

Trade, Interdependence and its Effect on Interstate Conflict: The Case of the East African Region

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The effect of dyadic trade on reducing disputes/conflicts has been dealt with at some length in the literature. Most of the studies assess the effect of trade on militarised interstate disputes from a global perspective. This article explores the effect of trade and economic interdependence on the likelihood of interstate conflicts in the countries of the East African region: Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, Tanzania and Uganda. To examine the causal effect, binary logistic regression was used by employing Correlates of War data sets and various issues of IMF Yearbook. The study finds that there is a reciprocal relationship between trade, economic openness and interstate conflict in the region. Economic openness across the region significantly reduces the onset of conflicts that could arise in East African countries. Trade-induced interdependence significantly decreases the likelihood of conflict in the region.

1. Introduction

The literature on the effect of trade on conflict/cooperation, or the effect of trade on peace between countries, shows that with regard to theory, there is a difference of opinion among Marxists, realists and liberals. Most of the empirical studies deal with the dyadic approach to examining the effect of trade on peace. As the findings of the vast majority of empirical studies show, integration through trade inhibits conflict between countries. In some countries policy-makers use this assertion in their dealings with issues of peace or conflict. As Goenner (2011)² indicates, Susan Schwab (2008:6), US representative, claimed that trade has strengthened peace in the Central American region.

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² Goenner states that the US trade representative Susan Schwab, in the President's 2008 Trade Policy Agenda, noted that the peace in the Central American region has been strengthened due to the favourable impact of the growth of intra-regional trade exhibited within the region. This implies that trade is seen by policy-makers as a positive factor that directly affects the peace conditions in a region.

Peace is one of the decisive factors for a country's economic growth and development, which is evidenced by the vast amount of research done on the relationship between economic interdependence and interstate conflict. Research on trade and conflict, which focuses on conflict resolution, cooperation and peace-building, is becoming a perennial topic of interest in academia. In the past few years, a significantly large number of empirical studies have been conducted with due emphasis on interstate and intraregional relations and conflict/cooperation.

Several studies on the issue of interdependence explore the cause-and-effect relationships between determinants and bilateral trade within a bloc. Various economic blocs are established in our world and various studies are undertaken to examine their validities. Hassan (2001) adopted a gravity model to examine the validity of the South Asian Association for Regional Cooperation (SAARC). The study disclosed the existence of a potential benefit that must be exploited through cooperation. To realise the potential benefit for SAARC countries, it is suggested that they liberalise trade by removing trade and non-trade barriers.

Hossain and Naser, (2008) analysed the effectiveness of trade and regional integration in the Gulf Cooperation Council (GCC). They found that the key success factor for GCC's regional integration is attributed to the execution of continuous evaluation and analysis of the progress at state level. The GCC has been examining regularly proposals that should be executed collectively and analysing thoroughly issues pertaining to GCC. They revealed that all the six member countries of GCC have exhibited almost the same level of development. Furthermore, an increasing trend is observed in intra-regional trade (imports and exports) and export of high-tech manufactured goods after the implementation of customs union. Similarly, a dramatic rising trend is observed in joint ventures, total capital investment as well as the amount of capital investment per single project after the implementation of customs union. The study revealed that FDI has increased on GCC because of an increased domestic market and stable economic growth success it achieved through the regional integration.

Ghani (2011) examined the impact of trade liberalization on the economic performance of OIC countries. The study revealed that, while trade liberalization has favourable effect on the GDP per capita of the

region in the medium term, it does not have significant effect on import and export of the region. After liberalization, it is revealed that no improvement is shown on the ratio of import, export and trade to GDP in OIC region.

It is stated that sub-Saharan Africa is one the most food-insecure regions in the world. This is attributed to the reliance of the region's 85 percent of agriculture on rain. Furthermore, 80 percent of the region's consumption is from the domestic production. Food insecurity has emerged to be a cause for political instability and civil strife in Africa. Food crisis occurred in Africa at the end of 2010 followed by a hiking price of food by 40 percent from January 2010 to February 2011. The food crisis has been associated with instabilities that food riots began in Algeria and in Tunisia in 2011, leading to removal of the regime of Ben Ali in Tunisia followed by Mubark's regime in Egypt. It is stated that as Africa's rhetoric of violent government changes, ethnic conflicts, religious crisis, civil wars become barriers for continuity of policies and their implementation. In addition to these barriers, the problems of corruption have fueled food insecurity in Africa, (Kanayo, 2012).

A significant number of authors contend that integration through trade will have a pacifying effect on the integrating nations, and argue that trade ties serve as an incentive to settle disputes before they grow into conflict/violence (Angell 1913; Doyle 1997; Mitrany 1966; Nye 1971; Russett and Oneal 2001). Other studies take the classic liberal view that foreign trade fosters mutual interdependence among national governments, manifested through economic ties; aspirations to wealth gain in the present and future; and a sense of oneness among the communities of the nations integrated (Deutsch 1957; Gartzke 1998; Haas 1960; Hegre et al. 2010; Lu and Thies 2010; Oneal et al. 2003; Polachek 1980; Rosecrance 1986; Russett et al. 1998; Russett and Oneal 2001). Other scholars are more attuned to realist international relations theory, and argue that there is a positive relationship between trade and conflict (Barbieri, 1996, 2002).

A second group of authors hold views contrary to those of the classic liberals. They contend that trade becomes a cause of conflict, harking back to neo-Marxism and Waltz's claims for neo-realism (Choucri and North 1989; Mearsheimer 1992). A third group of authors' views are based on Morgenthau's classical realism. They assert that as trade is not

an important factor, it is irrelevant to consider it in the sphere of causes of conflict. Rather, the basic causes of interstate conflict are primarily attributed to political forces. This view is found in the discussions by Gilpin (1987), Jervis (2002) and Levy (2002), and recent empirical work by Goenner (2004) and Gelpi and Grieco (2008), who are inclined towards this view in their conclusions. Other authors who argue that political relations often shape international trade ties with particular partners include Pollins (1989), Mansfield et al. (2000) and Long (2008).

Still other empirical studies on the issue of trade and conflict reveal that trade has a mixed consequences upon conflict. Gasiorowski (1986) finds that while the interdependence between countries is costly it increases conflict, and reduces conflict when interdependence becomes beneficial that results in cooperation it reduces conflict. Press-Barnathan (2006), asserts that it is the economic and political factors that play significant roles on making peace depending the importance of the issue for the particular case between the countries. Holsti (1986), Reuveny and Kang (1996), Morrow (1999), Bearce and Fisher (2002), and MacDonald (2007) view that conflict is indifferent to trade.

Other studies have attempted to examine the effect of economic integration on economic progress. Hassan et al. (2010) agree that bringing about economic integration among developing countries by removing tariff and non-tariff barriers would be gainful. Strategic regional economic integration serves as a foundation for vertical and horizontal linkages that benefit developing countries.

Still studies have dealt with the issue of structural transformation in developing countries related to their global competitiveness scenario. Studies posit that , unless developing countries take the initiative to structurally transform towards technology-supported production systems, they will lack competitiveness in the world market; the technological and industrial polarity between developing and developed countries, as well as among developing countries, will continue to widen in the future (Hassan and Islam, 2001).

Despite the challenges, Africa is endowed with enormous arable land which is the largest in the world and has significantly high prospect to reverse the prevailing food insecurity through “green revolution”. To

sustain food security in Africa and maintain peace and stability in Africa, it is suggested that enthronement of good governance; integration of land conservation plans, water management, biodiversity, and pollution controlling plans; restricting institutions that suits the realization of food security, such that encourages agricultural research and development, provision of agricultural extension services; formation and strengthening partnerships among African countries, emerging countries (China, Brazil and India), and with development partners; partnerships with international organizations to promote and strengthen the enthronement of democratic principles in Africa (Kanayo,2012).

Chazi et al. (2014) posit that Africa has been suffering from serious lack of basic infrastructure due to shortages of financial resource to develop it. Even though Africa is endowed with huge resources, which remain unexploited for centuries, many Africa countries do not have adequate infrastructure. The study disclosed that no African country is rated as AAA, which precludes it from getting debt as well as equity finance from international investors. They suggested that Islamic bonds stand out to be a panacea for the acute financial problem Africa is ever facing. They indicated that there is enormous surplus of finance in the Middle East that has been increasing because of continuous price rises, which can be utilized by African countries for their infrastructure development purposes. They asserted that Sukuku (bond certificates) is able to serve as a catalyst that enhances the infrastructure development endeavours of Africa. The literature highlighted above seems assumed the conflict or peace situation of the specified regions remaining constant. However, peace is crucial issue that should not be overlooked, which this study attempts to examine at some length as presented below.

This study examines the effect of trade and economic integration on conflict. Most of the studies used deal with the relationship between trade and conflict in a dyadic form in a global context. Moreover, the international relations literature empirically examines the relationship between trade and conflict without clearly segregating the diverse economies. It can be seen that there is some sort of aggregation of advanced and developing economies. But the factors that allow cooperation between two countries can differ, depending on the development status of the economies. In other words, the previous studies were conducted under the economic condition of heterogeneity.

Hence, this study is intended to fill a gap by focusing on a region that is considered homogenous.³

Given this background, the study attempts to examine the effect of trade integration on interstate conflict in East Africa, using a bilateral trade relationship approach. The overall impact of trade integration on interstate conflict is likely to depend not only on the dynamism of bilateral trade interdependence but also on global trade integration.⁴ Conceptually, this is assumed to be a limitation of the study because it focuses on bilateral relationships with a focus on the East African region. The countries included in this study are those categorised as East African countries in most of the literature: Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, Tanzania and Uganda.

With regard to the causes of and relationship between trade integration and interstate conflict or cooperation, the objective realities or characteristics of dyads influence vary from dyad to dyad. This can be augmented by the fact that, under the conditions of *ceteris paribus*, neighbouring countries are more likely to integrate through trade and be exposed to interstate conflicts than geographically distant countries. In fact, this is more vividly exhibited in developing countries; for example, the wars between Ethiopia and Eritrea, Ethiopia and Somalia and Kenya and Somalia. Further trade integration has a more favourable effect on those countries that are closer geographically. Countries that are

³ World economies are classified as homogeneous and heterogeneous. "Heterogeneous" refers to a collection of economies that have different economic statuses. This includes the world economic setup of developing and advanced countries. It can be also interpreted as an aggregation of low-income, middle-income and high-income countries under one umbrella. In contrast, the term "homogenous" refers to economies that have similar economic status. In fact, even within the homogeneous group, countries' economic conditions could differ, but they fall into one broad group. In this case we can have the category of developing countries as one homogenous set of economies and developed countries as another.

⁴ A study by Lee and Pyun (2009) titled "Does Trade Integration Contribute to Peace?" explains that there are at least two significant concerns to be addressed. Firstly, one should distinguish global trade integration from bilateral trade interdependence. The authors assert that if integration through trade results in a uniform increase of trade interdependence in all bilaterally trading countries, it is not important to make a distinction between bilateral and global trade integration. Nevertheless, despite the lower level of trade integration in some of the trading countries, stronger and deeper integration into the global market can be achieved. Hence, interstate conflict is not affected solely by changes in dyadic interdependence of trade, but also by changes in overall world trade integration. Lee and Pyun (2009) define the phrase "global trade integration" as "trade openness", usually proxied as the ratio of total trade to GDP at the aggregate national level.

integrated through trade will strive to resolve disputes that arise in the region in their early stages, which deters them from escalating to the status of interstate military conflicts. In relative terms, trade-driven economic integration decreases the likelihood of interstate conflict more for geographically distant states than for states in close proximity. The issue of geographic proximity is beyond the scope of this study⁵.

Using a dyadic observation data set from 1950 to 2000, Lee and Pyun (2009) explored the effect of trade integration on interstate disputes that involve military action. Their empirical results reveal that both bilateral and global trade integrations have a considerable effect on promoting peace and stability between countries. Moreover, in contrast to the findings of Martin et al. (2008), there is a strong positive association between global trade openness and peace.

Given these mixed arguments on the relationship between trade and conflict/cooperation/peace, Mansfield and Pollins (2001) propose three dimensions or fronts that require attention: the theoretical basis and causal mechanisms underlying the relationship between interdependence and conflict; the conceptual definition and operational measurement of interdependence and conflict; and the boundary conditions of the effects of interdependence on conflict.

Scholars have studied the three dimensions proposed by Mansfield and Pollins (2001). Some studies were made of the first dimension, the theoretical front. In this front Morrow (1999) has developed a game theoretic model consisting of two competitor nations. The increase in trade has the power to reduce the willingness of the target nation to enter into a war. However from the initiators side the increase in trade serves as an incentive to involve into conflict and obtain better concessions using its superior bargaining power imposed on the targeted nation. This indicates the indeterminate and both cases effect of trade on conflict. In other words, when a trade is to inhibit the motivation to initiate conflict against the trade partner nation, it will have an inducing effect on the other nation to initiate conflict for the other nation. Still in this theoretical area, Gartzke et al. (2001) attempted to develop a signalling

⁵ This study tries to consider the factor of geographic distance at the specified regional level of analysis, as most of the specified countries share borders. In fact, it would have added to research on the role of trade in conflict resolution had it included the global aspect. However, owing to the study's scope, analysis is limited to the regional level.

model that demonstrates that trade may reduce violent conflict while actually increasing non-violent conflict. In addition, Hegre (2004) developed an expected utility model to show that when trade is symmetrical, it has a stronger effect on conflict reduction.

With respect to the conceptual definition, some authors such as Dorussen (2006), Rowe (1999), and Reuveny (2001). Dorussen (2006) considers conflict from the gain or loss perspective that happens between the combatant states. It is asserted that conflict is extremely remote, if a state expects no gain from the use of force. McDonald (2004) attempted to examine the effects of free trade and trade barriers separately on conflict claiming that the former has the power to remove barriers to international trade, while the latter boosts the power of the society that supports the tendency of waging war. Gartzke et al. (2001) examined questioning the vast studies that deal with trade interdependence versus conflict. Specifically, they explored the effect of capital interdependence on peace other than trade on conflict.

Furthermore, conceptual and operational issues used to be points of argument among scholars who do not split trade. Gartzke and Li (2003), and Barbieri & Peters (2003) present different operational and conceptual definitions which are not yet resolved. The arguments focus on variables that include trade openness, trade share and dependence relationship with conflict. They differently argue in their analyses as to the positive/inverse relationships between trade share, openness and conflict supported with justifications. Hegre (2005) examined the arguments of Gartzke and Li (2003), and that of Barbieri & Peters (2003) their respective stated relationships between the variables. Hegre makes a point that the discrepancy in between the two views should not be restricted to variable construction.

Moreover, other scholars have examined causal relationships by adopting different definitions for different levels of conflict. Some of those scholars, who adopted an operational definition of conflict, are Pevehouse (2006), Reuveny, (2003) and Robst et al. (2007). Pevehouse (2006) attempted to examine the effect of trade on conflict by breaking down the frequency of the degrees of hostility in to threat of force, display of force, and use of force. Robst et al. (2007) examined the effect of trade and geographic distance on conflict. This type of examination is further strengthened by Bennett and Stam (2004: 141–

144) who attempted to predict the behaviour of a state based on its internal attributes such as the level of democracy. They further examined the variation in behavioural tendencies between a state, dyad states and regions. Other scholars such as Crescenzi (2003), Bueno de Mesquita et al. (2004) and Krustev (2006), investigated whether interdependence has an effect on aggravating conflict further or increasing the duration of militarised interstate conflict, as cited in Lu and Thies (2010).

As far as the third dimension (boundary conditions of the effects of interdependence on conflict) is concerned, several studies have been conducted. Reuveny (2001) and Dorussen (1999, 2002) examined the effect of several countries' interaction on conflict. Furthermore, Robst et al. (2007) dealt with the influence of geographical distance or proximity; Benson (2005) attempted to investigate the influence of dyadic economic size; Hegre (2000) assessed the effect of dyadic development levels; and Papayoanou (1996) argues that balance of power plays significant role than mere economic integration per se in relations to conflict. Gelpi and Grieco (2008) affirmed that the belief of democratic leaders that trade boosts economic growth lets them to become averse towards initiating military conflicts than do autocratic leaders.

2. Research Design

This study investigates the impact of trade integration on conflict. In fact, the conflict equation employs several specifications. The empirical specification for this particular study to examine the effect of the relationship between trade and other variables on conflict is specified as follows:

$$Y_{ijt} = \alpha + \beta \text{Dyadic trade}_{ijt} + \gamma X_{ijt} + u_{ijt} \quad (1)$$

Different models are used to examine the role of trade integration in disputes. With respect to the dyadic trade variable, in the first model, all the variables are considered to examine the effect of trade integration and other factors in a combined form as shown below.

$$Y_{ijt} = \alpha + \beta_1 (\text{Openness}) + \beta_2 (\text{Dependence}) + \beta_3 (\text{Trade Share}) + \beta_4 (\text{Alliance}) + \beta_5 (\text{Dem}) + \beta_6 (\text{Natcap}) \quad (2)$$

To examine the change on the effect of the variables on interstate conflict, a second model is used in which the *polity* variable is dropped while the other independent variables are retained, as given below:

$$Y_{ijt} = \alpha + \beta_1 (\textit{Openness}) + \beta_2 (\textit{Dependence}) + \beta_3 (\textit{Trade Share}) + \beta_4 (\textit{Alliance}) + \beta_5 (\textit{Natcap}) \quad (3)$$

Further, to examine the strength of the effect of economic integration on interstate conflict when some other variables are excluded from the equation, a third model is specified. In this case, both the *polity* and *dependence* variables are excluded from the equation as shown below.

$$Y_{ijt} = \alpha + \beta_1 (\textit{Openness}) + \beta_2 (\textit{Trade Share}) + \beta_3 (\textit{Alliance}) + \beta_4 (\textit{Natcap}) \quad (4)$$

Where

Y_{ijt} is the dependent variable represented by unity under the condition that Country *i* and Country *j* are engaged in conflict against each other at the time period of *t*, and zero if they are not engaged in conflict against each other at the time period of *t*⁶.

Dyadic trade_{ijt} is the non-directed bilateral trade that happens between the dyad countries *i* and *j*. It measures the trade interdependence between the dyad trading countries *i* and *j*.

X_{ijt} is the vector which comprises the other important determinants of interstate conflicts.

The independent variable, *Dispute*, represented by Y_{ijt} is used in two versions. In the first case, *Dispute* is set to 1 if a Military Interstate Dispute (MID) of any type occurred between dyads, and to 0 otherwise. In the second version, *Dispute* is set to 1 if a fatal MID occurred between dyads and 0 otherwise⁷. The first type of treating dispute is adopted for this study.

⁶ Conflict can take the form of military conflict, which is classified into five levels (1 = no militarised action, 2 = threat to use force, 3 = display of force, 4 = use of force, 5 = war).

⁷ For example, Kimball (2006) in his article "Alliance Formation and Conflict Initiation: The Missing Link", states that conflict initiation is scored 1 when both states in the dyad engage in a

Operationally, the study examines two-logit model specifications. The most commonly used proxy for conflict between the dyads is the measure of military conflict, which is constructed from the database of the “Correlates of War” (COW) project. This dyadic data set codes all Military Interstate Disputes (MIDs) with a level of hostility ranging from 1 to 5 (1= no militarized action, 2= threat to use force, 3= display of force, 4= use of force, 5= war). This MID dataset (version 3.02) is transformed to dyadic events with corrections made by Maoz (2005).⁸

In the literature on trade versus conflict, trade reflects three considerations. First, in the trade equation specified, the proxy trade-to-GDP ratio serves as a dependent variable though it lacks a theoretical basis. Second, in examining the effect of trade on conflict, the equations are based on the theory that trade, not its share of GDP as such, has an effect on conflict. Thirdly, trade and the higher value of dyadic GDP are treated as two distinct factors that have their own separate effects on conflict, as opposed to the trade-to-GDP ratio which conflates them (Mansfield and Pevehouse 2000; Keschk et al. 2004).⁹

In this study, the trade integration factor is considered in two models. The first model specification includes *openness*, which is the ratio of trade to GDP, which is expected to have a negative sign. The second model includes two variables, *trade share* and *dependence*, with the expectation that *trade share* is a positive sign and *dependence* is a negative sign. The empirical results are expected to be according to the theoretical predictions of the relationships among the three measures and their effects on MID onset. All three variables take on the values of the country of lower trade’s *dependence*, following the weak link assumption. In fact, other researchers debate the relationship between

militarised interstate dispute where the hostility levels for both states are greater than 3, under the classification of hostility in the range between 1 to 5.

⁸ The data set and the code book consulted by this study is available at <http://psfaculty.ucdavis.edu/zmaoz/dyadmids.html>

⁹ The issues stated here also have implications for the different measuring approaches used by Barbieri (2002). Barbieri uses the ratio of dyadic trade on the aggregate trade of each country as a measure for the trade variable. It is interesting to see the different views and arguments on the conceptual relationships between trade variables and conflict; no consensus has been reached so far among scholars who have been involved in the “trade versus conflict” issue (see Gartzke and Li (2003); the replies given by Barbieri and Peters (2003) to Gartzke and Li; Oneal (2003).

dependence and dispute, owing to the application of different methodologies.^{10 11}

$$\begin{aligned} \text{OPENNESS}_{it} &= \frac{\text{Export}_{it} + \text{Import}_{it}}{\text{GDP}_{it}} \\ \text{OPENNESS}_{jt} &= \frac{\text{Export}_{jt} + \text{Import}_{jt}}{\text{GDP}_{jt}} \\ \text{DEPENDENCE}_{ijt} &= \frac{\text{Export}_{ijt} + \text{Import}_{ijt}}{\text{GDP}_{it}} \\ \text{DEPENDENCE}_{jtt} &= \frac{\text{Export}_{jtt} + \text{Import}_{jtt}}{\text{GDP}_{jt}} \\ \text{TRADE SHARE}_{ijt} &= \frac{\text{Export}_{ijt} + \text{Import}_{ijt}}{\text{Export}_{it} + \text{Import}_{it}} \\ \text{TRADE SHARE}_{jtt} &= \frac{\text{Export}_{jtt} + \text{Import}_{jtt}}{\text{Export}_{jt} + \text{Import}_{jt}} \end{aligned}$$

In the above equations, the subscripts ij represent a dyadic variable, whereby the subscripts i and j denote Country i or j , such that $i \neq j$, and t refers to time in year of the time series. In computing each of the variables of *openness*, *dependence* and *trade share*, the lower rate has been used based on the weakest link assumption used by Gartzke and Li (2003) and others. Given this background, the following hypotheses are framed to be tested.

Hypothesis 1

H_o : The degree of economic openness does not reduce the likelihood of interstate conflicts.

H_a : The degree of economic openness does reduce the likelihood of interstate conflicts.

¹⁰ Barbieri, 2002; Russett and Oneal, 2001. For example, to account for the variable *dependence*, Higher Dependence is used as a proxy, which is the higher difference in the trade over GDP ratio in periods $t-1$ and $t-4$, in a dyad. It is argued that the likelihood of a MID should fall as this variable rises (Russett and Oneal, 2001; Keschk et al, 2004).

¹¹ Many of the analyses by Barbieri are very similar to those of Oneal and Russett (1997). However, they differ in their definition of the specified dependent and independent variables. Moreover, some differences can be observed in the controls they use in their regression analyses and the number of hypotheses they test (Oneal and Russett, 1999).

Hypothesis 2

H_o: The extent of a country's trade share does not reduce the likelihood of interstate conflicts.

H_a: The extent of a country's trade share reduces the likelihood of interstate conflicts.

Hypothesis 3

H_o: The extent of a country's economic dependence on foreign trade does not have a deterrent effect on the likelihood of interstate conflicts.

H_a: The extent of a country's economic dependence on foreign trade has a deterrent effect on the likelihood of interstate conflicts.

Hypothesis 4

H_o: The extent of a country's dyadic trade share does not reduce the likelihood of interstate conflicts.

H_a: The extent of a country's dyadic trade share does reduce the likelihood of interstate conflicts.

Lagged Capability Ratio is a one-year lagged value of the ratio of the higher national capability (CINC) score in a dyad to the lower score. In other words, it is measured and computed as a composite of national capabilities (CINC) score of the more capable state in the dyad, divided by the CINC score of the less capable state (Beck et al. 1998). The relative capabilities are computed based on the COW project CINC scores (Singer et al. 1972) and represent the ratio of the stronger state in the dyad to the combined capabilities of the two; the variable ranges from 0.5 (parity) to 1 (preponderance). The effect of a higher capability ratio on the likelihood of a MID is debated. There are two perspectives: that parity brings peace or that preponderance brings peace.

Demlow signifies the lower of the two democracy levels in a dyad (the difference between the autocracy and democracy scores in the Polity

data set¹², in which values range from 10 (fully democratic) to -10 (extremely autocratic) for each variable), indicating “shared” dyadic democracy. The effect of a rise in Demlow on the likelihood of a MID is expected to be positive. Hence, a rise in this variable should reduce the likelihood of a MID.¹³ To examine the effect of democracy on interstate conflict, the following hypothesis is framed.

Hypothesis 5

H_o: An improvement in the extent of democracy in a country’s political condition does not reduce the likelihood of interstate conflicts erupting.

H_a: An improvement in the extent of democracy in a country’s political condition reduces the likelihood of interstate conflicts erupting.

Allies signifies for alliance is coded 1 if dyadic members have in common a defence treaty or military alliance or are linked by an entente or a neutrality pact, and 0 otherwise. Allied countries should face a lower likelihood of a MID than non-allied countries. The hypothesis related to this assertion is given below.

Hypothesis 6

H_o: Interstate dyadic alliances do not reduce the likelihood of interstate conflicts erupting.

H_a: Interstate dyadic alliances do reduce the likelihood of interstate conflicts erupting.

¹² The raw data is taken from Polity IV database, which examines each country’s level of democracy ranging from full autocracy (-10), to full democracy (+10) (Polity-related database, 2013).

¹³ According to Oneal et al. (2003), technically, it is computed using the Polity III data (Jagers and Gurr, 1995; 1996) to compute a summary measure of the political character of regimes (Dem_i), subtracting from each country’s score on the democracy scale its score on the autocracy scale. Because a dispute can result from the actions of a single state, the likelihood of conflict should primarily be a function of the freedom of action enjoyed by the less constrained state in each dyad. Politically, this is the less democratic state (Demlow): the more democratic this state, the more constrained it is from using force, and the more peaceful the dyad will be. In general, if the democracy score of any country is greater than 6, it is considered a democracy, both institutionally and with regard to personal liberties and participation. Similarly, if the democracy score of any country is less than -6 it is considered an autocracy.

National Capability Ratio (NATCAP) like other studies conducted in similar areas of interest, this study considered the National Capability Ratio as an independent variable to represent and measure the balance of power in a dyad. The proxy measure used for this variable is the ratio of the stronger country's national capability to the sum of the two countries' national capability ratios. To measure this variable, the six values of each year's capability components are first summed up. Second, the sum of the absolute values of components of each year is converted into a share of the international system. Third, the share of the international system is divided by the number of observations (six) giving equal weight to each capability component.¹⁴ Then following Singer and Small (1995) and Kimbal (2006), national capability ratio is computed by the ratio of the stronger country's Composite Index of National Capability (CINC) index to the sum of the dyad's Composite Index of National Capability (CINC) indices. Basically, disputes may emerge or be enhanced under the condition that the stronger country intends to take over the weaker country. On the other hand, disputes may not emerge, or may be reduced, in a situation where the stronger country blocks the attacks that may come from the weaker country (Singer and Small, 1995). Actually, national capability component variable reflects the view of the realists, who argue that disputes are subdued through the predominance of power, as supported by similar studies (Bremer 1992; Maoz and Russett 1993).

Hassan (2001) asserts that assessing the effects of economic cooperation on the basis of dyadic relationships has the limitation that it disregards effects that may occur because of third-country effects. Models such as the gravity model used by Hassan (2001), based on the assumption that economic conditions in a dyad depend on the interaction of the two countries, cannot be away from a limitation as the analysis suffers from exclusion of other variables that could have significant influence. This study shares the inherent limitations as its analyses are based on dyadic relationships.

¹⁴ The six capability components widely used in the literature to determine the national material capability ratios are energy consumption, iron and steel production, military expenditure, military personnel, urban population and total population. To compute the national capability ratio of each dyad, this study used the Composite Index of National Capability (CINC) index of each country from the National Material Capabilities data set Version 4.0. The full reference of the data set used in this study is given at the appendix section.

3. Data Analysis

The data collected from various sources has been sorted to examine the hypotheses framed above. A commonly used approach in analysis, binomial logistic regression, was run to test the hypotheses. The estimates of the coefficients of the independent variables are shown in Table 1.

In Table 1, Model 1, it can be observed that all the independent variables bear the expected sign, with the exception of the country's dyadic alliance and national capability ratio, with regard to the first hypothesis – that economic openness results in the reduction of interstate disputes. The coefficient estimated for economic openness indicates that it has a reciprocal relationship with interstate disputes, which is statistically significant at less than 5% level in favour of rejecting the null hypothesis and accepting the alternative hypothesis. This implies that the more East African countries are economically open to and integrated with each other, the more remote the likelihood of interstate conflict. The influence of economic openness on interstate disputes without the involvement of the *polity* variable, as shown in Model 2, and without the involvement of the variables of *country's dependence* and *polity* in Model 3, reaffirm the result disclosed in Model 1. It is interesting to observe that when the *country's dependence* and *polity* variables are dropped in the specified models, the magnitude of influence of a country's economic openness in mitigating the onset of military dispute rises. This implies that the economic openness of a country plays a significant role in mitigating the likelihood of interstate conflicts in East African countries. This finding is consistent with those of many others who have carried out similar studies (Oneal and Russett 1997; Gartzke and Li 2003).

Trade liberalisation among a bloc of nations becomes successful and effective if the agreements among countries to reduce tariff and non-tariff barriers focus on those items for which significant trading activities are undertaken. To realise the success of economic openness in the East African region, some lessons can be learned from those regions, such as SAARC, that have some experience in this regard. Hassan's (2001) finding clearly shows that three successive conventions among the member countries of SAARC intended to open their markets and expand trade were not successful, because the agreements were mainly

on those goods and services that were barely traded among them. Hassan adds that economic cooperation can be boosted through active participation by the private sector in economic activities. Moreover, to enhance efficient utilisation of resources, the involvement of the state in the trading activity should be restricted to the minimum possible. Hassan shows that economic cooperation among the member countries of SAARC can be profitable in controlling and managing water, floods and irrigation (Hassan, 2001).

With respect to the effect of a country's economic dependence on international trade in the East African region on the possible eruption of interstate conflict, the study reveals that it has a deterrent effect, indicating that the estimated coefficient bears the expected negative sign. Moreover, the more East African countries become enmeshed through trade and enhance their economic interdependence, the less likelihood there is of interstate disputes in the region: however, the results show that it is not statistically significant, allowing acceptance of the null hypothesis. This could be attributed to the fact that most developing countries' foreign trade, with East African countries no exception, is dominated by primary products directed towards advanced countries. At present, this situation may leave little room for trade relationships between developing countries, though it highlights a potential prospect of reducing interstate disputes in the region. Hassan (2001) posits that inter-industry trade among countries in a region (such as SAARC) that have similar endowments of resources and costs is unlikely, as they have similar comparative advantages and disadvantages in most of the traded items. Despite this fact, member countries of a regional cooperation will have the benefit of obtaining supplies from neighbouring countries at lower transportation costs. Furthermore, the reduced restriction on imports and exports in these countries intensifies competition among them, leading to efficiency, improved quality and reduced costs. Regional economic cooperation stimulates better resource allocation and discourages inefficient firms that have been sheltered by tariffs and quotas.

Other studies support these findings; for example, Gartzke and Li's (2003) results are consistent with the above findings and found the *dependence* variable statistically significant, with a negative sign of the coefficient for both cases of all dyads and politically relevant dyads the study considered.

When we examine the influence of a country's economic dependence on interstate disputes by dropping the *polity* variable as shown in Model 2, the result disclosed in Model 1 of Table 1 is reaffirmed. In fact, even though there is a marginal increase and robust estimated coefficient of economic dependence, it is not statistically significant.

Similarly, as can be seen from Table 1 (Model 1), the improvement in the share of dyadic trade has the effect of mitigating the likelihood of dispute and conflict in the region. The coefficient of the *trade share* variable bears the expected positive sign and the test result indicates it is statistically significant at less than 5% level, leading to the rejection of the null hypothesis. It can be inferred that the more countries in the East African region enhance their mutual trade shares, the smaller the likelihood of interstate conflict in the region. The effect of trade share is also significant in the case of Model 1 (excluding the *country's dependence* variable), and Model 3 (excluding the *country's dependence* and *polity* variables), indicating that East African countries can reduce the likelihood of interstate conflict by enhancing dyadic trade sharing with one another. Dropping the stated variables from Model 2 and Model 3 leads to a reduction by some points in the magnitude of influence of the country's trade share on the reduction of interstate disputes. But the estimated coefficient is robust and has the expected sign, which indicates the strength of trade share in conflict alleviation in the region. The findings of studies by Gartzke and Li (2003) and Goenner (2011) are strongly consistent with this finding.

To boost the trade share of a country in a region various measures should be taken that foster inter-industry trade. To enhance the import-export of Organisation of Islamic Countries (OIC) countries, Hassan et al. (2010) suggest the need to develop financial assistance and credit facilities. Hence, it would be of great importance to consider benchmarking the policies proposed to OIC by Hassan et al. (2010) to strengthen economic integration among the East African countries. The challenges they may face while trading with one another can be minimised by setting a regional clearing house, providing export-credit arrangements and allowing each nation to accept the currencies of the member countries of the region. Furthermore, the member countries need to encourage private-sector involvement in trade and investment.

Table 1: Binomial logistic regression analysis of the relationship between trade, contingent variables and the probability of MID, on dyads 1991–2011 in the East African region

Dep. variable MID onset	Model 1	Model 2	Model 3
Country's Openness			
β	-1.036 **	-1.089 **	-1.151 **
S.E	(0.515)	(0.518)	(0.526)
Wald test	4.045	4.422	4.791
Prob.	0.044	0.035	0.029
Exp (β)	0.355	0.337	0.316
Country's Dependence			
β	-14.078	-14.277	
S.E	(21.026)	(21.015)	
Wald test	0.448	0.462	
Prob.	0.503	0.497	
Exp (β)	0.000	0.000	
Country's Trade Share			
β	31.098 **	29.265 **	21.186 **
S.E	(13.214)	(13.077)	(8.916)
Wald test	5.539	5.008	5.646
Prob.	0.019	0.025	0.017
Exp (β)	3.205E+12	5.122E+12	1.588E+9
Country's Dyadic Alliance			
β	2.326 ***	2.324 ***	2.656 ***
S.E	(0.744)	(0.744)	(0.749)
Wald test	9.782	9.753	12.568
Prob.	0.002	0.002	0.000
Exp (β)	10.232	10.221	14.238
Country's Polity Score (Dem/Auto)			
β	- 0.043		
S.E	(0.039)		
Wald test	1.246		
Prob.	0.264		
Exp (β)	0.958		
Country's National Capability Ratio			
β	3.442 ***	3.249 ***	3.287 ***
S.E	(0.754)	(0.739)	(0.735)
Wald test	20.852	19.331	19.983
Prob.	0.000	0.000	0.000
Exp (β)	31.237	25.767	0.001
Constant			
β	- 6.940	- 6.570	- 6.899
S.E	(1.052)	(0.995)	(1.012)
Wald test	43.554	43.625	46.517
Prob.	0.000	0.000	0.000
Exp (β)	0.001	0.001	0.001
N	1176	1176	1176

Note: The asterisks indicate statistical significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figures appearing in parentheses signify standard errors.

Data sources are given in the Appendix.

Africa in general and East Africa in particular need to explore potential financial sources to mitigate the financial constraints on boosting economic integration. With regard to the objective of economic integration, forming partnerships with already established regions within and outside the continent can have the advantage of getting financial support. This is supported by Naqvi (1998) and Hassan (1999), who contend that, to expand regional markets for the OIC countries, sub-Saharan African countries' markets should be boosted by an improvement in per capita income. This can be done by supporting sub-Saharan Africa with financial resources from the relatively wealthy countries. Sub-Saharan African countries can be assisted by granting them low interest-bearing loans, investment through equity capital and through grants.

Examining the experience of other regional blocs, Hassan and Islam (2001) found that intraregional trade within the OIC countries is not only low, but also highly dependent on industrialised countries. To boost economic cooperation among OIC countries and become beneficiaries of trade creation, they suggested removing tariff and non-tariff barriers. Structural transformation in the region would enable OIC to reap the advantages that arise from backward and forward linkages, besides enhancing the region's competitiveness. Furthermore, to stimulate intra-OIC trade and technology transfer, obtain the advantages of economies of scale, and increase both local and regional markets, it is suggested that OIC should work in partnership with WTO, APEC, EU, ASEAN and NAFTA. To speed up the move towards structural transformation and sustain economic growth in the region, the wealthier countries should invest their surplus capital in the form of long-term direct investment or short-term portfolio investment. This will develop and strengthen the region's capital markets. In the same token, apart from intraregional integration, East African countries need to work in cooperation with established international and regional blocs.

Alliances between two countries are considered to have a deterrent effect on the possibility of interstate conflict in the region. However, the study reveals the opposite, as shown in Model 1 of Table 1. The greater the dyadic alliance among the countries of the East African region, the higher the likelihood of conflict. The sign of the coefficient is not the expected one, even though it is statistically significant. This may demand further investigation of the effect of an alliance in disaggregated

form that deals with the specific dimensions of the alliance. Similarly, the effect of dyadic alliances is also statistically significant in the case of Model 1 (excluding *country's dependence* variable) and Model 3 (excluding *country's dependence* and *polity* variables) but the coefficients in all the models do not bear the expected usual conceptual sign.

Moreover, dropping the specified variables from the equations resulted in an increment by some points of the estimated coefficient, strengthening further its influence on interstate conflict. It is surprising to see that this finding is consistent with that of Oneal et al. (2003), suggesting that allied states have a greater incidence of disputes than do non-allied states, in which their result is statistically significant at 1%. They argue that alliances evidently do not just produce bonds of security, but also create a basis for misunderstanding and disagreement about institutions, decision-making procedures, burden-sharing and strategy. They further explain that even though an alliance has a constraining effect on the use of force in many cases, it also plays the role of creating "salience and/or the ease of interaction" (see Siverson and Starr 1991:93; Bueno de Mesquita 1982; Kinsella and Russett 2002). Furthermore, Oneal and Russett (1997, 1999) argue that forming an alliance with a major power is hazardous and risky. This is because major powers may be tempted to use force against smaller allies to enforce their spheres of influence and assert their sole interests.

On the contrary, Oneal and Russett (1997) reveal quite inconsistent findings that the formation of an alliance provides a strong support for peace by increasing the constraint on the use of force. A study by Long (2003) also shows that the coefficient for the variable measuring the *alliance* variable turned out to be positive, but not statistically significant.

As far as the *polity* variable is concerned, the study disclosed that the effect of the level of democracy in a country on the conflict is inversely related, as expected. However, the test result indicates that it is not statistically significant. Similarly, the polity score of the East African nations included in this study is in its infancy, though some countries have shown an improvement over time. Therefore, the improvements exhibited by some countries may not suffice to explain at a significant level the interstate disputes that happen in the region. There is an

encouraging pattern in this regard, which still demands much in the polity area for it to make a significant contribution on conflict.

Interestingly, a finding consistent with this is revealed by Daxecker (2011): that joint democracy is positive and significant (albeit weakly), suggesting it is more likely for rival dyads with democratic regimes to experience interstate conflict. Daxecker supports this finding with the argument that rivalries are primarily driven by the dynamics of autocratic states. This could be attributed to the utilisation of a small number of rivalries in the data set are jointly democratic, and the finding may thus be the result of outliers. However, the finding of Keschk et al (2010) is inconsistent with the finding of this study, showing that an improvement in democracy status has a constraining effect on the likelihood of interstate disputes.

Other scholars have a different view: that the presence of diversified political governance structures within a regional bloc can be a barrier to cooperation. Hassan and Islam (2001) state that there is significant variation in the political situations within the OIC countries, which range from democracy to monarchy to military rule. Such diversity in political governance could lead to contradictions and conflict among the OIC countries.

With regard to the national capability ratio, the finding reveals that it has a positive effect on interstate conflict in the region. This implies that the more the nations of the East African region boost their national capacity (power preponderance), the more conflict occurs in the region, rather than the other way round. In contrast, a study by Oneal and Russett (1997) reveals that increasing the capability ratio also reduces the incidence of disputes. The result shown in the case of Model 2 (excluding *country's dependence* variable), and Model 3 (excluding *country's dependence* and *polity* variables) strengthens further that of Model 1, thereby increasing the estimated coefficient of the national capability ratio by some points, leaving the sign unchanged.

It can be summarised from Model 1 that the degree to which the likelihood of conflict is reduced rises through enhancement of a country's trade share, followed by national capability and economic openness in descending order.

To examine the existence of multicollinearity on the independent variables, a Pearson correlation was run and the results are shown in Table 2. As can be seen from Table 2, there is no problem of multicollinearity in almost all of the cases, with the exception of dyadic countries' *economic dependence* and *trade share* variables. To avoid possible collinearity problems in this regard, the country's *economic dependence on trade* variable has been omitted from the logistic regression and Model 3 has been designed to investigate the actual effect of the independent variables on interstate conflict in the region.

Table 2: Correlation matrix between the independent variables, 1991–2011

	Openness	Dependence	Trade Share	Dyadic Alliance	Polity (Dem/Auto)	Nat Cap Ratio
Openness	1.000					
Dependence	- 0.103	1.000				
Trade Share	0.184	- 0.713	1.000			
Dyadic Alliance	- 0.011	0.146	0.016	1.000		
Polity (Dem/Auto)	- 0.090	- 0.011	-0.122	- 0.004	1.000	
Nat Cap Ratio	0.163	0.118	0.027	0.008	- 0.217	1.000

The test result for negative two-log likelihood and the Nagelkerke R Square are shown in Table 3, which indicates that the parameters are useful to the specified model.

Table 3: Negative two-log likelihood and the Nagelkerke R Square of the models

Model	2-log likelihood	Nagelkerke R Square
Model 1	605.158	.131
Model 2	606.428	.129
Model 3	607.668	.127

4. Conclusion

This study investigated the effect of the identified important dimensions proxied on interstate conflicts using a thorough analysis and a series of hypotheses tests. As a result the following conclusions are presented.

The study has shown that economic openness among the East African countries has a strong and significant constraining effect on the likelihood of militarised interstate conflict in the region. Moreover, the findings of this study, which deals with East Africa, are consistent with studies made at a global level.

Enhancing dyadic trade and boosting trade share among countries in the East African region will have a significant effect in reducing the likelihood of conflict in the region. This implies that trade interdependence in the region is one of the fundamental mechanisms that play a significant role in inhibiting the onset of militarised interstate conflict. However, increasing the dependence of a nation's economy on trade alone is expected to have a constraining effect on militarised interstate conflict, though it is not statistically significant in the region in the present scenario.

The dyadic alliance in the East African region is associated favourably with the initiation of conflict, with the implication that the stronger the dyadic alliance among the countries, the higher the likelihood of initiation for conflict. Hence, the alliances should be designed with utmost caution in a way that maintains some distance that keeps the integrity and freedom of making solitary decision of a nation in the region to form an alliance.

Moreover, the study reveals that the increase in democracy and national capability of the countries in the region has an accelerating effect on the likelihood of interstate conflicts. The power preponderance of a nation leads to the initiation of conflict in the region.

It can be stressed that the enhancement of economic openness and dyadic trade share will go a significant long way to inhibit the likelihood of the initiation of conflict in the region. It is high time for

the concerned bodies to give due consideration to establishing international trade-oriented strong partnerships among the East African countries to create a significant barrier to the likelihood of conflicts in the region.

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Appendix: Data Sources

Trade-related data:

International Monetary Fund, Direction of Trade Statistics, Year Book (various issues)

International Monetary Fund, International Financial Statistics, Year Book (various issues)

Economist Intelligence Unit, Country by Country: Forecasts of political and economic trends in over 180 countries (various issues)

Global Economics, Country by Country: Forecasts of political and economic trends in over 180 countries (various issues)

World Bank Book, Trends in Developing Economies (various issues)

CIA World Fact Book

International Marketing Data and Statistics (various issues)

Interstate conflict-related data:

Ghosn, Faten, Glenn Palmer, and Stuart Bremer. (2004) "The MID3 Data Set, 1993–2001: Procedures, Coding Rules, and Description", *Conflict Management and Peace Science* 21:133–154.

Ghosn, Faten, and Scott Bennett. (2003) Codebook for the Dyadic Militarized Interstate Incident Data, Version 3.10. Available at: <http://correlatesofwar.org>

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Marshall, M.G. (2013) *Major Episodes of Political Violence (MEPV) and Conflict Regions, 1946–2012*.

Center for Systemic Peace, available at: www.systemicpeace.org

National Capability Index-related data:

Singer, J. David, Stuart Bremer, and John Stuckey. (1972) “Capability Distribution, Uncertainty, and Major Power War, 1820–1965” in Bruce Russett (ed.) *Peace, War, and Numbers*, Beverly Hills: Sage, 19–48. (Version 4.0)

Alliance-related data:

Gibler, Douglas M. (2009) *International military alliances, 1648–2008*. CQ Press. (Version 4.1)

Polity-related data:

Marshall, M.G., T. R. Gurr, and K. Jaggers. (2013) *Polity IV Project: Political Regime Characteristics and Transitions, 1800–2012* (Polity IV Data Series version 2013).