

Working Paper 17-05

# The Impact of Trade Liberalization in Africa

JUNG Jae Wook

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## Executive Summary

Africa is one of the most economic-integrated continents by a number of regional trade agreements in the continent. There are about 30 bilateral and multilateral trade agreements within the continents so that each African country is a member of at least one regional trade agreement. Trade between African countries, however, barely exceeds 10% of the total trade of Africa, which is much lower than other continents' intra-regional trade share. This discrepancy between many regional trade agreements and small intra-continent trade share tells that regional economic integrations in Africa are very unsuccessful trade liberalization policies to promote trade. This paper examines a reason why trade liberalization policies in Africa fail. In particular, we investigate the impact of trade agreements in Africa on trade conditional on financial market development and political instability. An empirical study finds that Africa countries' poor financial market accessibility and political instability are key barriers to trade integration in the region. These two factors can explain most disadvantage of African countries in their intra-regional trade. In a dynamic regression, the two factors depress the long-run growth of trade due to trade liberalization in the region significantly, while African continent dummy variable that captures other unobserved trade obstacles in the region has much less effect on trade compared to the literature on African regional economic integration.

**Keywords:** Regional Trade Agreements, Financial Market Development, Political Stability, Africa

**JEL code:** F13, F14, F15, F36, N77

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# The Impact of Trade Liberalization in Africa

JUNG Jae Wook\*

## 1. Introduction

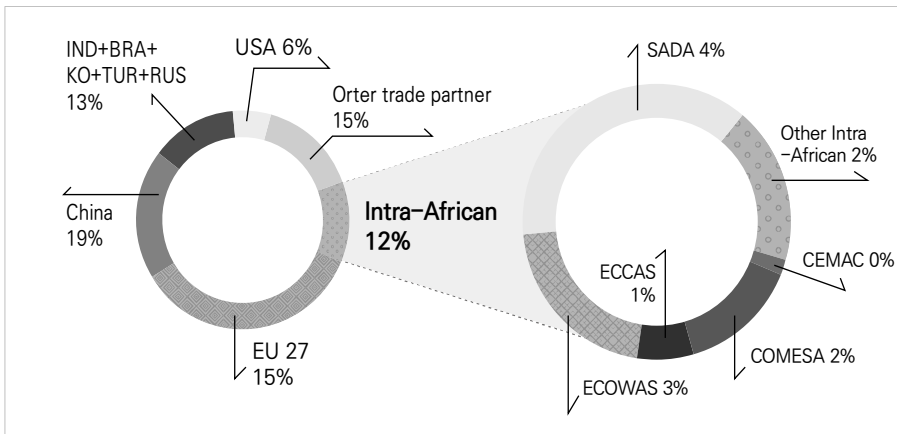
Africa is one of the most economic-integrated continents by a number of regional trade agreements in the continent. From the Organization of African Unity (OAU) initiated in 1963, various economic integration agreements by type and coverage have been launched in Africa. About 30 bilateral and multilateral trade agreements within the continent currently exist. Thus, each African country participates in at least one regional trade agreement as a member state. The Tripartite Free Trade Area (TFTA), or called the Continental Free Trade Area (CFTA), was proposed in 2015 African Union Summit as a multilateral free trade agreement among members of three existing regional trade agreements, the Common Market for Eastern and Southern Africa (COMESA), the Southern African Development

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Community (SADC), and the East African Community (EAC). If TFTA successfully launches, it will be the largest regional trade agreement that represents more population than the North American Free Trade Agreement (NAFTA) and the European Union (EU).

**Figure 1. Africa's Trade Partners and Their Shares**



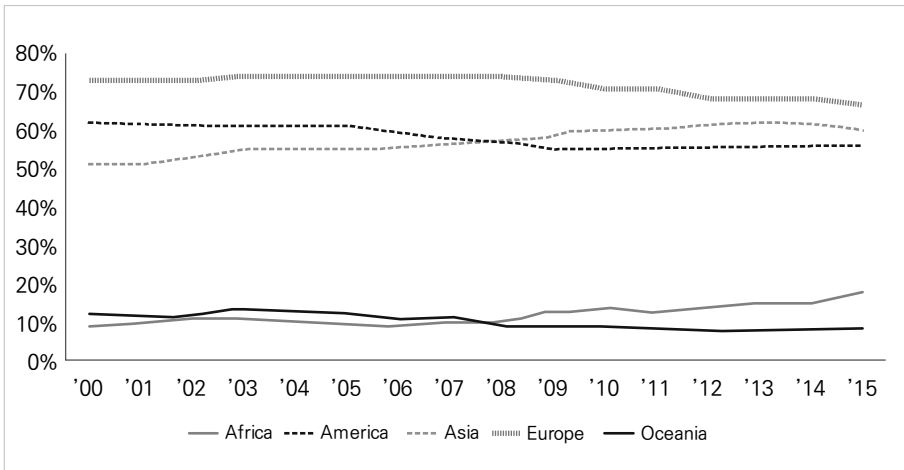
Note: IND, BRA, KOR, TUR, and RUS stand for India, Brazil, Korea, Turkey, and Russia, respectively. SADC, ECOWAS, ECCAS, COMESA, and CEMAC indicate the Southern African Development Community, the Economic Community of West African States, the Economic Community of Central African States, the Common Market for Eastern and Southern Africa, and the Central African Economic and Monetary Community, respectively.

Source: Reproduced Figure on p. 2 of JUNG (2017).

Intra-continent trade in Africa, i.e., trade between African countries, however, barely exceeds 10% of the total trade of Africa as shown in Figure 1 and Figure 2. The size of African regional trade is certainly smaller than other major continents' intra-regional trade such as Asia, Europe, and America and similar to the level observed in Oceania which consists of island countries. In terms of the size of the overall trade, Africa takes only 3% of the share of world trade whereas 15% of the world population resides in the continent. This discrepancy between many regional trade agreements and small intra-continent trade share tells that regional economic integrations in Africa are very unsuccessful trade liberalization policies to promote trade.



Figure 2. Intra-continental Exports



Note: Intra-continental exports are computed as a share of total exports of each continent.

Source: Reproduced Figure 3.8 on p. 83 of AfDB, OECD, and UNDP (2017).

This paper examines the impact of trade agreements in Africa on trade and investigates the reasons why trade liberalization policies mostly fail to increase trade in Africa. An empirical study finds that Africa countries' poor financial market accessibility and political instability are key barriers to trade integration in the region. These two factors can explain most disadvantage of African countries in trade. In a dynamic regression, the two factors depress the long-run growth of trade due to trade liberalization in the region significantly, while African continent dummy variable that captures other unobserved trade obstacles in the region has much less effect on trade, compared to the literature on African regional economic integration.

This study is a novel empirical study on African regional economic integration in several points. Most previous studies about regional economic integrations in Africa perform comparative study based on the qualitative method of study such as political and historical structure analysis. Only few empirical research analyzes African disadvantage effect in regional trade. Longo and Sekkat (2004) is one of the closest research to the present paper in the intra-African trade literature. They use the trade gravity model to examine the impacts of infrastructure availability, economic policy performance, and internal political tensions on trade. However, some

of their variables are insufficient to represent each obstacle effect as proxies. For example, they use FDI inflows in US dollar as a proxy variable for economic policy performance, but FDI inflows are commonly considered to be related to trade by itself,<sup>1</sup> rather than economic stability and policy effectiveness as a determinant. Also, they rely on a simple gravity regression model without controlling endogeneity bias issues. My work focuses on financial market condition and political stability as key factors along with other country-specific and country pair-specific reasons captured by the fixed effect model suggested by Baier and Bergstrand (2007) and Baier, Bergstrand, and Feng (2014) with controlling the endogeneity possibility.

This paper also contributes to three main lines of international trade literature: the research on the impact of financial development on trade,<sup>2</sup> the research on the effect of political instability and uncertainty on trade, and the studies about the effect of trade liberalization policies on trade. Helpman (1984) and Kletzer and Bardhan (1987) first articulate the link between the easiness of access financial resource or capital and trade decision. Beck (2002) and Beck (2003) find a strong correlation between financial development and the trade of manufactured goods with the relative size of private credit as a measure of financial market development. Recent trade literature such as Manova (2013) emphasizes the role of financial market in international trade. Her model-driven empirical study examines that more developed financial market stimulates exports in terms of export volume, and the intensive and extensive margins of export, especially in the sectors that depend on external source of finance more. Recent key papers focus on a channel that how financial market development affects trade. Amiti and Weinstein (2011) show better trade finance caused faster export growth relative to domestic sales during the Japanese financial crisis. They rely on the availability of trade finance to explain the sales composition of exporters that are more sensitive to financial shocks. Feenstra, Li, and Yu (2014) explain that firms get more credit constrained as their export share increases from the view of different shipping time for exports and domestic sales. Several other papers explores diverse effects of financial market development on heterogeneous exporters empirically with

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<sup>1</sup> See Markusen (1995) and Swenson (2004) for more review on this issue.

<sup>2</sup> For more detail literature review on the relation between financial market development and international trade, see Foley and Manova (2015) and Jung (2016).

different countries' firm-level data.<sup>3</sup> One of their main results is that firms' export size is positively correlated with easier access to external finance.

This paper echoes recently renowned research about the effect of political instability and uncertainty such as Handley (2014) and Mölders (2016). Trade policy uncertainty works in two different channels. In the model of Mölders (2016), political instability discourages an efficient negotiation between countries. Even after trade agreement came into force, a termination is possible as political instability increases. Political ineffectiveness such as corruption also affects investment decision of firms. Sequeira (2016) delivers that corruption and political instability affects trade implicit costs and the gains from trade liberalization.

The present paper is in the line of literature that answers whether trade liberalization policies such as World Trade Organization (WTO) and free trade agreements increase trade or not. Rose (2004) and more recently Dutt, Mihov, and Van Zandt (2013) investigate the effect of WTO memberships and trade. Meanwhile, Kehoe and Ruhl (2013) and Baier and Bergstrand (2007) study the effect of bilateral or multilateral free trade agreements.

The present paper also sheds light on how trade liberalization affects trade over time while most previous studies focus on the instantaneous or the long-run effects of trade liberalization on trade. Baier, Bergstrand, and Feng (2014) distinguish the positive contemporaneous effect of economic integration and the gradual effect on trade in the transition periods until the long run, which is assumed 10-15 years after the policy enters into force. Following Baier, Bergstrand, and Feng (2014), I apply their method that distinguish the instant and gradual effect of economic integrations on trade to the regional trade liberalization policies in Africa and find the long-run disadvantage of African countries is large while Africa's regional trade agreements have similar instant effects on trade to other regional trade blocs' effects.

The rest of this paper organizes as follows. Section 2 introduces some facts about regional trade agreements in Africa briefly. Section 3 explains the methodology of study and data. Sector 4 shows empirical results. Sector 5 concludes.

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<sup>3</sup> These papers include Greenaway, Guariglia, and Kneller (2007) for UK, Minetti and Zhu (2011) for Italy, Bellone *et al.* (2010) for France, and Muùls (2008) for Belgium. Berman and Héricourt (2010) for 9 developing countries and Gorodnichenko and Schnitzer (2013) for 27 transition countries.

## 2. Summary of Regional Trade Agreements in Africa

The African continent features 17 regional trade blocs and several bilateral trade agreements. As mentioned in the Introduction, the TFTA aims to join up three of them: the East African Community (EAC), the Southern African Development Community (SADC) and the Common Market for Eastern and Southern Africa (COMESA). African countries have lost economies of scale due to physical and geographical division between countries as well as lack of cross-border transportation infrastructure since the era of Independence. Regional integration has been considered a compelling approach for Africa to overcome the disadvantage. Regional integration has been proposed since the independence of African countries from their European colonizers in 1950s and 1960s. The beginning of the integration was based on political reasons, while economic incentives push forward the recent integration of African countries. Now, one African country joins more than one regional agreement on average. The agenda of regional integration has been widely accepted by African leaders after the independences as a development policy to promote trade. After leading countries initiated the agenda, a lot of African new governments had African summits that resulted in eventually the creation of the OAU in 1963. The Abuja treaty signed in 1991 establish the African Economic Community (AEC) to expand the five already-existing Africa's regional economic blocs. Currently, African Union (AU) recognizes eight major regional economic communities as a building block of AEC. AU recognized regional economic agreements include the Arab Maghreb Union (AMU), the Community of Sahel Saharan States (CEN-SAD), the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), the Intergovernmental Authority on Development (IGAD), and the Southern African Development Community (SADC).

Table 1 summarizes eight major regional trade agreements in Africa, recognized by the AU. The number of member countries varies from 5 to 29, but the share of trade within regional trading blocks is unrelated to the number of members. The

eight major regional trade agreements in Africa have shown their poor performance of regional trade as a trade liberalization and facilitation policy so far. Overall, all the regional trade agreements have less than 20% of total intra-regional economic integration export. These regional trade agreements also fail to increase intra-continent trade. Other than the EAC and IGAD, members of all the regional trade agreements export to other African countries than regional trade agreement member states less than 10% of their total trade.

**Table 1. Summary of Major Regional Trade Agreements in Africa**

| RTA Name | Number of Member States | Share in Africa |            | Share of Exports to |                     |                       | Establishment |
|----------|-------------------------|-----------------|------------|---------------------|---------------------|-----------------------|---------------|
|          |                         | GDP             | Population | Members             | African Non-members | Non-African Countries |               |
| UMA      | 5                       | 15.3%           | 8.1%       | 3.4%                | 2.7%                | 93.9%                 | 1989          |
| EAC      | 6                       | 6.9%            | 14.6%      | 18.1%               | 15.2%               | 66.6%                 | 2001          |
| IGAD     | 8                       | 11.9%           | 21.6%      | 12%                 | 14.2%               | 73.8%                 | 1986          |
| ECCAS    | 11                      | 9.9%            | 14.7%      | 1.5%                | 4.9%                | 93.6%                 | 1985          |
| CEN-SAD  | 29                      | 58.1%           | 52.2%      | 10.4%               | 4.7%                | 84.9%                 | 1998          |
| COMESA   | 19                      | 32.6%           | 42.4%      | 11.7%               | 5.6%                | 82.7%                 | 1994          |
| SADC     | 15                      | 27.0%           | 27.2%      | 19.5%               | 2.7%                | 77.8%                 | 1992          |
| ECOWAS   | 15                      | 27.4%           | 29.2%      | 12.1%               | 6.3%                | 81.6%                 | 1975          |

Note: GDP and Population numbers are as of 2015. GDPs of Algeria and Eritrea are as of 2011.

Source: author's calculation with data obtained from World Bank (2017) and UN Comtrade (2017), online (accessed May 18, 2017).

First, the five countries located in North Africa: Egypt, Libya, Algeria, Tunisia, and Morocco, established the Arab Maghreb Union (AMU) in 1989 to eliminate tariff and non-tariff barriers between member countries. The union, however, has not been fully implemented because of political tensions in and between some member states such as Libya, Tunisia, Algeria, and Morocco. UMA is one of the least integrated of the African communities when it comes to the size of intra-

regional trade. In 2015, only 3.4% of the regional trade in UMA countries went to the members, while UMA members' trade with non-African countries accounts for 93.9%.<sup>4</sup>

The East African Community (EAC) originally established in 2001 and extended as a customs union in 2005, and finally reached a common market in 2010. Six members have expanded their economic integration to promote the movement of goods, services, capital, and labor. As a customs union, member countries have eliminated tariffs and non-tariff barriers as well as coordinated customs standards. AfDB, OECD, and UNDP (2017) understand the EAC as one of the most successful regional integration cases in Africa. USTR accredits the degree of regional integration in the EAC with quoting that the ports of Mombasa and Dar es Salaam take about 90% of goods entering the EAC and customs check is done once on entry until delivered at final destination.<sup>5</sup> The EAC has its intra-community trade share of 18.1%, which is the second largest share among major trade blocs in Africa.

The Common Market for Eastern and Southern Africa (COMESA) established in 1994. Nineteen member states participate in the COMESA as of 2016. Although many members signed to form a free trade area, still the common external tariff to goods and services from outside of the COMESA is not fully agreed by all the members. However, the member states of COMESA have coordinated the regional transportation regulations, trade insurance system, and customs protocols. Since it covers various countries located in a wide range of Africa, only 11.7% of trade of member states moved between the trade bloc in 2015, as Table 1 show.

The Economic Community of West African States (ECOWAS, or CEDEAO: Communauté économique des États de l'Afrique de l'Ouest in French) is the economic community to improve regional trade and harmonization. ECOWAS has a common external tariff system established in 2015 as well as two current unions, namely the UEMOA (Union Economique et Monétaire Ouest-Africaine, or West African Economic and Monetary Union) and the WAMZ (West African Monetary Zone). The UEMOA is one of the most successful regional currency union other than the Euro zone, which uses a Euro-pegged currency, CFA franc. The share of

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<sup>4</sup> AfDB, OECD, and UNDP (2017).

<sup>5</sup> USTR (2016), online (accessed September 24, 2017).

trade among the members exceeds barely 10% of the total trade of ECOWAS because most trade goes to France and other European countries. On the other hand, ECOWAS is successful in adopting the free movement of people policy. According to AU, AfDB, and UNECA (2016), ECOWAS is the most successful regional integration for facilitating free cross-border movement of people in Africa.

The Southern African Development Community (SADC), which was established in 1992, takes the largest intra-bloc trade share among the eight major regional trade agreements in Africa. A free trade area launched in 2008, while the two largest economies in the SADC, DR Congo, and Angola have not participated in the trade protocol. The SADC also has a lot of initiatives to develop cross-border infrastructure such as a SADC Regional Development Fund.

The Community of Sahel-Saharan States (CEN-SAD) was established in 1998 and has the largest number of countries in a community, 29. The CEN-SAD shows very limited progress in trade policy coordination due to many members' discord. As of 2015, only the 10.4% of members' total trade occurs within the community. AfDB, OECD, and UNDP (2017) consider the CEN-SAD as the worst performed regional economic bloc in terms of the African Regional Integration Index.

The Economic Community of Central African States (ECCAS) has suffered regional tensions among the Great Lakes countries after its establishment in 1985. 11 members traded only 1.5% of their total trade with other members in ECCAS while the more than 90% of their trade went to non-African regions in 2015. Recently the member states have tried to revive the community to enhance trade between members with policies such as one-stop border posts.<sup>6</sup>

The Intergovernmental Authority on Development (IGAD) established by eight eastern African countries in 1986. It was originated to overcome food security issue due to droughts in the Horn of Africa, but transit to a regional economic community to handle macroeconomic and trade policy coordination.<sup>7</sup> Some member states such as Kenya and Uganda are also the members of EAC.

In addition to the structure of regional trade blocs, the composition of trade is also an important issue for regional integration. One could blame huge dependence

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<sup>6</sup> UNECA, online (accessed June 12, 2017).

<sup>7</sup> AfDB, OECD, and UNDP (2017).

of exports on raw materials such as oil, minerals, and agricultural products in Africa for the poor performance of regional trade agreements. It is true that these raw material exports take a majority of exports from Africa to the rest of world. Manufacturing products, however, have a significant position in Africa's intra-continent trade. Exports of food items and manufactured products from African countries to other African countries take about 20% of their total exports, which is similar or slightly higher than the share of intra-African export of overall exports.<sup>8</sup>

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<sup>8</sup> AfDB, OECD, and UNDP (2017).



## 3. Methodology and Data

### 3-1. Empirical Strategy

In order to deal with endogeneity problem, the benchmark estimation model incorporates two key factors and Africa continent dummy variable that capture the effect of obstacles from full implementation of trade liberalization into Baier and Bergstrand (2007) and Baier, Bergstrand, and Feng (2014) models.

A benchmark regression is a long-horizon first-differenced panel gravity equation specified based on Baier and Bergstrand (2007). It is designed to capture the average treatment effect of trade liberalization. Baier and Bergstrand (2007) and Baier, Bergstrand, and Feng (2014) suggest that the first-differenced estimation over longer time horizon such as five years is better than fixed effect estimation with trade liberalization policy dummies over time. One might think using a traditional gravity regression model with various country-pair dummies and time specific dummies is preferred. Time-fixed effect type lead and lag changes in the trade policy-time dummy variables cannot fully capture the effect of regional trade agreements over time because trade flows have serial dependence over consecutive years.<sup>9</sup> The benchmark estimation adopting Baier and Bergstrand (2007) and Baier, Bergstrand, and Feng (2014) first differencing model specifications uses 5-year differencing of trade data to observe the overall effect of trade liberalization policy on trade following that Wooldridge (2012) suggest “using longer differences over time.”<sup>10</sup>

In the main model, three additional variables are incorporated in Baier and Bergstrand (2007)’s 5-year differencing specification: financial development variable of an origin country interacted with trade liberalization variable, political stability variables of an origin and destination countries, interacted with trade liberalization variable, and the Africa continent dummy that captures a continent-specific barrier that hinders gains from trade liberalization in Africa. The full model is specified as follows.

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<sup>9</sup> See Baier, Bergstrand, and Feng (2014) for more discussion on this issue.

<sup>10</sup> Wooldridge (2012), p. 463.

$$\begin{aligned} \Delta_5 \log X_{i,j,t} = & \beta_1 (\Delta_5 RTA_{i,j,t}) + \beta_2 \Delta_5 (RTA_{i,j,t} \times Fin_{i,t}) \\ & + \beta_3 \Delta_5 (RTA_{i,j,t} \times Pol_{j,t}) + \beta_4 \Delta_5 (RTA_{i,j,t} \times Pol_{j,t}) \\ & + \beta_5 (\Delta_5 RTA_{i,j,t} \times Africa_{i,j}) \\ & + \delta_{5i,t} + \psi_{5j,t} + \eta_{i,j} + \varepsilon_{5i,j,t} \end{aligned}$$

where  $\log X_{i,j,t}$  is the export variable of origin  $i$  that serves destination  $j$  in year  $t$ ,  $RTA_{i,j,t}$  is a dummy variable for regional trade agreement between origin  $i$  and destination  $j$  in time  $t$ .  $Fin_{i,t}$  is a financial market development measure of origin  $i$ .<sup>11</sup>  $Pol_{j,t}$  is a dummy variable for political stability of country  $j$  in year  $t$ .<sup>12</sup>  $Africa_{i,j}$  is a dummy variable that indicates if countries  $i$  and  $j$  are both located in African continent.  $\Delta_5$  stands for 5-year differencing variable. A country-pair fixed effect term  $\eta_{i,j}$  can account for any unobservable change in country-pair-specific terms if they evolve over within 5 years.  $\delta_{5i,t}$  and  $\psi_{5j,t}$  are exporter-time and importer-time fixed effects to capture time-varying country-specific unobservables in  $i$  and  $j$  influencing trade over five years. Since the main focus of research is about intra-regional trade,  $i$  and  $j$  are countries in the same region.<sup>13</sup>

The other specification is a dynamic regression as Baier, Bergstrand, and Feng (2014) suggest. This specification has an advantage of capturing transition effects of trade liberalization. It may be more common that a dynamic regression has leads and lags of trade liberalization implementation time dummy variables in the gravity equation to perform a dynamic regression than the current specification. The current dynamic specification adopts an alternative of applying linear trends of the leads and lags of trade agreement variables as well as a concurrent time dummy variable for trade agreements to the model. This method allows statistical benefits. First, using linear trends over longer time horizon can help resolving a potential multi-collinearity problem. Second, the linear trend specification allows better results in terms of higher

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<sup>11</sup> I also try including financial market development measure of destination country in the specification, but only origin's financial market development variable has a statistically significant effect.

<sup>12</sup> Political stability variable could be a pair-specific. For instance, inter-state war could be represented by a country pair-specific variable. To capture more broad concept of political stability, origin and destination countries' stability index is used. Pair-specific event affects both origin and destination's stability variables.

<sup>13</sup> The definition of "region" is described in the Data section.

statistical significance with larger degrees of freedom than the traditional method of adding leads and lags because of less loss of sample size. The regression takes the form as follows. Notice that all lead terms or lag terms provide only one estimated coefficient  $\beta_{lead}$  or  $\beta_{lag}$ , respectively, that describes the slope of linear lead and lag trend of trade variables correlated with trade agreements.<sup>14</sup>

$$\begin{aligned}
\log X_{i,j,t} = & \beta_0 RTA_{i,j,t} + \beta_f \sum_{f=1}^K (-f) RTA_{i,j,t+f} + \beta_l \sum_{l=1}^L l RTA_{i,j,t-l} \\
& + \beta_{fin} RTA_{i,j,t} \times Fin_{i,t} + \beta_{f-fin} \sum_{f=1}^K (-f) RTA_{i,j,t+f} \times Fin_{i,t+f} \\
& + \beta_{l-fin} \sum_{l=1}^L l RTA_{i,j,t-l} \times Fin_{i,t-l} + \beta_{pol,i} RTA_{i,j,t} \times Pol_{i,t} \\
& + \beta_{f-pol,i} \sum_{f=1}^K (-f) RTA_{i,j,t+f} \times Pol_{i,t+f} \\
& + \beta_{l-pol,i} \sum_{l=1}^L l RTA_{i,j,t-l} \times Pol_{i,t-l} + \beta_{pol,i} RTA_{i,j,t} \times Pol_{i,t} \\
& + \beta_{f-pol,i} \sum_{f=1}^K (-f) RTA_{i,j,t+f} \times Pol_{i,t+f} \\
& + \beta_{l-pol,i} \sum_{l=1}^L l RTA_{i,j,t-l} \times Pol_{i,t-l} + \beta_{afr} RTA_{i,j,t} \times Africa_{i,j} \\
& + \beta_{f-afr} \sum_{f=1}^K (-f) RTA_{i,j,t+f} \times Africa_{i,j} \\
& + \beta_{l-afr} \sum_{l=1}^L l RTA_{i,j,t-l} \times Africa_{i,j} + \eta_{i,t} + v_{j,t} + v_{i,j} + \varepsilon_{i,j,t}
\end{aligned}$$

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<sup>14</sup> See Jung (2016) and Baier, Bergstrand, and Feng (2014) for more detail discussion about the advantages and disadvantages of the linear trend specification.

Where  $\log X_{i,j,t}$  is the export variable of origin  $i$  that serves destination  $j$  in year  $t$ ,  $RTA_{i,j,t}$  is a dummy variable for trade agreement between origin  $i$  and destination  $j$  in time  $t$ .  $Fin_{i,t}$  is a financial market development measure of origin  $i$ .  $Pol_{i,t}$  is a dummy variable for political stability of country  $i$  in year  $t$ .

Time horizon for lead trends ( $K$ ) and for lag trends ( $L$ ) in the specification are chosen to cover a horizon from the earliest time point when trade agreements are anticipated to the latest time period when trade agreements' effect on trade is fully realized in the long-run. Since most literature understands from 10 to 15 years as a "long-run" after trade liberalization, Baier, Bergstrand, and Feng (2014) and Jung (2016) adopt 15-year lagged time window to capture the long-term effect of trade agreements on trade. It is much harder to choose an appropriate lead trends' time window,  $K$ . The current model is based on the 10-year intervals for  $K$  to capture the anticipation behavior of exporters and any possible endogeneity issue between trade and trade liberalization policy decision. Although the main model uses  $K=10$  and  $L=15$ , results with different time windows are similar to the main model's.<sup>15</sup>

In addition, note that even though the lead and lag terms continue to 10 or more years, it does not mean that the model requires a longer-time span than 10 or more years. The lead and lag terms are valid up to the point where the data sample is available. It is actually an advantage of this linear trend method to preserve more samples over time. For instance, if only seven year's lead points of data are available, then the lead trend would take its value up to the seven years with a linear slope. This point is one of the advantages of using log-linear trends of lead and lag terms as Baier, Bergstrand, and Feng (2014) suggest.

## 3-2. Data

Four main variables are used in the empirical analysis for this research: disaggregated bilateral trade flows within the same region, index of trade agreements by country-pair and years that the agreements enter into force, the financial market development measure of countries, and political stability index. Table A2-A4 in the Appendix show all data spans and summary statistics of key variables.

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<sup>15</sup> The robustness check result is available upon request.

First data used in the empirical analysis is annual bilateral import and export data from NBER-UN World Trade Data developed and documented by Feenstra *et al.* (2005). The data originally include trade flows between 149 countries during 1962-2000, categorized by SITC-4. To judge whether two partner countries engaged in the trade are located in the same region or not, I apply the definition of “region” following World Bank’s Country and Lending Groups categorization rule.<sup>16</sup>

Three different trade-related quantitative variables are adopted in the empirical analysis: the volume of real exports, the extensive and intensive margins of exports. The extensive and intensive margins of exports are computed with the margin-decomposition methodology of Hummels and Klenow (2005).

The extensive margin of exports from origin  $i$  to destination  $j$  in year  $t$ , is defined as,

$$EM_{i,j,t} = \frac{\sum_{m \text{ of } M_{i,j,t}} X_{Wjt}^m}{\sum_{m \text{ of } M_{W,j,t}} X_{Wjt}}$$

where  $M_{i,j,t}$  is the set of all product categories exported from country  $i$  to country  $j$  in year  $t$ ,  $X_{Wjt}^m$  is the value of exports from the world to country  $j$  of product category  $m$  in year  $t$ , and  $X_{Wjt}$  is the aggregate value of exports from the world to country  $j$  in year  $t$ .

The intensive margin of exports from origin  $i$  to destination  $j$  in year  $t$ , denoted by  $IM_{i,j,t}$  is defined as,

$$IM_{i,j,t} = \frac{\sum_{m \text{ of } M_{i,j,t}} X_{ijt}^m}{\sum_{m \text{ of } M_{i,j,t}} X_{Wjt}}$$

where  $X_{i,j,t}$  is the total value of exports from origin  $i$  to destination  $j$  in year  $t$ .

Second, regional trade agreement data, i.e., country-pairs that agree regional trade agreements and years that each regional trade agreement enters into force are used.<sup>17</sup> Baier and Bergstrand (2017) data originally cover six different levels of in-

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<sup>16</sup> World Bank, online (accessed May 18, 2017).

<sup>17</sup> Economic integration data are obtained from Baier and Bergstrand (2017), which has been constructed and updated by them.

ternational economic integrations. Regional trade agreements in the present paper include free trade agreements, customs unions, monetary unions, and common markets variables, as one homogeneous regional trade liberalization policy variable, because these regional economic integration categories have a very homogeneous structure for trade in Africa.

Another variable for the empirical study is the measure of financial market development in an exporting country. As in Beck (2002), the ratio (%) of the amount of private credit provided by deposit banks and other financial intermediaries to the gross domestic product of the country in each year is used for a measure of financial development. Although this measure is an outcome of financial market, it still implies how easily firms in each country can access credit market in a specific year. Unfortunately, any credit data specific to exporters is unavailable widely, this measure has been commonly adopted in the trade literature such as Beck (2002) and Manova (2013) as a proxy for financial accessibility of exporters that need to finance upfront costs for export. Other financial market data related to cross-sectional differences in the legal system stability such as the repudiation of contracts, accounting standards, and the risk of expropriation used by La Porta *et al.* (1998) are disparate from the used data because the data cannot capture time variant changes. The original data obtained from Beck *et al.* (2013) cover 133 countries during 1960-2010.<sup>18</sup> Since regional trade agreements data have annual frequency among 195 countries during 1960-2005 and the agreements data are available for 149 countries during 1962-2000, the sample used in the analysis covers 133 countries during 1962-2000 for data coherence.

Last variable is the political instability index. The Political Instability variable is a combination of the Political Instability Task Force (PITF) State Failure Problem Set of the Center for Systemic Peace and the Armed Conflict data of the Uppsala Conflict Data Program and the Peace Research Institute Oslo (UCDP/PRIO), as Bertin, Ohana, and Strauss-Kahn (2016) use. PITF dataset provides annual information that originally covers the period 1955 to 2016. PITF dataset compiles information from multiple sources covering ethnic wars, revolutionary wars, geno-

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<sup>18</sup> online data (accessed May 17, 2017).

cides and politicides, and adverse regime changes.<sup>19</sup>

UCDP/PRIO publish Armed Conflict Dataset that covers 1946-2016. This annual dataset collects information on armed conflict if at least one party is the government of a country in the time period. The dataset defines conflict 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 calendar year.”<sup>20</sup>

In the present empirical study, country-time specific indicator variables are set up. If a country has any kind of political instability event as introduced above, the indicator variable takes one, otherwise zero as its value.

Merging the four data as explained above allows the sample that covers 133 countries during 1962-2000. Each variable of data is summarized in Table A2-A4 in the Appendix.

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<sup>19</sup> See Marshall, Gurr, and Harff (2017) for more detail definition of each kind of conflict events.

<sup>20</sup> See Allansson, Melander, and Themnér (2017) and Gleditsch et al. (2002) for more detail description of UCDP/PRIO armed conflict data.

## 4. Results

Table 2 reports the benchmark result using the 5-year differencing specification with three different trade variables: the real value of exports (EX), the extensive margin of exports (EM), and the intensive margin of exports (IM). The results fulfill the observations in Baier and Bergstrand (2007). Regional trade agreements overall increase trade volume, extensive and intensive margins of trade with statistical significance. The interaction of regional trade agreements and African continent dummy that reflects Africa's own disadvantage in implementing regional trade agreements on trade. It is very clear that regional trade agreements perform poorly in Africa. Not only in the volume, but also in the extensive margins of trade, regional trade agreements in Africa have little effects compared to regional trade agreements in other regions, when combining the effect of regional trade agreement as well as the interaction of regional trade agreement and African continent dummy.

**Table 2. Benchmark Result with 5-year Differencing Specification**

| Variables  | $\Delta_5 \log EX_{i,j,t}$ | $\Delta_5 \log EM_{i,j,t}$ | $\Delta_5 \log IM_{i,j,t}$ |
|--|----------------------------|----------------------------|----------------------------|
| $\Delta_5 RTA_{i,j,t}$                           | 0.541***<br>(0.080)        | 0.211***<br>(0.082)        | 0.330***<br>(0.070)        |
| $\Delta_5 RTA_{i,j,t} \times$<br>Continent Dummy | -0.098***<br>(0.028)       | -0.101**<br>(0.032)        | 0.003<br>(0.069)           |
| exporter-importer(i,j) FE                        | Yes                        | Yes                        | Yes                        |
| exporter-year(i,t-(t-5)) FE                      | Yes                        | Yes                        | Yes                        |
| importer-year(j,t-(t-5)) FE                      | Yes                        | Yes                        | Yes                        |
| $R^2$  | 0.42                       | 0.51                       | 0.49                       |
| No. Obs.   | 6,850                      | 6,850                      | 6,850                      |

Note: Robust standard errors in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10, 5, and 1% levels, respectively, in two-tailed t-tests.

Source: Author's calculation with data obtained from Feenstra *et al.* (2005); Baier and Bergstrand (2017), online (accessed May 25, 2017).

Table 3 shows the result of the main model including financial development and political instability variables. Interestingly, when controlling financial develop-



ment and political stability, the pure effect of regional trade agreements is negligible statistically. That implies the main impact of trade agreements on trade is closely related to access to financial markets and institutional effect of the political system. African continent dummy has also negative but statistically insignificant effects for all the trade measures when financial market development and political stability indexes are controlled. This implies the poor performance of African regional trade agreements are closed related to their underdeveloped financial markets and unstable political systems. As Table A3 and A4, African countries have relatively less developed financial markets as well as more political crisis than other countries. Thus, the result that trade volume, the intensive and extensive margins of trade increment due to regional trade agreement in Africa turn out statistically insignificant when financial market development and political instability variables are included suggests “Africa disadvantage” in trade may relate to its institutional fundamental.

**Table 3. Main Result with 5-year Differencing Specification**

| Variables   | $\Delta_5 \log EX_{i,j,t}$ | $\Delta_5 \log EM_{i,j,t}$ | $\Delta_5 \log IM_{i,j,t}$ |
|---|----------------------------|----------------------------|----------------------------|
| $\Delta_5 RTA_{i,j,t}$                                  | -0.015<br>(0.072)          | 0.100<br>(0.062)           | -0.086<br>(0.065)          |
| $\Delta_5(RTA_{i,j,t} \times Fin_{i,t})$                | 0.029*<br>(0.015)          | 0.021**<br>(0.008)         | 0.008<br>(0.081)           |
| $\Delta_5(RTA_{i,j,t} \times Pol_{i,t})$                | -0.223***<br>(0.013)       | -0.175***<br>(0.019)       | -0.048***<br>(0.016)       |
| $\Delta_5(RTA_{i,j,t} \times Pol_{j,t})$                | -0.139***<br>(0.029)       | -0.099***<br>(0.029)       | -0.039**<br>(0.018)        |
| $\Delta_5 RTA_{i,j,t} \times$ Africa<br>Continent Dummy | -0.310<br>(0.280)          | -0.139<br>(0.118)          | -0.171<br>(0.109)          |
| exporter–importer(i,j) FE                               | Yes                        | Yes                        | Yes                        |
| exporter–year(i,t–(t–5)) FE                             | Yes                        | Yes                        | Yes                        |
| importer–year(j,t–(t–5)) FE                             | Yes                        | Yes                        | Yes                        |
| $R^2$   | 0.42                       | 0.51                       | 0.49                       |
| No. Obs.  | 6,850                      | 6,850                      | 6,850                      |

Note: Robust standard errors in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10, 5, and 1% levels, respectively, in two-tailed t-tests.

Source: Author’s calculation with data obtained from Feenstra *et al.* (2005); Baier and Bergstrand (2017), online (accessed May 25, 2017); Beck *et al.* (2013), online (accessed May 17, 2017); Uppsala Conflict Data Program and the Peace Research Institute Oslo, online (accessed May 30, 2017); Center for Systemic Peace, online (accessed May 30, 2017).

My key factors have strong and expected effects on trade measures. As financial market development measure is higher than another country, the trade increasing effect of trade agreement is positive for trade volume and the extensive margin of trade.<sup>21</sup> For example, in a country with the average level of financial market development (41% overall, see Table A4 in the Appendix for detail) when other things are the same, a regional trade agreement increases trade volume about 1.2% ( $\cong -0.015 + 0.029 \times 41$ ) on average per year. Lagged variable of political instability index interacted with trade agreements have all negative effects on trade but the effects of origin and destination countries' political instability work differently. The political instability of destination affects all the trade measure negatively while the political environment of origin country mostly affects trade volume through intensive margins.

**Table 4. Benchmark Result with Dynamic Specification**

| Variables  | $\log EX_{i,j,t}$    | $\log EM_{i,j,t}$    | $\log IM_{i,j,t}$   |
|--|----------------------|----------------------|---------------------|
| $RTA_{i,j,t}$                                      | 0.296***<br>(0.051)  | 0.160***<br>(0.043)  | 0.136***<br>(0.048) |
| $RTA_{lag}$  | 0.014***<br>(0.004)  | 0.038<br>(0.036)     | 0.010**<br>(0.004)  |
| $RTA_{lead}$                                       | -0.026***<br>(0.006) | -0.014***<br>(0.005) | -0.012**<br>(0.006) |
| $RTA_{i,j,t} \times$ Africa<br>Continent dummy     | -0.155<br>(0.983)    | -0.105<br>(0.834)    | -0.050<br>(0.930)   |
| $lag RTA_{i,j,t} \times$ Africa<br>Continent dummy | -0.161**<br>(0.068)  | -0.111**<br>(0.056)  | -0.050<br>(0.064)   |

<sup>21</sup> Notice that financial market development measures have always positive values in any country because of the range of the index. That reminds one should be careful to interpret so-called “pure” effect of regional trade agreements.

**Table 4. Continued**

|  |                  |                  |                   |
|--|------------------|------------------|-------------------|
| <i>lead RTA<sub>i,j,t</sub> × Africa<br/>Continent dummy</i> | 0.106<br>(0.296) | 0.118<br>(0.251) | -0.011<br>(0.280) |
| exporter–importer(i,j) FE                                    | Yes              | Yes              | Yes               |
| exporter–year(i,t) FE  | Yes              | Yes              | Yes               |
| importer–year(j,t) FE  | Yes              | Yes              | Yes               |
| <i>R</i> <sup>2</sup>  | 0.91             | 0.88             | 0.78              |
| No. Obs.   | 34,236           | 34,236           | 34,236            |

Note: Robust standard errors in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10, 5, and 1% levels, respectively, in two-tailed t-tests.

Source: Author's calculation with data obtained from Feenstra *et al.* (2005); Baier and Bergstrand (2017), online (accessed May 25, 2017).

Table 4 reports the benchmark result using dynamic regression with three different trade variables: the real export values, the extensive margin of exports (EM), and the intensive margin of exports (IM). The results look similar to the observations in Baier, Bergstrand, and Feng (2014) and previous tables. As explained in the previous section, the 10-year window for leads and the 15-year window for lags are applied. The effect of trade agreement takes a long enough time to realize its effect on trade fully. Overall, regional trade agreements increase all trade measures instantly after trade agreements start to be implemented then raise trade volume and its intensive margin over time. African countries have strong disadvantages in using their regional trade agreements similar to the result shown in Table 2, specifically in the transition after the beginning of trade agreements but also over time.

Table 5 shows the final result of dynamic specification with all variables including financial market development and political instability variables. Each variable has the coefficient estimates on the linear trends for the 15 years of lagged log value of exports, the extensive and intensive margins of exports in logs. As mentioned footnote 21, it should be cautious to interpret the result to assume a reference country because all countries have positive values for financial market development measure. The concurrent effect of regional trade agreements is negative because it might reflect some mirror effects of each key variable.

Financial market development variable works positively with regional trade

agreements to improve all the trade measures when the agreements begin. The interaction between political instability index of origin country and trade agreement has a negative effect on trade only for the lagged term. Thus, as the political system of origin country is more volatile, trade agreement could not increase trade as much as it should.

Political instability variable for destination country interacts with regional trade agreements have negative effects but in a different way. Destination country's political stability is very crucial for regional trade agreements to improve trade when trade agreements are just implemented. Its long-run effects are smaller and less statistically significant than the interacted effect of an origin country's political stability with regional trade agreements. As the political system is unstable in a destination, even trade agreement is expected, intra-continent trade is still dormant. Africa continent risk other than financial market and political instability only affects the extensive margin of trade in the long run negatively. Thus, trade agreement in Africa cannot increase varieties traded in the region as much as it could in other regions over time.

**Table 5. Main Result with Dynamic Specification**

| Variables   | $\log EX_{i,j,t}$    | $\log EM_{i,j,t}$   | $\log IM_{i,j,t}$    |
|---|----------------------|---------------------|----------------------|
| $RTA_{i,j,t}$                                       | -0.458***<br>(0.190) | -0.272*<br>(0.161)  | -0.186***<br>(0.049) |
| $RTA_{lag}$   | 0.032<br>(0.030)     | 0.008<br>(0.020)    | 0.024*<br>(0.015)    |
| $RTA_{lead}$  | -0.004<br>(0.016)    | 0.028*<br>(0.019)   | -0.032**<br>(0.150)  |
| $RTA_{i,j,t} \times$ Africa<br>Continent dummy      | -0.154<br>(0.983)    | 0.106<br>(0.834)    | 0.486<br>(0.930)     |
| $lag RTA_{i,j,t} \times$ Africa<br>Continent dummy  | -0.150**<br>(0.068)  | -0.115*<br>(0.060)  | -0.035<br>(0.065)    |
| $lead RTA_{i,j,t} \times$ Africa<br>Continent dummy | 0.247<br>(0.296)     | 0.120<br>(0.251)    | 0.127<br>(0.280)     |
| $RTA_{i,j,t} \times Fin_{i,t}$                      | 0.223***<br>(0.050)  | 0.027***<br>(0.004) | 0.196***<br>(0.047)  |
| $lag(RTA_{i,j,t} \times Fin_{i,t})$                 | 0.009*<br>(0.005)    | 0.001<br>(0.005)    | 0.009*<br>(0.006)    |
| $lead(RTA_{i,j,t} \times Fin_{i,t})$                | 0.006<br>(0.004)     | 0.013***<br>(0.004) | -0.007<br>(0.005)    |

Table 5. Continued

|                                      |                      |                     |                     |
|--------------------------------------|----------------------|---------------------|---------------------|
| $RTA_{i,j,t} \times Pol_{i,t}$       | -0.069<br>(0.108)    | -0.005<br>(0.091)   | -0.063<br>(0.102)   |
| $lag(RTA_{i,j,t} \times Pol_{i,t})$  | -0.068**<br>(0.015)  | -0.029**<br>(0.014) | -0.036**<br>(0.016) |
| $lead(RTA_{i,j,t} \times Pol_{i,t})$ | -0.004<br>(0.007)    | 0.004<br>(0.006)    | -0.008<br>(0.007)   |
| $RTA_{i,j,t} \times Pol_{j,t}$       | -0.322***<br>(0.109) | -0.022<br>(0.089)   | -0.300**<br>(0.199) |
| $lag(RTA_{i,j,t} \times Pol_{j,t})$  | -0.027*<br>(0.016)   | -0.024*<br>(0.013)  | -0.003<br>(0.015)   |
| $lead(RTA_{i,j,t} \times Pol_{j,t})$ | -0.003<br>(0.007)    | 0.007<br>(0.006)    | -0.010<br>(0.068)   |
| exporter–importer(i,j) FE            | Yes                  | Yes                 | Yes                 |
| exporter–year(i,t) FE                | Yes                  | Yes                 | Yes                 |
| importer–year(j,t) FE                | Yes                  | Yes                 | Yes                 |
| $R^2$                                | 0.91                 | 0.89                | 0.78                |
| No. Obs.                             | 34,236               | 34,236              | 34,236              |

Note: Robust standard errors in parentheses. \*, \*\*, and \*\*\* denote statistical significance at the 10, 5, and 1% levels, respectively, in two-tailed t-tests.

Source: Author's calculation with data obtained from Feenstra *et al.* (2005); Baier and Bergstrand (2017), online (accessed May 25, 2017); Beck *et al.* (2013), online (accessed May 17, 2017); Uppsala Conflict Data Program and the Peace Research Institute Oslo, online (accessed May 30, 2017); Center for Systemic Peace, online (accessed May 30, 2017).

## 5. Conclusions

Regional trade agreements have been proliferating in the past decades in developing countries so that developing countries have more involved in international trade. The economic performance of most African regional trade agreements, however, has not met the expectations of member countries when they start. It is actually true that regional trade agreements in Africa had been words without actions until African countries started to improve trade infrastructure and system recently. Many policy analyses examine several reasons of unsuccessful regional trade agreements in Africa. A few issues are already delivered such as a lack of transportation and infrastructure, or a failure of diversification in industries. This paper sheds light on Africa's underdeveloped financial market and its political instability as a trade barrier, which are the main sources of uncertainty of trade agreements.

This paper examines the impact of trade agreements in Africa on trade and investigates the obstacles that member countries of trade agreements in Africa face. An empirical study finds that Africa countries' poor financial market access and political instability in are the key barriers to trade integration in the region. These two factors account for most disadvantages of African countries in trade. In a dynamic regression, the two factors depress the growth of trade due to trade liberalization in the region, especially in the long run.

Financial market development is crucial to provide sufficient capital in the early stage of trade creation. In Africa, potential exporters face two financial disadvantages. One disadvantage is based on the fact that up-front cost for export is higher in African countries than the one in advanced countries because of lack of export infrastructure and experience. Exporters from African countries also normally have to pay higher financing costs because of country and regional risk premium and less opportunity to access finance due to underdeveloped credit market in African countries.

Unstable political system in Africa is infamous. Its impact on trade liberalization policy and trade has two-fold. Mölders (2016) proves that trade policy uncertainty from political instability directly discourages an efficient negotiation between partner countries and makes trade agreements hard to be implemented. Even after trade agreement came into force, a possibility of termination or at least virtually

dead of the agreement still exists. The decade-long international violent conflicts between Sierra Leone and Liberia virtually destroyed the Mano River Union, one of the regional trade agreements in Africa.<sup>22</sup> The uncertainty on the agreements between the two countries hinders the entry of potential exporters, as Handley (2014) explains.<sup>23</sup>

Political instability torments African economy instantaneously as well as in the long run when its economic potential grows depending on the investment. Foreign investors who provide a primary financial source for Africa countries via foreign direct investments become reluctant to invest in Africa where political system that supports and protects their investments is vulnerable. For example, recent domestic conflicts in Nigeria severely reduced the inflow of foreign investment to its oil production.<sup>24</sup> The channel of political instability's effect on investment is more important when Africa implements regional economic integration because regional economic blocs expect more foreign investment that seeks potential economies of scale in Africa and can stimulate production for export.

The result of this empirical study suggests that Africa's financial market development and stable political system is the key for the future of intra-continent trade and regional integration in Africa. Recently, financial access has been improved with governments and continental development financing institutes. Foreign direct investments from not only advanced countries but also emerging countries such as China, India, and Turkey provide the financial resource for trade. The current political system in Africa is much more stable than the past, but still international conflict and volatile political status of some African countries affects trade performance.

In recent years, African countries have initiated several protocols to expand intra-continent trade, such as the Action Plan for Boosting Intra-African Trade (BIAT) and TFTA, or called CFTA, originated from African Economic Community that African countries established in 1991 to develop its economy and stimulate the intra-continent trade. Although still many factors in implementing regional eco-

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<sup>22</sup> Jung (2017).

<sup>23</sup> Jung (2017). See also Feng, Li, and Swenson (2017) for trade policy uncertainty in China's WTO accession and its effect on exports.

<sup>24</sup> Jung (2017).

conomic integration need more actions to eliminate tariff and non-tariff barriers, African countries' cooperation has expanded to develop transportation infrastructure as well as systematic connectivity and regional security.

Financial market development, political stability, and policy expectancy are also necessary for Africa to streamline a comprehensive plan for regional integration into African countries' national level policies as well as development aid plans for Africa from international institutes and major developed countries. Fortunately, the number of violent international and intra-state conflicts in Africa has decreased significantly. Financial market has been expanded with mobile-base technological innovation in Africa. The result of research emphasizes an important lesson for African countries that have faced financial market volatility and domestic political instability.



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## Appendix

**Table A1. Member Countries of Major Regional Trade Agreements in Africa**

| RTA Name | Member Countries (2016)  |
|----------|--|
| UMA      | Algeria, Libya, Mauritania, Morocco, Tunisia   |
| EAC      | Burundi, Kenya, Rwanda, South Sudan, Uganda, Tanzania  |
| IGAD     | Djibouti, Eritrea, Ethiopia, Kenya, Somalia, South Sudan, Sudan, Uganda  |
| ECCAS    | Angola, Burundi, Cameroon, Central African Rep., Chad, Congo, Rep., DR Congo, Equatorial Guinea, Gabon, Rwanda, São Tomé and Príncipe  |
| CEN-SAD  | Benin, Burkina Faso, Cabo Verde, Central African Rep., Chad, Comoros, Côte d'Ivoire, Djibouti, Egypt, Eritrea, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Mali, Mauritania, Morocco, Niger, Nigeria, São Tomé and Príncipe, Senegal, Sierra Leone, Somalia, Sudan, Togo, Tunisia |
| COMESA   | Burundi, Comoros, DR Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, Zimbabwe  |
| SADC     | Angola, Botswana, DR Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe   |
| ECOWAS   | Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo   |

Source: Author's revision from Figure on p.13 of AU, AfDB, ECA(2016)

**Table A2. Source of Data**

| Variable                     | Source  |
|------------------------------|---|
| Exports                      | NBER-UN World Trade Data  |
| Trade Agreements             | Baier and Bergstrand (2017), online (accessed May 25, 2017).  |
| Financial Market Development | Beck <i>et al.</i> (2013), online (accessed May 17, 2017).  |
| Political Instability        | Center for Systemic Peace, the Political Instability Task Force (PITF) State Failure Problem Set, online (accessed May 30, 2017).<br>Uppsala Conflict Data Program (UCDP) and the Peace Research Institute Oslo (PRIO) Armed Conflict Dataset version 17.1, online (accessed May 30, 2017). |

**Table A3. Political Instability Events in Africa**

| Country              | Political Instability Events (1962–2000) |
|----------------------|--|
| Algeria              | 1962, 1991–2000                          |
| Angola               | 1962, 1975–2000                          |
| Benin                | 1963–1965, 1972                          |
| Botswana             | –  |
| Burkina Faso         | 1980                                     |
| Burundi              | 1963–1973, 1988–2000                     |
| Cabo Verde           | –  |
| Cameroon             | –  |
| Central African Rep. | –  |
| Chad                 | 1965–1994                                |
| Comoros              | 1976, 1995–1996, 1999                    |
| DR Congo             | 1962–1965, 1977–1979, 1992–2000          |
| Congo, Rep.          | 1963, 1997–1999                          |
| Côte d'Ivoire        | 2002–2008                                |
| Djibouti             | 1991–1994                                |
| Egypt                | 1967, 1973, 1992–1999                    |
| Equatorial Guinea    | 1969–1979                                |
| Eritrea              | 1998–2000                                |
| Ethiopia             | 1962–1993, 1998–2000                     |
| Gabon                | –  |
| The Gambia           | 1994                                     |
| Ghana                | 1972, 1981                               |
| Guinea               | 2000                                     |
| Guinea-Bissau        | 1998–1999                                |
| Kenya                | 1964–1966, 1969, 1991–1993               |
| Lesotho              | 1970, 1998–1999                          |
| Liberia              | 1985, 1989–1996, 2000                    |

**Table A3. Continued**

|                       |                            |
|-----------------------|----------------------------|
| Libya                 | 1987                       |
| Madagascar            | -                          |
| Malawi                | -                          |
| Mali                  | 1990-1995                  |
| Mauritania            | -                          |
| Mauritius             | 1965, 1975-1989            |
| Morocco               | 1966-1974, 1976-1992       |
| Mozambique            | 1972-1973, 1976-1992       |
| Namibia               | -                          |
| Niger                 | 1996                       |
| Nigeria               | 1964-1970, 1980-1985       |
| Rwanda                | 1963-1966, 1990-1998       |
| Sao Tome and Principe | -                          |
| Senegal               | 1962-1963, 1992-1999       |
| Seychelles            | -                          |
| Sierra Leone          | 1967, 1971, 1991-2000      |
| Somalia               | 1969, 1977-1978, 1988-2000 |
| South Africa          | 1984-1996                  |
| Sudan                 | 1962-1972, 1983-2000       |
| Swaziland             | 1973                       |
| Tanzania              | -                          |
| Togo                  | -                          |
| Tunisia               | -                          |
| Uganda                | 1966-1969, 1971-2000       |
| Zambia                | 1964, 1968-1972, 1996      |
| Zimbabwe              | 1972-1979, 1981-1987       |

Source: Bertin, Ohana, and Strauss-Kahn (2016), pp. 352-353, Table A1; expanded and corrected by the author with data.

**Table A4. Summary of Financial Development Measure of Countries**

(Unit: %)

| Country              | # of Obs. | Mean  | Std. Dev. | Min.   | Max.  | African Country |
|----------------------|-----------|-------|-----------|--------|-------|-----------------|
| Albania              | 91        | 3.53  | 0.29      | 3.89   | 3.08  | -               |
| Algeria              | 206       | 34.46 | 23.76     | 67.67  | 4.15  | 0               |
| Angola               | 8         | 2.42  | 1.30      | 3.93   | 1.14  | 0               |
| Argentina            | 967       | 14.59 | 4.49      | 25.17  | 8.50  | -               |
| Aruba                | 73        | 41.46 | 1.31      | 43.37  | 39.16 | -               |
| Australia            | 794       | 38.98 | 20.55     | 83.48  | 17.61 | -               |
| Austria              | 815       | 64.91 | 21.04     | 98.30  | 33.31 | -               |
| Bahamas              | 284       | 47.41 | 8.71      | 62.43  | 34.02 | -               |
| Bahrain              | 202       | 43.20 | 10.77     | 62.28  | 28.05 | -               |
| Bangladesh           | 13        | 19.98 | 2.69      | 22.70  | 15.12 | -               |
| Barbados             | 242       | 37.26 | 6.35      | 55.51  | 28.66 | -               |
| Belgium              | 821       | 31.38 | 20.98     | 77.36  | 9.76  | -               |
| Belize               | 21        | 40.32 | 5.02      | 47.51  | 32.91 | -               |
| Benin                | 13        | 8.96  | 2.41      | 14.06  | 6.24  | 0               |
| Bhutan               | 27        | 5.87  | 2.47      | 10.32  | 2.53  | -               |
| Bolivia              | 373       | 17.52 | 16.51     | 63.04  | 1.51  | -               |
| Brazil               | 560       | 29.63 | 8.49      | 41.77  | 10.25 | -               |
| Bulgaria             | 192       | 32.91 | 20.92     | 68.29  | 8.71  | -               |
| Burkina Faso         | 214       | 7.22  | 4.59      | 15.65  | 2.16  | 0               |
| Burundi              | 55        | 6.73  | 3.47      | 16.58  | 2.64  | 0               |
| Cambodia             | 54        | 4.92  | 0.98      | 5.88   | 3.08  | -               |
| Cameroon             | 313       | 18.08 | 5.50      | 28.46  | 6.66  | 0               |
| Canada               | 78        | 62.59 | 27.60     | 99.31  | 17.59 | -               |
| Central African Rep. | 7         | 9.74  | 3.80      | 12.71  | 4.06  | 0               |
| Chad                 | 10        | 5.23  | 1.39      | 6.72   | 3.39  | 0               |
| Chile                | 777       | 32.24 | 23.50     | 67.01  | 2.74  | -               |
| China                | 299       | 83.99 | 11.88     | 107.18 | 68.47 | -               |



Table A4. Continued

|                    |     |        |       |        |        |   |
|--------------------|-----|--------|-------|--------|--------|---|
| Colombia           | 984 | 24.08  | 6.63  | 35.65  | 10.16  | - |
| DR Congo           | 312 | 2.51   | 1.27  | 4.83   | 0.21   | 0 |
| Congo, Rep.        | 11  | 9.44   | 3.62  | 15.82  | 5.70   | 0 |
| Costa Rica         | 554 | 22.33  | 5.60  | 28.31  | 10.47  | - |
| Cyprus             | 726 | 92.34  | 51.91 | 202.19 | 38.24  | - |
| Côte d'Ivoire      | 612 | 27.11  | 8.77  | 41.19  | 14.91  | 0 |
| Denmark            | 892 | 31.98  | 11.41 | 83.62  | 21.66  | - |
| Djibouti           | 5   | 43.21  | 12.05 | 54.47  | 30.12  | 0 |
| Dominican Republic | 498 | 26.70  | 11.29 | 49.46  | 5.56   | - |
| Ecuador            | 719 | 19.95  | 6.87  | 40.67  | 12.93  | - |
| Egypt              | 453 | 23.74  | 9.84  | 56.02  | 14.83  | 0 |
| El Salvador        | 480 | 23.47  | 5.75  | 43.53  | 16.82  | - |
| Ethiopia           | 213 | 12.95  | 2.88  | 23.59  | 7.05   | 0 |
| Fiji               | 344 | 23.14  | 8.83  | 39.65  | 10.70  | - |
| Finland            | 824 | 51.55  | 16.44 | 92.17  | 36.03  | - |
| France             | 851 | 76.32  | 16.25 | 99.88  | 44.81  | - |
| Gabon              | 312 | 14.98  | 2.80  | 23.82  | 6.61   | 0 |
| Gambia             | 75  | 15.11  | 3.43  | 22.96  | 10.66  | 0 |
| Germany            | 184 | 102.01 | 9.18  | 116.54 | 88.00  | - |
| Ghana              | 314 | 6.98   | 2.34  | 11.66  | 1.39   | 0 |
| Greece             | 859 | 25.57  | 9.23  | 42.58  | 11.19  | - |
| Guatemala          | 505 | 13.46  | 2.35  | 19.61  | 10.05  | - |
| Guinea-Bissau      | 11  | 7.62   | 2.99  | 12.96  | 4.41   | 0 |
| Guyana             | 32  | 44.29  | 11.88 | 55.80  | 23.17  | - |
| Haiti              | 228 | 7.12   | 4.14  | 13.74  | 1.47   | - |
| Honduras           | 444 | 23.94  | 6.78  | 37.94  | 9.94   | - |
| Hong Kong, SAR     | 207 | 146.00 | 15.87 | 176.45 | 124.82 | - |
| Hungary            | 365 | 27.98  | 9.56  | 47.37  | 16.19  | - |

Table A4. Continued

|                    |     |        |       |        |       |   |
|--------------------|-----|--------|-------|--------|-------|---|
| Iceland            | 319 | 46.85  | 13.63 | 82.34  | 30.52 | - |
| India              | 203 | 19.28  | 6.50  | 28.96  | 8.29  | - |
| Indonesia          | 337 | 32.84  | 15.38 | 53.53  | 9.00  | - |
| Iran, Islamic Rep. | 436 | 24.42  | 5.30  | 41.81  | 15.75 | - |
| Iraq               | 145 | 9.79   | 2.48  | 13.36  | 6.57  | - |
| Ireland            | 811 | 53.16  | 15.52 | 95.96  | 30.42 | - |
| Israel             | 129 | 46.69  | 18.19 | 72.40  | 12.94 | - |
| Italy              | 801 | 56.62  | 7.31  | 71.23  | 46.47 | - |
| Jamaica            | 459 | 21.99  | 4.62  | 30.66  | 13.57 | - |
| Japan              | 860 | 141.57 | 49.74 | 231.41 | 61.74 | - |
| Jordan             | 221 | 57.74  | 14.33 | 75.80  | 32.82 | - |
| Kenya              | 376 | 19.94  | 5.38  | 33.01  | 11.63 | 0 |
| Korea, Rep. of     | 554 | 50.45  | 12.81 | 79.03  | 33.04 | - |
| Kuwait             | 302 | 44.20  | 26.57 | 99.96  | 7.91  | - |
| Lao PDR            | 53  | 6.58   | 2.64  | 9.19   | 0.45  | - |
| Libya              | 127 | 8.83   | 4.23  | 16.69  | 3.60  | 0 |
| Macao, SAR         | 116 | 76.79  | 10.39 | 91.02  | 62.71 | - |
| Madagascar         | 315 | 14.61  | 1.38  | 17.13  | 7.95  | 0 |
| Malawi             | 33  | 13.50  | 5.85  | 19.11  | 3.98  | 0 |
| Malaysia           | 713 | 61.08  | 44.88 | 155.17 | 8.36  | - |
| Mali               | 15  | 13.33  | 2.56  | 17.16  | 8.85  | 0 |
| Malta              | 379 | 43.89  | 22.87 | 101.82 | 12.47 | - |
| Mauritius          | 166 | 23.99  | 6.87  | 54.92  | 15.21 | 0 |
| Mexico             | 885 | 22.20  | 6.81  | 33.24  | 8.68  | - |
| Mongolia           | 43  | 6.97   | 1.24  | 10.78  | 5.67  | - |
| Morocco            | 524 | 25.76  | 11.77 | 48.89  | 11.00 | 0 |
| Mozambique         | 10  | 11.40  | 2.48  | 15.39  | 8.31  | 0 |
| Myanmar            | 356 | 5.48   | 1.52  | 8.92   | 2.56  | - |

Table A4. Continued

|                  |     |       |       |        |       |   |
|------------------|-----|-------|-------|--------|-------|---|
| Nepal            | 81  | 8.54  | 6.87  | 27.73  | 1.25  | - |
| Netherlands      | 822 | 55.87 | 25.56 | 125.47 | 21.56 | - |
| New Zealand      | 763 | 39.08 | 35.08 | 107.02 | 9.80  | - |
| Niger            | 189 | 8.74  | 4.13  | 16.81  | 3.54  | 0 |
| Nigeria          | 621 | 6.83  | 2.57  | 17.24  | 3.29  | 0 |
| Norway           | 847 | 59.24 | 11.80 | 79.21  | 47.34 | - |
| Pakistan         | 209 | 22.16 | 2.80  | 27.52  | 13.27 | - |
| Panama           | 636 | 42.40 | 18.86 | 93.16  | 11.30 | - |
| Papua New Guinea | 300 | 18.13 | 4.81  | 29.22  | 11.42 | - |
| Paraguay         | 387 | 16.37 | 5.82  | 29.03  | 4.69  | - |
| Peru             | 868 | 14.03 | 4.99  | 27.80  | 4.89  | - |
| Philippines      | 661 | 31.23 | 9.64  | 55.60  | 17.01 | - |
| Poland           | 439 | 32.71 | 20.39 | 90.54  | 14.25 | - |
| Portugal         | 826 | 55.41 | 13.51 | 113.36 | 37.48 | - |
| Romania          | 136 | 11.08 | 8.87  | 30.92  | 4.44  | - |
| Rwanda           | 38  | 3.75  | 2.01  | 9.50   | 1.37  | 0 |
| Samoa            | 85  | 17.84 | 5.95  | 28.65  | 9.45  | - |
| Saudi Arabia     | 349 | 37.84 | 23.14 | 74.21  | 2.20  | - |
| Senegal          | 341 | 21.04 | 8.33  | 34.28  | 12.37 | 0 |
| Seychelles       | 52  | 18.14 | 2.25  | 22.46  | 10.45 | 0 |
| Sierra Leone     | 158 | 5.54  | 1.09  | 7.78   | 1.91  | 0 |
| Singapore        | 724 | 75.22 | 24.73 | 117.48 | 34.64 | - |
| South Africa     | 575 | 84.66 | 31.40 | 127.02 | 17.84 | 0 |
| Spain            | 600 | 71.68 | 5.56  | 90.12  | 62.30 | - |
| Sri Lanka        | 131 | 14.77 | 5.16  | 28.72  | 7.11  | - |
| Sudan            | 200 | 9.77  | 2.06  | 12.42  | 1.28  | 0 |
| Suriname         | 167 | 20.90 | 7.86  | 41.63  | 4.86  | - |
| Sweden           | 867 | 78.48 | 20.45 | 122.41 | 36.43 | - |

**Table A4. Continued**

|                     |               |              |              |               |             |          |
|---------------------|---------------|--------------|--------------|---------------|-------------|----------|
| Switzerland         | 670           | 129.39       | 28.68        | 162.97        | 91.65       | -        |
| Syrian Arab Rep.    | 277           | 7.65         | 3.80         | 19.46         | 3.71        | -        |
| Tanzania            | 15            | 6.69         | 3.52         | 12.59         | 3.09        | 0        |
| Thailand            | 699           | 62.99        | 45.07        | 165.80        | 12.48       | -        |
| Togo                | 184           | 17.95        | 6.22         | 30.22         | 10.73       | 0        |
| Trinidad and Tobago | 608           | 24.85        | 10.67        | 47.95         | 8.16        | -        |
| Tunisia             | 215           | 57.49        | 5.03         | 65.72         | 48.67       | 0        |
| Turkey              | 683           | 16.51        | 2.32         | 20.53         | 13.11       | -        |
| Uganda              | 8             | 4.59         | 0.72         | 5.60          | 3.39        | 0        |
| United Kingdom      | 868           | 56.59        | 39.34        | 119.43        | 17.40       | -        |
| United States       | 82            | 103.80       | 22.00        | 168.77        | 76.01       | -        |
| Uruguay             | 532           | 21.30        | 13.64        | 54.60         | 5.36        | -        |
| Venezuela           | 937           | 27.36        | 13.31        | 56.32         | 8.40        | -        |
| Viet Nam            | 55            | 21.60        | 4.96         | 30.41         | 17.24       | -        |
| Zambia              | 13            | 6.23         | 1.43         | 8.57          | 3.69        | 0        |
| Zimbabwe            | 37            | 0.59         | 1.28         | 4.70          | 0.01        | 0        |
| <b>Overall</b>      | <b>47,166</b> | <b>40.66</b> | <b>34.76</b> | <b>231.41</b> | <b>0.01</b> | <b>-</b> |

Source: Author's calculation with data obtained from Beck *et al.* (2013) online (accessed May 17, 2017).

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## 국문요약

본 연구는 아프리카 지역 국가들의 다양한 역내 자유무역협정에도 불구하고 역내 교역이 증가하지 못하는 원인을 계량경제학적으로 분석하였다. 아프리카 대륙 전체로 보면 약 30여 개의 양자 혹은 다자간 역내무역협정이 체결되어 있을 정도로 협정상의 무역자유화가 진행되어 있다. 하지만 아프리카 국가간 역내 무역 규모는 전체 교역 규모의 10% 수준에 그치고 있어 다른 지역의 역내 무역 비중에 비해 매우 낮은 수준이다. 본고에서는 NBER 전 세계 교역 데이터와 세계은행이 발표하는 각국의 자본시장 발달지수, PTFT와 UCDP/PRIO 분쟁 데이터를 이용한 각국의 정치제도 안정성 지수 등을 이용하여 아프리카의 역내 교역을 저해하는 원인에 대해 살펴보았다. 그 결과 아프리카 지역 국가들의 낮은 자본시장 발달 정도와 불안정한 정치제도가 아프리카 역내 교역의 저해 요인 중 상당 부분을 차지하고 있음을 확인하였다. 특히 동태적 분석에서 무역협정의 효과가 집중적으로 실현되는 협정 체결 직후 시점에서 자본시장 조건과 정치제도 안정성 요인이 교역 증가속도와 밀접하게 관련이 있다는 사실을 발견하였다. 이 두 요인을 제외한 아프리카 지역의 다른 특이요소를 반영하는 아프리카 대륙 더미변수의 효과는 미미하였다. 본고는 아프리카 지역 국가를 비롯한 신흥지역 국가들의 교역을 확대하기 위해서는 협정상의 무역자유화뿐만 아니라 자본시장 조건과 같은 경제구조나 정치환경에 대한 개선이 함께 이루어져야 한다는 점을 강조하고 있다.

**핵심용어:** 지역무역협정, 자본시장, 정치 안정성, 아프리카

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## **저서 및 논문**

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