0037)	0.0018 (0.0029)	-0.0007 (0.0033)	
EU	-0.0587b (0.0255)	-0.0768a (0.0228)	-0.1227a (0.0169)	-0.1532a (0.0142)
GCC	-0.0578c (0.0343)	-0.1005a (0.0316)	-0.0647c (0.0338)	-0.0849a (0.0269)
EFTA	-0.1121a (0.0362)	-0.1541a (0.0269)	-0.1999a (0.0236)	-0.2247a (0.0212)
ASEAN	-0.0457 (0.0344)	-0.0406 (0.0333)	-0.0102 (0.0323)	-0.0557c (0.0300)
SCO	0.0290 (0.0416)	0.0239 (0.0407)	0.0565 (0.0423)	0.0335 (0.0328)
NAFTA	-0.0053 (0.0526)	-0.0293 (0.0508)	-0.0461 (0.0593)	-0.0551 (0.0627)
MERCOSUR	-0.0306 (0.0224)	-0.0376 (0.0242)	-0.0706a (0.0241)	-0.0805a (0.0225)
SADC	-0.0528b (0.0256)	-0.0372 (0.0286)	-0.0397 (0.0289)	-0.0544b (0.0256)
Number of Observations	1,089	1,089	1,089	1,574
R-squared	0.4939	0.467	0.397	0.3104

Notes: Standard errors are reported in parentheses. In this table, "a", "b", and "c" indicate statistical significance at 1%, 5%, and 10% level, respectively. ASEAN: Association of South East Asian Nations, EU: European Union, EFTA: European Free Trade Association, GCC: Gulf Cooperation Council, MERCOSUR: Mercado Común del Sur, NAFTA: North American Free Trade Agreement, SADC: Southern African Development Community, SCO: Shanghai Cooperation Organisation.

Appendix A31

Regional Analysis (GLM)

Dependent Variable: Rescaled GPI

	(1")	Marginal Effect	(2")	Marginal Effect
ln GDPC_1	-0.1214b (0.0548)	-0.0225b (0.0100)		
Primary Education_1	-0.0035 (0.0025)	-0.0006 (0.0004)	-0.0039 (0.0024)	-0.0007 (0.0004)
Democratic Freedom_1	-0.2523a (0.0915)	-0.0465a (0.0167)	-0.3867a (0.1083)	-0.0712a (0.0194)
Trade Openness_1	-0.0021b (0.0008)	-0.0003b (0.0001)	-0.0026a (0.0008)	-0.0005a (0.0001)
ln Natural Resources_1	0.0378b (0.0192)	0.0070b (0.0035)	0.0097 (0.0144)	0.0018 (0.0026)
EU	-0.3815a (0.1443)	-0.0668a (0.0241)	-0.4789a (0.1302)	-0.0827a (0.0211)
GCC	-0.2891 (0.1890)	-0.0499 (0.0304)	-0.5087a (0.1781)	-0.0831a (0.0251)
EFTA	-0.9380a (0.2631)	-0.1347a (0.0283)	-1.1608a (0.289)	-0.1563a (0.0210)
ASEAN	-0.2183 (0.1788)	-0.0384 (0.0297)	-0.1859 (0.1719)	-0.0330 (0.0291)
SCO	0.1254 (0.1832)	0.0239 (0.0359)	0.0998 (0.1787)	0.0189 (0.0347)
NAFTA	-0.0250 (0.2686)	-0.0046 (0.0492)	-0.1508 (0.2582)	-0.0270 (0.0444)
MERCOSUR	-0.1652 (0.1169)	-0.0294 (0.0201)	-0.2021 (0.1264)	-0.0357 (0.0214)
SADC	-0.2781b (0.1351)	-0.0485b (0.0219)	-0.1880 (0.1503)	-0.0335 (0.0256)
Number of Observations	1,089	1,089	1,089	1,089

Notes: Standard errors are reported in parentheses. In this table, “a”, “b”, and “c” indicate statistical significance at 1%, 5%, and 10% level, respectively. ASEAN: Association of South East Asian Nations, EU: European Union, EFTA: European Free Trade Association, GCC: Gulf Cooperation Council, MERCOSUR: Mercado Común del Sur, NAFTA: North American Free Trade Agreement, SADC: Southern African Development Community, SCO: Shanghai Cooperation Organisation.

Appendix A32

Regional Analysis (GLM)

Dependent Variable: Rescaled GPI

	(3")	Marginal Effect	(4'')	Marginal Effect
ln GDPC_1				
Primary Education_1	-0.0040 (0.0025)	-0.0007 (0.0004)		
Democratic Freedom_1				
Trade Openness_1	-0.0029a (0.0009)	-0.0005a (0.0001)		
ln Natural Resources_1	-0.0039 (0.0163)	-0.0007 (0.0030)		
EU	-0.7136a (0.0965)	-0.1190a (0.0147)	-0.8721a (0.0850)	-0.1457a (0.0127)
GCC	-0.3327c (0.1884)	-0.0570c (0.0296)	-0.4327a (0.1482)	-0.0761a (0.0234)
EFTA	-1.3948a (0.2218)	-0.1758a (0.0173)	-1.5428a (0.2304)	-0.1971a (0.0170)
ASEAN	-0.0382 (0.0670)	-0.0070 (0.0305)	-0.2735c (0.1546)	-0.0501c (0.0266)
SCO	0.2601 (0.1873)	0.0513 (0.0388)	0.1516 (0.1453)	0.0304 (0.0300)
NAFTA	-0.2349 (0.3003)	-0.0412 (0.0495)	-0.2704 (0.3254)	-0.0493 (0.0553)
MERCOSUR	-0.3703a (0.1290)	-0.0627a (0.0200)	-0.4076a (0.1211)	-0.0719a (0.0195)
SADC	-0.1970 (0.1508)	-0.0351 (0.0256)	-0.2671b (0.1309)	-0.0492b (0.0228)
Number of Observations	1,089	1,089	1,574	1,574

Notes: Standard errors are reported in parentheses. In this table, "a", "b", and "c" indicate statistical significance at 1%, 5%, and 10% level, respectively. ASEAN: Association of South East Asian Nations, EU: European Union, EFTA: European Free Trade Association, GCC: Gulf Cooperation Council, MERCOSUR: Mercado Común del Sur, NAFTA: North American Free Trade Agreement, SADC: Southern African Development Community, SCO: Shanghai Cooperation Organisation.