Civil Conflicts and Regional Integration Outcomes in Africa

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Abstract

Civil conflicts are a major challenge to the economic development of a country. Although it is an intrastate dispute, civil conflict has also an impact on the neighboring countries. It can be a source of regional destabilization that consequently impedes regional economic growth. The aim of the present article is to analyze the potential consequences of conflicts on regional economic integration (REI) outcomes among African nations. Our findings document that civil conflicts affect the economic fate of regional economic communities mostly through their negative impact on regional integration in terms of business cycle synchronicity, their effect on regional trade intensity being more nuanced. By assessing the effect of conflict on regional economic integration processes, this paper highlights that intrastate political events are also major regional constraint hampering the performances of African Regional Economic Communities (REC). We therefore find an additional reason to recommend that prevention and resolution of civil conflicts might be put on the top of the political agenda of African RECs.

Keywords: Civil conflict, Regional Economic Integration, Africa.
JEL Classification: O11, F15, D74, O55.

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We would like to thank Professor Jean-Louis Arcand, Joppe de Ree, Kelly Labar, Stéphanie Cassilde, Joël Cariolle, Linguère M'Baye and Gaoussou Diarra for helpful comments and discussions.

1 Introduction

Regional economic integration (REI) is crucial for African states since they are characterized by relative small market sizes impeding their development process and integration to the global economy. The potential benefits of REI, such as the improvement of economic prospects and political stability, are expected to be substantial (Schiff and Winters 2003). However, as of their anticipated outcomes, the existing African RECs have poorly performed since their establishment. Progresses in intra-regional trade and policy coordination appear to be low. Among the identified explanatory factors, the lack of political commitment and the importance of economic constraints have been stressed as the most hampering for countries to progress in REI (Geda and Kibret 2008). As a major challenge to economic development more generally, civil conflict might also be a constraint to regional economic integration (REI).

Africa is one of the continents that are the most affected by civil conflict, with more than 2/3 of its 53 countries having experienced conflict between 1980 and 2005[3]. Like all wars, civil conflict has harmful consequences in the occurring countries. Human lives are lost and communities, infrastructures and institutions are destroyed. Further, in terms of economic prospects, it has devastating consequences (Collier et al. 2003). Although civil conflict is an intrastate dispute, it is also found to have an impact on the neighboring countries by affecting their economic prospects (*e.g.,* Murdoch and Sandler 2002), and by geographically spreading to those countries. Civil conflict is thus a source of regional political and economic destabilization and, as such, it might be an obstacle to progress in REI in Africa. Understanding the effect of conflict on REI outcomes would highlight the role of intrastate political events, such as civil wars, as a critical constraint hampering the performances of African RECs.

The present article aims at assessing the potential consequences of conflicts on regional economic integration outcomes among African countries. In particular, we are interested in analyzing what happens to a country participating in a given REC when civil conflict occurs. We subsequently propose an empirical study of the potential regional costs of conflicts, in terms of their effects on integration outcomes in Africa between 1980 and 2005. The empirical approach we use in this paper is innovative for several reasons. First, we conduct the analysis at the multilateral level, which considers the degree of integration of a country with all the other countries belonging to the same REC. This allows us to account for the global effects of civil conflicts, rather than using the bilateral approach. Further, instead of *de jure* indicators of economic integration among nations such as the signature of agreements or treaties, we use *de facto* measures that account for the various dimensions of integration which are the increase in regional trade and the greater coordination of macroeconomic policies. In addition, our instrumental variable technique allows us to simultaneously control for the unobserved heterogeneity affecting integration effectiveness and civil conflict. The conflict variable is instrumented by the number of assassination attempts on national leaders and by the number of refugees hosted in countries.

Our findings document that prevention and resolution of domestic violent conflicts should be put on the top of the political agenda of African Regional Economic Communities (RECs). We show that civil conflict induces a decrease in business cycle synchronicity and an increase in intra-regional trade intensities. Yet, past conflicts affect negatively current intra-regional trade intensities. From these results, we derive the following policy implication: it is highly advisable for members of the same REC to get involved in their peers' conflicts prevention and/or resolution, because of their regional economic effect. Consolidating peace and building strong state institutions are crucial to improve regional economic prospects and achieve a sustainable economic development.

[3]Source: UCDP/PRIO Armed Conflict Dataset.

The rest of the paper is structured as follows. Section 2 presents theoretical aspects of the impact of civil conflict on regional economic integration process in Africa. Section 3 describes the data and the research design. The results are discussed in section 4, and concluding remarks are provided in the final section.

2 Civil Conflict and Regional Economic Integration: Theoretical Aspects

2.1 Regional Economic Integration in Africa

According to Balassa (1961), regional economic integration can be defined as a process by which a group of countries agrees "to eliminate discrimination between the economic and noneconomic units that belong to the different national states". Yet, it is not a straightforward process; it involves the decision to cooperate (*de jure* integration) and the effectiveness of the cooperation (*de facto* integration). Neither the signature of a treaty, nor the establishment of regional institutions in charge of the execution of policies allowing regional economic progress guarantee the effectiveness of REI. Countries must implement specific political and economic measures in order to achieve the gradual elimination of various forms of discrimination. The set of such measures comprises the continuing lowering of intra-regional boundaries and the shifting of authority over key areas of domestic regulation and policy to the supranational level (Lombaerde and Van Langenhove 2005). As suggested by Balassa (1961), it is possible to distinguish various stages of REI from the establishment of a free trade area to a full economic union, according to the extent of cooperation: a free trade area, a customs union, a common market, a monetary union and a full economic union[4].

For a regional economic community (REC), each step of the economic integration process comprises for its members benefits, but also costs (Venables 2000)[5]. The distribution of costs and benefits determines national interest and incentives likely to lead countries to implement or not the regional agreements signed. The difficulty of bearing the costs associated with progress in terms of REI might explain the lack of political commitment of national leaders to implement the regional agreements, which was identified by Geda and Kibret (2008) as a major constraint to the performances of African RECs. Some requirements allow countries to offset the costs associated with a deeper degree of integration, at each step. For instance, Mundell (1961)'s theory of Optimum Currency Areas (OCA) provides the criteria required for countries in a monetary union to reap the benefits of being in such a union. These criteria are related to the necessary economic interdependence between the members of a same REC. There must be a symmetry in the shocks affecting countries, a full mobility of factors, the diversification of production, a similarity in inflation rates, a flexibility of wages and prices, and a capacity for risk-sharing within the REC. Thus, at each step of REI, if the members do not sufficiently fulfill some specific criteria, the costs associated with the integration process might lead them to not make the efforts required for their progress in REI.

Regional economic integration has become a concern for all countries throughout the world, in the

[4] A free trade area is a group of countries which suppresses all restrictions on mutual trade, but each member retains its own tariff and quota system on trade with third countries. A free trade area becomes a customs union when countries adopt a common system of tariffs and quotas with respect to trade with third countries. Further, a customs union becomes a common market with the removal of all restrictions on factor movement. The adoption of a common monetary policy and a common currency leads to a monetary union, and beyond the monetary union, countries that coordinate their economic policies form an economic union.

[5] REI process generates costs such as trade diversion and the loss of fiscal revenues from regional trade.

current context of increased globalization. Indeed, as pointed out by Alesina and Spolaore (1997), "countries that are too small may not be viable in a world of trade restrictions". Most African states are yet characterized by a low income and a small market size (UNECA 2004). For them, REI is thus crucial. Regional integration is first viewed as means to allow African states to offset the small size of their domestic markets and attain sustained economic growth, notably through scale and competition effects, new trade opportunities and increased investment (Schiff and Winters 2003). It is also perceived as a possible way to improve the credibility of members' economic policies (Fernandez and Portes 1998) and as an important tool for diplomacy (Schiff and Winters 1998).

Since the independences, African leaders have strived to enhance the economic integration of the continent. Several regional groups were created. We find that the number of RECs has increased from 10 to 21 between 1980 and 2005 (2 customs unions, 6 economic integration agreements, 8 free trade agreements, 3 monetary zones and 2 monetary unions). The list of African RECs and their members is provided in Appendix 1. The multiplication of RECs has been accompanied by an overlapping membership phenomenon. Out of the 53 African states, 46 are members of at least 2 RECs in 2004 (UNECA 2004). The average was only 1 in 1980. Overlapping membership hampers the progress of integration since countries participate in RECs which objectives and policies that are different, with however a global emphasis on trade and macroeconomic integration. Despite the African interest in REI, the progress toward integration with respect to the achievement of these goals is quite poor. For illustration, according to the World Trade Organization, intra-African exports represent only 9.5% of African total exports in 2007. Other blocs are performing better with 73.5% in Europe, 51.3% in North America, 49.7% in Asia, 24.4% in South and Central America and 12.3% in Middle East. The poor performances of African RECs are also explained by economic and political constraints. The economic constraints consist mostly in the factors impeding the achievement of the requirements for the suitability of regional unions, such as those we mentioned above. Among those factors, the overall insufficient production specialization, divergent macroeconomic policies, poor infrastructure development and the continuity of strong economic ties with non-members seem to play an important role (*e.g.* Schiff and Winters 2003 and Geda and Kibret 2008). The political constraint consists mainly in the unwillingness of national governments to effectively implement the agreements signed. We argue below that civil conflicts are an additional constraint hampering the progress of African RECs, and prevent the countries from reaping REI benefits, notably in terms of increase in regional trade and scope for better policy coordination.

2.2 Civil conflicts as a constraint to African countries' progress in REI

Africa is one of the continents that are the most affected by civil conflict, with more than 2/3 of its 53 countries that experienced a civil conflict between 1980 and 2005[6]. Only 17 states have avoided internal sizeable conflicts in the continent[7], and on average, each year, civil conflict occurs in 11 African countries.

Major challenge to the economic development, civil conflicts cause serious damages to national economic prospects. The most common feature that has been identified in the literature on the consequences of civil conflicts is the decline of economic capabilities that results from civil conflict. A

[6] According to the UCDP/PRIO Armed Conflict Dataset, see Section 3.1.

[7] These countries are Benin, Botswana, Cape Verde, Equatorial Guinea, Gabon, Libya, Madagascar, Malawi, Mauritania, Mauritius, Namibia, Sao Tome and Principe, Seychelles, Swaziland, Tanzania, Zambia and Zimbabwe.

country confronted to a civil conflict might experience serious losses in its accumulated physical and human capital, and in its overall trade flows (Bayer and Rupert 2004). The impossibility for this country to offer secured long term returns for investments further results in a low investment (Collier 1999), which leads this country to a decline in GDP per capita and/or in growth rates. Not only do civil conflicts have an impact on economic capabilities when they occur, but also when there is a risk that they occur. Besley and Persson (2008) find that the risk of civil conflict results in a lower investment in state fiscal capacity, notably because of the diversion of fiscal resources in the increased military expenditures.

Although intrastate events, it has been argued that civil conflicts have a strong negative impact on the neighboring countries (Collier et al. 2003). Murdoch and Sandler (2002) find that civil wars reduce short-run growth across an entire region of neighboring countries. De Groot (2009) moderates this finding by arguing that only contiguous ("primary") neighboring countries actually suffer from the negative effects of proximate conflict, and also experience a decline in their economic capabilities. Non-contiguous ("secondary") neighbors experience on the contrary a positive spillover effect. There is also some evidence that civil conflict may also have an impact on neighbors' through geographical spillovers, which are considered as a strong determinant of civil conflict throughout the world[8]. By allowing for country specific heterogeneity, Bosker and de Ree (2009) show however that the probability of civil war onset following a neighboring conflict is increased only for Africa. In other words, the fate of African countries does not only depend on their own actions to prevent civil war, but also on what is happening in their neighboring states.

As a result of its impaired economic situation and lower investment in state fiscal capacity, we can expect a country confronted to a civil conflict not to be able to respect its commitments towards the countries in its regional economic community (communities). Indeed, it might not be possible for this country to face the potential losses due to the REI process, notably due to the likely asymmetry in the shocks affecting its economy and its regional peers' economies. Further, conflict might impede production diversification, infrastructure development within the occurring country, and make macroeconomic discipline impossible. Besides that, conflict might have a negative effect on REI outcomes through its effect on political commitment. REI in order to be successful has to have convincing features of permanency and irreversibility, and a sustained political commitment is crucial for that. Yet, conflicts change the priorities of the governments, and lead countries to become withdrawn. It is also likely that conflict countries might, for instance, be more sensitive to incentives to go back on signed agreements, given the time inconsistency problems of economic policy-making. Through their effects on neighboring countries, we also expect civil conflicts to be an obstacle to REI process, first because they are a potential source of regional political destabilization. Then, they might increase the economic divergence between the members of the same regional economic community, by increasing notably the asymmetry of the shocks affecting their respective economies.

Concerning intra-regional trade, the effect of civil conflicts is likely to be ambiguous. Indeed, besides the negative effect on overall trade due to the decline in economic capabilities and to infrastructure destruction, civil conflict might increase a country's reliance on its regional peers. As Mansfield and Bronson (1997) point out, countries with limited resources might trade more with their allies in times of conflict. Civil conflict might then contribute to somewhat reduce economic ties with non-members in certain circumstances. For instance, some countries consider certain ethical aspects when trading with other countries and might be unwilling to maintain economic relations with countries confronted to a civil conflict. Yet, in Africa, intra-regional trade flows are weak compared to trade with non-members, mainly because of the non-complementarity in the countries' structure of trade. So, even if there is a relative increase in intra-regional trade flows due to an increased reliance on the members of

[8] See among others Sambanis (2001), Hegre and Sambanis (2006), Salehyan and Gleditsch (2006), Gleditsch (2007) and Buhaug and Gleditsch (2008)

the same REC, it is likely that this increase will not be large, compared to overall trade flows. For this reason we expect civil conflict to have an ambiguous effect on intra-regional trade.

3 Data and Research Design

3.1 Data

Our empirical analysis is based on a panel data set that we construct from different sources. It covers the 53 African countries and the 21 RECs from 1980 to 2005. In this data set, the observation unit is the existing couple country-REC[9]. According to the date of the establishment of RECs, we have a sample size of 3663 observations[10].

One of the reasons for the poor performances of African RECs is the lack of political commitment in implementing the signed treaties. This leads us to rely on *de facto* measures of regional economic integration, to assess the effect of conflict on the effectiveness of REI, in terms of the expected outcomes of the implementation of regional agreements. For instance, the increase in internal trade within a regional integration would catch the progress in the removal of trade barriers through the free trade area and customs unions agreements (e.g. Carrère 2004 and 2006). In the same manner, the extent of cross border shareholdings and internal movements in labor forces would indicate the elimination of restrictions on factors movement. Further, the synchronicity of business cycles indicates the symmetry of the shocks affecting the economies within a given cluster, which is required for countries to better coordinate their macroeconomic policies and reap the benefits of adopting of a common monetary policy and a common currency (e.g. Mundell 1961, and Frankel and Rose 1998). We then decide to focus on trade relationships and the scope for coordination of policies and use the intra-regional trade intensity and business cycles synchronicity variables as proxies of REI outcomes, as suggested in the literature (*e.g.* Frankel and Rose 1997, 1998), and given the lack of reliable data on factor mobility for African countries.

For business cycle synchronicity, we rely on data on real gross domestic product (GDP) that comes from the World Bank World Development Indicators (WDI) 2008. We take GDP as a proxy of real economic activity, for it is often referred to as one of the main summary indicators of economic activity, and because of its availability for African countries[11]. We construct the business cycle synchronicity variable as follows. First we take the natural logarithm of GDP, and then we filter the data from short-term fluctuations and long-term trend to use GDP de-trended[12] component. In a third step, we compute, for each pair of countries, a correlation coefficient of the business cycles of countries *i* and *j* within the same REC over a rolling 5-years sub-period[13]. Finally, we take the regional mean of these correlation coefficients for each country *i* as our measure of business cycle synchronicity. According to the date of the establishment of the RECs, we have between one and

[9] For example, the couples Sénégal-WAEMU and Madagascar-SADC are taken as observation units in our data set.

[10] See the date of creation for African RECs in Appendix 1.

[11] Frankel and Rose (1997, 1998), Darvas *et al.* (2005) and Inklaar *et al.* (2008), use alternative proxies of real economic activity such as the industrial production or the employment rate, but these data is usually not available for African states.

[12] Following Frankel and Rose (1997, 1998), the cyclical component is computed with the Hodrick and Prescott filter. We use value of 6.25 for the smoothing parameter, as suggested by Ravn and Uhlig (2002) for annual data. As also pointed out by studies by Frankel and Rose (1997, 1998) and Calderon *et al.* (2007), we find in our robustness checks that using different filtering methods does not affect the results,.

[13] For each year *t*, we compute the correlation coefficients on the period $\{t,t+4\}$. We find similar results, available upon request, when we compute those coefficients over 3-years rolling periods.

twenty-six observations on the business cycle synchronicity for a given couple country-region. The business cycle synchronicity variable is continuous and is comprised between -0.720 and 0.758. Table 1 shows its descriptive statistics.

The second dependent variable is intra-regional trade intensity. It is the mean of bilateral trade intensities between country *i* and the other countries in the REC for each year. Following Frankel and Rose (1997, 1998), we define two indicators of trade intensity (TI1 and TI2) computed as follows: $TI1_{ijt} = \frac{M_{ijt} + X_{ijt}}{(X_{it} + M_{it}) + (X_{jt} + M_{jt})}$ and $TI2_{ijt} = \frac{M_{ijt} + X_{ijt}}{Y_{it} + Y_{jt}}$.

X_{ijt} is the nominal bilateral trade exports FOB (Free On Board) of country *i* to country *j* and M_{ijt} is the nominal bilateral trade imports CIF (Cost-Insurance-Freight) of country *i* from country *j*. Bilateral trade data come from the IMF database Direction of Trade. The official trade data are obtained from the compilation of formal trade and do not include informal trade which is certainly important among African states. Therefore, with the official data, the estimate of the impact of civil conflict on intra-regional trade intensity may be underestimated. X_{it} (M_{it}) is the total nominal exports FOB (total nominal imports CIF) of the country *i*. Y_{it} is the nominal GDP of the country *i*. Total exports, total imports and nominal GDP are taken from World Development Indicators 2008.

We are interested in investigating the effect of conflict on REI. As our main variable of interest we use a dummy for the years during which a country is in civil conflict. We use the UCDP/PRIO Armed Conflict Dataset, version 4 (Gleditsch *et al.* 2002, PRIO 2009). UCDP/PRIO defines a civil 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".

We control for the usual determinants of REI outcomes (Imbs 2004, Darvas *et al.* 2005 and Inklaar *et al.* 2008): the production specialization and the similarity of fiscal policies. The production specialization is computed as the regional mean of the specialization indicator defined by Imbs (2004) S_{ijt}. It is computed as the mean of the differences of economic structures between countries *i* and *j* over the rolling period *t*: $S_{ijt} = \frac{1}{T}\sum_{t}^{T}\sum_{n}^{N}\left|s_{nit} - s_{njt}\right|$, where s_{ni} denotes the GDP share of a sector *n* in a country *i*. The similarity of fiscal policies is proxied by the correlation of the share of government consumption in the GDP[14]. The data for both variables is drawn from the WDI 2008.

We also add variables that are included in gravity models. As suggested by Inklaar *et al.* (2008), these not only affect trade intensity, but there also related to variables affecting business cycle synchronicity. These variables are the following: per capita GDP, to control for the effect of economic development level; an institution variable, namely the Polity2 variable from the Polity IV dataset; and the number of mobile and fix phone lines per 1000 inhabitants, to control for the level of infrastructures. The data is drawn from the WDI 2008.

[14] The conventional deficit is usually acknowledged to be a better indicator of the fiscal policy of a government. We decided to use the share of government consumption because of the greater availability of these data. But when using the conventional deficit to construct the variable of similarity of fiscal policies as a robustness check, our results, which are available upon request, are similar, despite the loss of about one-third of the observations.

3.2 Econometric issues

The focus of the present paper is the analysis of the potential effects of civil conflicts on the outcomes of regional economic integration in Africa. For that purpose, we estimate the following regression:

$$REI_{irt} = \alpha + \beta \cdot Conflict_{it} + \gamma \cdot X_{irt} + \eta_{irt} \quad (1)$$

REI_{irt} is the regional integration indicator of a country *i* in a cluster *r* on year *t*, $Conflict_{it}$ is the conflict status of a country *i* on year *t*, X_{irt} denotes the various control variables that could determine REI outcomes independently of civil conflict and η_{irt} is the classical error term. α, β and γ are the coefficients to be estimated.

A simple OLS regression of equation (1) might yield biased estimates. There is indeed a potential issue with simultaneity between civil conflict and REI. On one hand, civil conflict might make more difficult the integration of a country, and on the other hand, countries might get into an integration process in order to secure the achievement of peace and political stability. There are also unobserved factors that are related to countries' social, economic and political indicators, and/or to the incentives to implement the regional economic agreements. Those unobserved factors may affect both conflicts and the progress in REI. For instance, countries that are more likely to benefit from the distribution of gains and losses of REI might show a strong and sustained political commitment towards the integration process in order to capture the gains associated. In doing so, they experience an enhanced economic growth, which contributes to increase, for instance, the citizens' opportunity cost of joining a rebellion[15]. Then, the degree of REI will be closely tied to the fact those countries are in peace, and this could result in an observed negative association between regional integration depth and conflict status which might in fact capture the result of countries' effective implementation of regional agreements.

To purge the simultaneity between REI and conflict, and the correlations between conflict and unobserved factors affecting the effective implementation of regional agreements, we adopt an instrumental variables estimator and use two instruments for conflict: a dummy for assassination attempts on the national leader and the number of refugees hosted by the country in each period.

Jones and Olken (2008) analyze the effects of assassinations attempts on national leaders on political institutions and civil conflicts. In their study, they emphasize the role of national leaders in the path of conflicts and provide evidence that assassinations attempts affect civil conflicts in a different way according to their intensity. While successful assassination attempts lead to an intensification of low intensity conflicts, they tend to hasten the termination of high intensity conflicts. We use the data collected by the authors from 1875 to 2004. They consider only the attempts in which a weapon was actually used. In Africa, there have been 13 assassination attempts among which 4 have been successful, between 1980 and 2004. This is the key to our identification assumption: if all assassinations had been successful, this variable could not be a good instrument, since Jones and

[15] Poverty has been identified as a cause of civil war by many studies in the literature. Yet, researchers differ in their interpretation of this empirical finding. According to Fearon and Laitin (2003), conflict in poor countries reflects their henceforth limited state capability to put down rebellions, whereas for Collier and Hoeffler (2004) it reflects lower opportunity costs of fighting in those countries. Whether one interpretation prevails on the other does not really matter when we consider the effect of REI on conflict. On one hand, by allowing them to conduct better economic policies, REI would allow states to make the require investments to increase national capability and change the political opportunity that affects rebels' decision to fight. On the other hand, by enhancing economic growth, regional economic integration might contribute to increase the opportunity cost of fighting.

Olken (2008) find that successful attempts lead to an institutional change likely to directly affect progress in REI. We assume that assassination attempts do not have a direct effect on regional economic integration, but an indirect effect through conflict, GDP and institutional change, for which we control.

The second instrument we use for conflict is the number of refugees hosted by the country each year. We use data compiled by Marshall for the Center for Systemic Peace[17]. Assisting and protecting refugees is a great burden for host countries, as suggested by the UNHCR reports. Refugees' flows urge the necessity to provide more public services, increase the scarcity of resources and require the shifting of a share of public expenditures from national citizens to the refugee population. Refugees might also influence positively the country's economic growth, if they have a high level of human or physical capital, or due to the increase in aid flows a host country might expect, especially when the conflict they are fleeing receives large international media coverage. We thus assume that it does not have a direct impact on progress in REI, but only through its impact on national economy. On the other hand, refugees hosting might, as argued by Saleyhan and Gleditsch (2006), lead to the international spread of conflict. First, refugee camps are often located near conflict areas and targeted during attacks. Some of the refugees might also bring along with them arms, combatants, and ideologies which are conducive to violence and mobilize opposition directed at their country of origin, or even at the hosting country. Furthermore, Saleyhan and Gleditsch (2006) point out that there might be tensions between refugees and host communities, due to several factors, from misperceptions about the real impact of refugees on the local environment and economy to the induced demographic and ethnic balance change in the host society.

We finally include in all estimates year fixed effects in order to control for the occurrence of covariate shocks, and region fixed effects to control for regional specific characteristics that are constant over time, notably the type of regional integration arrangements[18] or the characteristics of the established regional institutions.

4 EMPIRICAL RESULTS

4.1 Descriptive analysis

Descriptive statistics on the full sample over the 26 years of our analysis are provided in Table 1. The average country in our sample has low intra-regional trade flows and is relatively weakly synchronized with the countries in the REC it belongs to. In comparison, Tapsoba (2009) suggests that, from 1970 to 2003, the average business cycle synchronicity is nine times higher for the OECD members (0.4012) and 13 times higher for European Monetary Union members (0.5554) than for African countries. This is consistent with the poor performances of African RECs we mentioned above. If we differentiate the variables according to the conflict status, we find, as shown in Figures 1a and 1b, that an average conflict country is not clearly more or less integrated than a country at peace in terms of business cycle synchronicity. In terms of intra-regional trade however, conflict countries are not clearly different as of trade intensity relative to regional partners' total output, but they have greater trade intensity relative to regional partners' total trade.

[17] Data compiled from the World Refugee Survey of the United States Committee for Refugees and Immigrants (USCRI).
[18] In Africa, the RECs have not changed their type of arrangement in our period.

Figure 1a: Business Cycle Synchronicity by Conflict Status

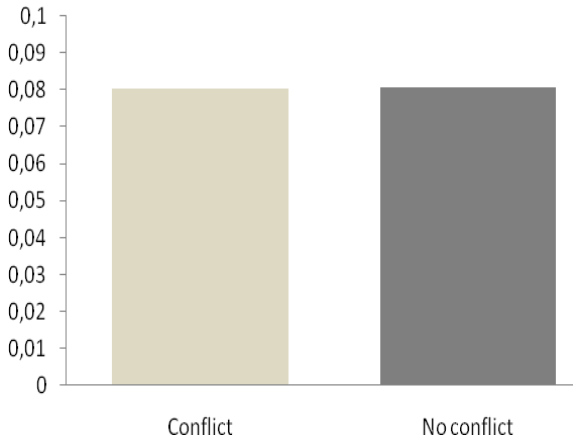

Figure 1b: Trade Intensities by Conflict Status

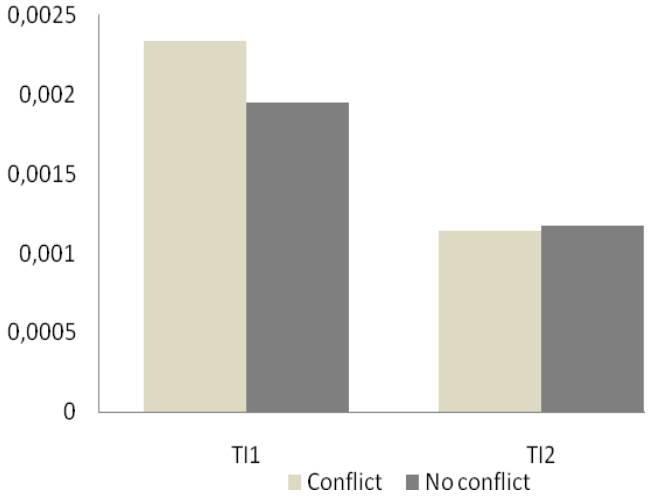

Table 1: Descriptive statistics of the main variables.

	Mean	Std. Dev.	Minimum	Maximum	Observations
	[1]	[2]	[3]	[4]	[5]
Conflict	0.21103	0.40809	0	1	3663
Trade intensity					
TI1	0.00203	0.003313	0	0.03425	3452
TI2	0.00117	0.001753	0	0.02141	3532
Synchronicity					
Hodrick-Prescott (λ=6.25)	0.08053	0.19490	-0.72059	0.75819	3572
Instruments					
Assassination attempts on leaders	0.00792	0.08864	0	1	3663
Number of refugees hosted	68.2975	140.868	0	1527	3530

Note: Std. Dev. stands for Standard deviation. TI1= Regional average of bilateral trade divided by the sum of the total trade of countries in the pairs. TI2= Regional average of bilateral trade divided by the sum of the output of countries in the pairs. λ is the smoothing parameter of the Hodrick-Prescott's filter.

4.2 Effects of civil conflict on progress in regional economic integration

A test of the difference in the means of assassination attempts on leaders and refugees hosted according to the conflict status shows that this difference is statistically significant[19]. On average, it is

[19] We conducted a test of the significance of the difference in the means, which is not presented here, but available upon request.

more likely for a conflict country to experience more assassination attempts on its leaders and host more refugees. The first stage equations of the IV estimates are reported in Appendix 3. We find that experiencing an assassination attempt increases significantly the probability of conflict by between 20 and 31 percentage points depending on the specifications, whereas hosting refugees increases also significantly this probability by between 3 and 5 percentage points.

In Table 2, we present the results of instrumental variables estimates. We find that civil conflict significantly affects REI process through its negative impact on regional synchronicity. Moreover, the effect is substantial, in quantitative terms. In column (3) of Table 2, we see that being in conflict reduces our measure of synchronicity by 0.126. If we compare a country at peace between 1980 and 2005 to a country having been in conflict on average for 40.64% of the period (the sample standard deviation), the difference in the corresponding synchronicity coefficient would be (-0.126)*0.4081 = -0.0514. This is slightly less than one-third of the sample standard deviation in synchronicity coefficients (0.195). Further, comparing a country at peace between 1980 and 2005, such as Bostwana, to a country which has been in conflict for 100% of the period[20], like Sudan, yields a fall in the synchronicity of business cycles of 0.126, which is roughly a two-third standard error shortfall in the synchronicity coefficient.

Our results suggest that civil conflict has a positive and significant impact on intra-regional regional trade intensities. This result might seem relatively striking. Indeed, Bayer and Rupert (2004) find evidence that, between 1950 and 1992 civil wars have reduced total bilateral trade by about one-third. Besides that, due to the identified impact of civil conflict on economic capabilities, we would expect a reduction in intra-regional trade intensity. Indeed, a major obstacle to the expansion of intra-REC trade in Africa is the similarity in the structure of trade among REC members and it is likely that conflict might hamper the diversification of the economic structure, not only for conflict countries, but also for their neighbors[21]. Yet, this result indicates that civil conflict increases the ratio of the country's intra-regional trade flows on all regional partners' total trade flows: this increase can be due to a decrease in the conflict country's total trade, as well as to an increase in its intra-regional trade flows. As we argue above, civil conflict might lead an increase in regional trade, for the country having to rely more on its regional peers. But, due to the induced decline in its national economic capabilities and to the spillover effects of conflict on its neighbors, likely to belong to the same REC, the effect that seems more important is the decrease in total trade. The conflict coefficient for TI2 is smaller, which confirms the previous, since it suggests that the decline in output might be more important than the decline in total trade.

4.3 Dynamic impact of civil conflict on REI

The short-run effects of civil conflict may be different from its longer-run effects on progress in REI, notably because of the change in the economic structure that it induces. To test for this, we include the lagged conflict variable in our regressions. The results presented in Table 3 show that civil conflicts do have a lagged negative effect on intra-regional trade intensities. This result is interesting if we put it in perspective with our above suggestion that conflict might have an ambiguous effect on intra-regional intensities due to the increased reliance of the conflict country on its regional peers. Indeed, the lagged negative impact of civil conflict hints that this increased reliance is a relatively short term effect. In the longer term, the change in the economic structure induced by conflict leads to a decrease in intra-regional trade intensity likely to be due to the decrease in regional trade flows that is more important than the decrease in total trade flows or total output.

[20] This is the sample maximum.
[21] See section 2.

Table 2: IV estimates of the impact of civil conflict on trade intensity and synchronicity.				
Dependent variable	**Trade intensity**		**Synchronicity**	
	TI1	**TI2**		
	[1]	[2]	[3]	[4]
Conflict	**0.00143*** **	**0.00093*** **	**-0.12641*** **	**-0.13018*** **
	(0.00051)	**(0.00033)**	**(0.04760)**	**(0.04714)**
TI1			0.26122	
			(2.45343)	
TI2				1.12234
				(4.13336)
Production specialization	-0.00096**	-0.00085***	-0.17958***	-0.17230***
	(0.00039)	(0.00026)	(0.03047)	(0.03033)
Governments similarity	0.00077***	0.00041***	-0.00258	-0.00303
	(0.00027)	(0.00014)	(0.02221)	(0.02222)
Polity2	0.00001	0.00001	-0.00304***	-0.00310***
	(0.00001)	(0.00001)	(0.00088)	(0.00088)
Log (Phone lines)	0.00034***	0.00021***	0.00997***	0.00963***
	(0.00003)	(0.00002)	(0.00284)	(0.00286)
Log (GDP)	0.00007	0.00012**	-0.01725**	-0.01741**
	(0.00009)	(0.00006)	(0.00775)	(0.00770)
Partial R2 of excluded instruments	0.0317	0.0319	0.0326	0.0334
F test of excluded instruments	52.62***	52.92***	54.25***	56.07***
Hansen	1.257	0.117	0.598	0.578
Probability	0.262	0.732	0.439	0.447
Hausman test	12.74	14.77	5.738	6.289
Probability	0.0004	0.0001	0.0166	0.0121
Observations	2942	2946	2942	2946

Note: All estimates include an intercept, regional and year dummies. TI1= Regional average of bilateral trade divided by the sum of the total trade of countries in the pairs. TI2= Regional average of bilateral trade divided by the sum of the output of countries in the pairs. The variables Production specialization and Governments similarity measure respectively the similarity of productive structures and the similarity of Government consumption with the other partners in a given cluster. The conflict variables are instrumented with a dummy for an assassination attempt on the leaders and the logarithm of the number of refugees hosted. The null hypothesis of the Hausman test is the exogeneity of the covariate of interest. Robust standard errors in parentheses. * Significant at 10 %, ** significant at 5 % and *** significant at 1 %.

As of synchronization, we find that being in conflict on the previous year increases progress in REI. This might be related to the fact that after a few years of conflict, countries somehow get used to being in conflict. To relate this to what we mentioned in Section 2 about the changing priorities of countries falling into civil conflict, this result suggests that after a certain period, the governments of these countries go back to normal affairs. This result might also be explained by civil conflicts negative effects on neighboring countries' economic growth. Indeed, a country confronted to civil conflict might show greater business cycle synchronization with the countries belonging to the same regional

community, but this would be due to the fact that the regional peers also experience an impaired economic situation as a result of this conflict.

Table 3: Dynamic impact of civil conflict on trade intensity and synchronicity (IV estimates).

Dependent variable	**Trade intensity**		**Synchronicity**	
	TI1	**TI2**		
	[1]	[2]	[3]	[4]
Conflict	**0.00362*** **	**0.00245*** **	**-0.22487** **	**-0.23409** **
	(0.00119)	**(0.00076)**	**(0.10030)**	**(0.09981)**
Lagged conflict	**-0.00239*** **	**-0.00165*** **	**0.11705***	**0.12259** **
	(0.00074)	**(0.00047)**	**(0.06181)**	**(0.06149)**
TI1			1.80334	
			(2.57269)	
TI2				4.16910
				(4.19652)
Production specialization	-0.00114***	-0.00100***	-0.16175***	-0.15314***
	(0.00035)	(0.00022)	(0.03209)	(0.03207)
Governments similarity	0.00082***	0.00045***	-0.00746	-0.00801
	(0.00030)	(0.00015)	(0.02357)	(0.02359)
Polity2	0.00001	0.00001	-0.00273***	-0.00280***
	(0.00001)	(0.00001)	(0.00090)	(0.00091)
Log (Phone lines)	0.00033***	0.00020***	0.00963***	0.00920***
	(0.00003)	(0.00002)	(0.00312)	(0.00314)
Log (GDP)	0.00006	0.00011**	-0.01458**	-0.01492**
	(0.00008)	(0.00005)	(0.00714)	(0.00715)
Partial R2 of excluded instruments	0.0128	0.0128	0.0130	0.0132
F test of excluded instruments	19.08***	19.13***	19.09***	19.49***
Hansen J statistic	0.191	18.33	1.225	5.212
Probability	0.662	0.901	0.268	0.273
Hausman test	15.07	0.0156	4.687	1.203
Probability	0.0001	0.0000	0.0304	0.0224
Observations	2770	2774	2770	2774

Note: All estimates include an intercept, regional and year dummies. TI1= Regional average of bilateral trade divided by the sum of the total trade of countries in the pairs. TI2= Regional average of bilateral trade divided by the sum of the output of countries in the pairs. The variables Production specialization and Governments similarity measure respectively the similarity of productive structures and the similarity of Government consumption with the other partners in a given cluster. The conflict variables are instrumented with a dummy for an assassination attempt on the leaders and the logarithm of the number of refugees hosted. The null hypothesis of the Hausman test is the exogeneity of the covariate of interest. Robust standard errors in parentheses. * Significant at 10 %, ** significant at 5 % and *** significant at 1 %.

4.4 Does the effect of civil conflicts on the process of REI depend on country-specific characteristics?

In Section 3.2 we raised the issue of an omitted variable bias that might affect our estimates. One way

to address the presence of unobserved factors that are likely to affect both civil conflicts and REI outcomes is to control for country-specific characteristics that are constant over time. For instance, one of these unobserved factors could be the ethnic composition of the country and its regional peers. Indeed, if an ethnic group is present in two countries, this might increase the level of integration of those countries. At the same time, it might have an effect on civil conflict, through for instance the possibility for a potential rebel group linked to this ethnic group to receive support from their peers in the other country. The ethnic composition of a country does not change much over time, so, by including country-specific effects in our regressions, we are able to control for this factor affecting both integration and civil conflict. Further, civil conflicts differ across countries, in their causes, intensity, duration, or demands of the involved actors. The question to be address is the following: do civil conflicts affect progress in REI according to these country specific characteristics, or are they a curse for progress in REI in themselves? For instance, we might expect that the Rwandan civil conflict in the 1990's has had more negative effects on the country's degree of integration than the Ivorian civil conflict of the recent period, mostly because of the difference in the number of victims and in the factors that have triggered conflict outbreak.

To purge the country-level specificities, we add country fixed effects to the regional and period fixed effects. Due to the three-dimensional structure of our data set, and to the overlapping membership of African countries in the RECs, the inclusion of country fixed effects in our regressions does not lead to the drop of the regional dummies. Table 4 reports the results of the estimates of the effect of conflict with country, region and period fixed effects[23]. It appears that conflict has no more significant effect on intra-regional trade intensities, but the results for synchronicity are comparable to those reported in Table 2. Indeed, once the country-specific characteristics are accounted for, if we compare a country at peace between 1980 and 2005 to the average country in our sample, the difference in the corresponding synchronicity coefficient would be (-0.4321)*0.4081 = -0.1763. This is roughly about one sample standard deviation in synchronicity coefficients (0.195). So, when accounting for country-specific effects, the impact of civil conflict on synchronicity appears slightly more important, whereas its impact on intra-regional trade intensities is no longer significant.

4.5 Robustness checks

Our results might be driven by the choices we made for the variables of interest, notably the business cycles synchronicity variable, the intra-regional trade variable and the conflict variable. As an alternative variable of conflict, we use the logarithm of number of battle-related deaths to assess the impact of conflict intensity, and the logarithm of the number of years of conflict[24], to assess its duration impact. The results are presented in Table 5, they are similar to the ones we have with the dummy conflict variable, in the sense that the coefficient for synchronicity is negative and significant, and the one for intra-regional trade-intensity is positive and statistically significant. Yet, the magnitude of the coefficients is lower, which is due to the nature of the variables. We thus find that one standard error increase in the number of battle-related deaths leads to an increase in intra-regional trade intensity relative to regional partners' total trade (total output) of 0.00054 (0.00035), whereas it leads to a decrease in synchronicity of 4.4%. Similarly, one standard deviation increase in the number of

[23] When controlling for country specific effects, the number of refugees hosted by the country is no longer significant in the first step equation, as shown in column (3) of the table presented in Appendix 3. We then conducted the IV estimates with only one instrument, the assassination attempts.

[24] We use here the major dates of conflict, according to the UCDP/PRIO dataset. Yet, our estimates with duration calculated with the minor sates are similar, and available upon request.

years of conflict decreases synchronicity by 5.6%, whereas it increases trade intensity TI1 (TI2) by 0.00061 (0.00040).

Table 4: Impact of civil conflict on trade intensity and synchronicity with region, period and country-specific effects (IV estimates).

Dependent variable	**Trade intensity**		**Synchronicity**	
	TI1	**TI2**		
	[1]	[2]	[3]	[4]
Conflict	**0.00133**	**0.00151**	**-0.43210***	**-0.41670***
	(0.00121)	**(0.00093)**	**(0.23314)**	**(0.22764)**
TI1			-10.19212***	
			(3.03593)	
TI2				-18.61129***
				(5.05555)
Production specialization	-0.00039	-0.00059*	-0.17017***	-0.17688***
	(0.00044)	(0.00032)	(0.05055)	(0.04789)
Governments similarity	0.00068***	0.00032***	-0.02301	-0.02339
	(0.00020)	(0.00011)	(0.02599)	(0.02523)
Polity2	0.00002	0.00001	-0.00080	-0.00078
	(0.00001)	(0.00001)	(0.00141)	(0.00136)
Log(Phone lines)	0.00018**	0.00008	-0.03857***	-0.03798***
	(0.00008)	(0.00006)	(0.01431)	(0.01358)
Log(GDP)	-0.00016	0.00018	-0.07035**	-0.05735*
	(0.00019)	(0.00014)	(0.03378)	(0.03236)
Partial R2 of excluded instruments	0.0040	0.0040	0.0040	0.0041
F test of excluded instruments	9.73***	9.38***	9.35***	9.51***
Hansen J statistic	0	0	0	0
Probability	N.A.	N.A.	N.A.	N.A.
Hausman	1.254	3.947	3.955	3.767
Probability	0.263	0.0470	0.0467	0.0523
Observations	2942	2946	2942	2946

Note: All estimates include an intercept, regional, year and countries dummies. TI1= Regional average of bilateral trade divided by the sum of the total trade of countries in the pairs. TI2= Regional average of bilateral trade divided by the sum of the output of countries in the pairs. The variables Production specialization and Governments similarity measure respectively the similarity of productive structures and the similarity of Government consumption with the other partners in a given cluster. The conflict variables are instrumented only by a dummy for assassination attempts on the leaders. The null hypothesis of the Hausman test is the exogeneity of the covariate of interest. Robust standard errors in parentheses. * Significant at 10 %, ** significant at 5 % and *** significant at 1 %.

For the business cycle synchronicity variable, the results might be different according to the indicator of economic activity and to the filtering method used to compute the cyclical component of this economic activity. As indicator of economic activity, we could have chosen the consumer price index, which we did not because of the lesser availability of these data for African countries. Columns (1) and (2) of Table 6 show that our results do not significantly change when using alternative

synchronicity variables.

Table 5: Robustness checks on the impact of conflict on synchronicity using alternative conflict variables

Dependent variable	TI1	TI2	Synchronicity
	[1]	[2]	[3]
Log (Number of battle-related deaths)	0.00020***	0.00013***	-0.01634**
	(0.00007)	(0.00005)	(0.00662)
Log (Conflict duration in years)	0.00053***	0.00035***	-0.04842***
	(0.00020)	(0.00013)	(0.01786)

All estimates include the following variables: the similarity of productive structures and the similarity of Government consumption of the rest of partners in the given cluster, Polity2, Log (Phone lines), Log (GDP), intercept, regional and year dummies. TI1= Regional average of bilateral trade divided by the sum of the total trade of countries in the pairs. TI2= Regional average of bilateral trade divided by the sum of the output of countries in the pairs. The battle-deaths and conflict duration variables are instrumented with a dummy for assassination attemps on the leaders and the logaritm of the number of refugees hosted. Robust standard errors in parentheses. * Significant at 10 %, ** significant at 5 % and *** significant at 1 %.

In column (3), we also have similar results when we use alternatives regional trade variables, except for TI3, the ratio of regional trade flows on total trade flows of the conflict country. To relate this with our discussion of the results shown in Table 2 for TI1, it suggests that the increase of intra-regional trade intensity relative to regional partners' total trade is more due to the decrease in regional partners' trade with the conflict country than to an increase of its reliance on its regional peers.

Another issue that might modify our results is one of selection. In fact, there are two issues of selection. The observation unit in the dataset is the existing couple ''country-regional economic community''. Since we do not account for the non-existing couples, or the countries that are not members of any REC[25], we effectively study a selective sample of countries. This potentially induces a selection bias if the probability of becoming a member of a REC is related to the domestic political situation of a country. It may however be argued, that the bias is relatively small, given the circumstances of the construction of REC: geographical factors and cultural proximity usually play an important role in determining which countries join a REC (Frankel 1997). Another issue of selection arises from the fact that there is non-random missing synchronicity and intra-regional trade intensity data. This is arguably more important. Indeed, the probability of having missing synchronization and/or intra-regional trade data might be systematically higher for conflict countries, which are more likely to lack the capacity to collect reliable economic data. We can assume that a country lacking the capacities to collect reliable data might also lack the capacity to implement regional economic agreements. Then, by not accounting for the existence of these missing data among the existing couples country-REC, we might underestimate the effect of civil conflict on effective REI.

In order to simultaneously control for causes of selection as well as for the unobserved heterogeneity affecting both REC membership and agreements implementation, and for the simultaneity between civil conflict and REI, we adopt the method presented by Semykina and Wooldridge (2008). The method works as follows: in the first step, we estimate the probability of having non-missing synchronization or intra-regional trade data for an existing country-REC couple and derive from this stage the inverse Mills ratio. Then, we apply a pooled instrumental variable estimator to the structural equation and include the estimated inverse Mills ratio in the regressions.

[25] By the beginning of the 1990's, all the 53 African countries are members of at least one REC.

Table 6: Robustness checks on the impact of conflict on synchronicity using alternative intra-regional trade and synchronicity variables

Synchronicity variables		
	TI1	**TI2**
	[1]	[2]
Prices synchronicity	-0.10948**	-0.10969**
	(0.05259)	(0.05232)
Baxter-King Filter (2,8)	-0.14662***	-0.14882***
	(0.05076)	(0.04946)
Fisher's z-transformation	-0.13086***	-0.13473***
	(0.04981)	(0.04929)
Trade variables	[3]	
TI3	0.00073	
	(0.00222)	
TI4	0.00227*	
	(0.00134)	
Log (Regional trade value)	1.61437***	
	(0.49268)	

Note: All estimates include the following variables: the similarity of productive structures and the similarity of Government consumption of the rest of partners in the given cluster, Polity2, Log (Phone lines), Log (GDP), intercept, regional and year dummies. The synchronicity of prices is computed from the logarithm of Consumer Prices Index. The Baxter-King filter assumes here that the length of business cycles is between 2 and 8 years. TI1= Regional average of bilateral trade divided by the sum of the total trade of countries in the pairs. TI2= Regional average of bilateral trade divided by the sum of the output of countries in the pairs. TI3= Regional average of bilateral trade divided by the sum of the total trade of country *i*. TI4= Regional average of bilateral trade divided by the sum of the output of country *i*. Log (Regional trade value)= Sum of exports and imports to and from country *i*. The conflict dummy variable is instrumented with a dummy for assassination attemps on the leaders and the logaritm of the number of refugees hosted. Robust standard errors in parentheses. * Significant at 10 %, ** significant at 5 % and *** significant at 1 %.

Following Thomas and Strauss (1997), we use the same set of instruments to identify both the selection and the REI equation. The results presented in Appendix 4 allow us to reject selection for the trade intensity regressions, since the inverse Mills ratio turns out to be statistically indistinguishable from zero. Yet, when introducing the inverse Mills ratio in the estimates the coefficient for conflict is no longer statistically indistinguishable from zero. For synchronicity, the estimated inverse Mills ratio is dropped due to collinearity, for it is constant over time, which means the process of selection is constant over time. Then, by including region fixed effects allowing us to control for regional specific characteristics that are constant over time, in a certain way we correct for the potential selection problem due to the nature of our data set.

5 Concluding Remarks

In this paper, we have examined the impact of civil conflicts on REI outcomes in Africa through their effects on business cycle synchronicity and intra-regional trade intensity. In the literature on regional economic integration, these variables appear to symbolize the progress made in terms of REI and the scope for going deeper into the integration process: the co-movement of business cycles is assumed to catch the ability of countries to coordinate their economic policies and intra-regional trade intensity

shows the economic interdependence between countries through the depth of their trade relations. Estimates provide evidence that conflict in a country tends to reduce its output cycles synchronicity. The results for trade intensities are more nuanced and relatively less robust: while current conflict increases intra-regional trade intensity, lagged conflict reduces it. More generally, this highlights how progresses in regional integration are modified once domestic violent conflict occurs in one state.

African countries have been involved in regional economic integration since the beginning of the twentieth century[27]. The efforts made have varied across the different countries, regions and time, but as of today, the performances of the various RECs appear relatively disappointing, especially compared to RECs in other developing regions. The recurrence of civil conflicts and the other constraints related to political institutions raise the issue that regional economic integration can successfully take place only if it is accompanied by a political integration process. The coordination of national economic policies particularly requires such a process. It is all the more essential for RECs' members to strengthen their political ties when one of them is confronted to a civil conflict, for this will contribute to increase economic actors' confidence in the coherence of the initiative. Thus, by being committed to resolve a civil conflict occurring in a country, regional groups' members might also reap specific benefits, in terms of their own progress in REI. We then recommend that, especially in the African context, RECs get strongly involved in their peers' civil conflict prevention, containment and resolution.

Besides that, our study also adds to the evidence provided by the literature on the effects of civil conflicts by showing the negative regional effects of conflicts and identifying an additional incentive for conflict prevention and resolution policies. More specifically, our point here is that apart from conflict spillover effects that have been identified by previous studies, there is a further incentive for members of the same REC to work for the prevention and/or the resolution of conflicts in their peers. If conflict in a country impedes its progress in REI, then it should be a primary concern for its regional peers since their own progress towards integration would also be affected, through its subsequent negative externalities. We then argue that bringing a sustain political stability in a regional community should be considered as a regional public good and RECs' members should get involved in the prevention, containment and resolution of conflict occurring in their regional peers.

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Appendix 1: List of Regional Economic Communities and countries

Clusters	Members	Type	Entry	Source
CFA Zone (ZF)	Cameroun (1961), Benin, Burkina Faso, Comoros, Congo, Côte d'Ivoire, Gabon, Equatorial Guinea (1985), Bissau Guinea (1997), Mali (1958-1962- 1967), Madagascar (1973), Mauritania (1958-1973), Niger, Central African Republic, Senegal, Chad, Togo (1963)	MC	1958	Authors
Common Monetary Area (Zone Rand)	Botswana (1961-1975), Lesotho (1961), Namibia (1990), South Africa (1961), Swaziland (1961)	MC	1961	
Liptako-Gourma Authority	Burkina Faso, Mali, Niger	EIA	1970	
Intergovernmental Authority on Development (IGAD)	Djibouti, Ethiopia, Kenya, Somalia, Sudan, Uganda, Eritrea (1993-2007)	EIA	1986	
Community of Sahel-Saharan States (CEN-SAD)	Burkina Faso, Chad, Libya, Mali, Niger, Sudan, Central African Republic (1999), Eritrea (1999), Djibouti (2000), Gambia (2000), Senegal (2000), Egypt (2001), Morocco (2001), Nigeria (2001), Somalia (2001), Tunisia (2001), Benin (2002), Togo (2002), Côte d'Ivoire (2004), Guinea-Bissau (2004), Liberia (2004), Ghana (2005), Sierra Leone (2005), Comoros (2007), Guinea (2007), Kenya (2008), Mauritania (2008), Sao Tome and Príncipe (2008)	FTA	1998	
Nile Basin Initiative (NBI)	Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda	EIA	1999	
West African Monetary Zone (WAMZ)	Gambia, Ghana, Guinea, Nigeria, Sierra Leone	MC	2000	
Mano River Union (MRU)	Liberia, Sierra Leone, Guinea (1980)	EIA	1973	Frankel (1997)
Economic Community of the Great Lakes Countries (CEPGL)	Burundi, Democratic Republic of Congo, Rwanda	EIA	1976	
Economic Community of Central African States (ECCAS)	Angola, Burundi, Cameroon, Congo, Gabon, Equatorial Guinea, Rwanda (withdraw in 2007), Sao Tome and Principe, Democratic Republic of Congo, Chad	FTA	1983	
Indian Ocean Commission (IOC)	Comoros, Madagascar, Mauritius, Reunion, Mayotte, Seychelles	EIA	1984	
Arab Maghreb Union (AMU)	Algeria, Libya, Mauritania, Morocco, Tunisia	FTA	1989	
Cross Border Initiative (CBI)	Burundi, Comoros, Kenya, Madagascar, Malawi, Mauritius, Namibia, Rwanda, Seychelles, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe	FTA	1993	
African Economic Community (AEC)	African States	FTA	1994	
Southern African Customs Union (SACU)	Botswana, Lesotho, Namibia, South, Africa, Swaziland	CU	1910	WTO
West African Economic and Monetary Union	Benin, Burkina Faso, Côte d'Ivoire, Bissau Guinea (1997), Mali (1958-1962- 1984), Mauritania (1958-1973), Niger, Senegal, Togo (1963)	MU	1958	

(UEMOA/WAEMU)				
East African Community (EAC)	Kenya, Tanzania, Uganda, Rwanda (2007), Burundi (2007)	MU (1960-1966), MC (1966-1977), CU (Since 1999)	1960	
Economic Community of West African States (ECOWAS)	Benin, Burkina Faso, Cape Verde (1976), Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania (1975-2000), Niger, Nigeria, Senegal, Sierra Leone, Togo	FTA	1975	
Southern African Development Community (SADC)	Angola, Botswana, Democratic Republic of Congo (1997), Lesotho, Madagascar, Malawi, Mauritius (1995), Mozambique, Namibia (1990), Seychelles (1997-2004, 2008), South Africa (1994), Swaziland, Tanzania, Zambia, Zimbabwe	FTA	1992	
Common Market for Eastern and Southern Africa (COMESA)	Burundi, Comoros, Democratic Republic of Congo, Djibouti, Egypt (1999), Eritrea (1994), Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Namibia (1994-2004), Rwanda, Seychelles (2001), Sudan, Swaziland, Uganda, Zambia, Zimbabwe, Libya (2006), Lesotho (1994-1997), Mozambique (1994-1997), Tanzania (1994-2000)	FTA	1994	
Commission de la Communauté Economique et Monétaire de l'Afrique Centrale (CEMAC)	Cameroun (1961), Congo (1958), Gabon (1958), Republic of Central Africa (1958), Chad (1958), Equatorial Guinea (1985)	MU	1958	
Note: PTA: Preferential Trade Agreement, FTA: Free Trade Area, CU: Customs Union, MU: Monetary Union, MC: Monetary Cooperation, EIA: Economic Integration Agreement, WTO: World Trade Organization.				

Appendix 2: List of countries in civil conflicts as defined in the PRIO data set (1980-2005)

Country	**Period**
Algeria	1991-2005
Angola	1980-2002, 2004
Burkina Faso	1987
Burundi	1991-1992, 1994-2005
Cameroon	1984
Central African Republic	1996-1997, 2001-2002
Chad	1980-1984, 1986-1987, 1989-1994, 1997-2002, 2005
Comoros	1989, 1997
Congo, Democratic Republic	1996-2001
Congo, Republic of	1993-1994, 1997-1999, 2002
Côte d'Ivoire	2002-2004
Djibouti	1991-1994, 1999
Egypt	1993-1998
Eritrea	1997, 1999, 2003
Ethiopia	1980-1992, 1994-1996, 1994-2005
Gambia	1981
Ghana	1981, 1983
Guinea	2000-2001
Guinea-Bissau	1998-1999
Kenya	1982
Lesotho	1998
Liberia	1980, 1989-1995, 2000-2003
Mali	1990, 1994
Morocco	1980-1989
Mozambique	1980-1992
Niger	1991-1992, 1994, 1996-1997
Nigeria	2004
Rwanda	1990-2002
Senegal	1990, 1992-1993, 1995, 1997-1998, 2000-2001, 2003
Sierra Leone	1991-2000
Somalia	1982-1984, 1986-1996, 2001-2002
South Africa	1980-1988
Sudan	1983-2005
Togo	1991
Tunisia	1980
Uganda	1980-2005

Appendix 3: First stages of the IV estimates.

Dependent variable	**Conflict**				
	[1]	[2]	[3]	[4]	[5]
Assassination attempts on leaders	**0.30816*** **	**0.30626*** **	**0.20842*** **	**0.30841*** **	**0.31347*** **
	(0.08886)	**(0.08283)**	**(0.06616)**	**(0.07809)**	**(0.07711)**
Log (number of refugees hosted)	**0.04724*** **	**0.03793*** **	**-0.00178**	**0.03881*** **	**0.03919*** **
	(0.00361)	**(0.00402)**	**(0.00534)**	**(0.00414)**	**(0.00413)**
TI1				-10.11045**	
				(4.02590)	
TI2					-24.90434***
					(6.54383)
Production specialization		0.34799**	0.10403*	0.30216*	0.28517*
		(0.15957)	(0.05820)	(0.16443)	(0.16596)
Governments similarity		-0.07372	-0.03771	0.04580	0.05714
		(0.09348)	(0.02635)	(0.09765)	(0.09839)
Polity2		-0.00039	0.00031	-0.00440	-0.00444
		(0.00341)	(0.00190)	(0.00378)	(0.00377)
Log (Phone lines)		-0.01939	-0.03450**	-0.03586**	-0.03341**
		(0.01643)	(0.01529)	(0.01700)	(0.01688)
Log (GDP)		-0.12986***	-0.10997***	-0.13137***	-0.12979***
		(0.02022)	(0.02302)	(0.02130)	(0.02140)
Observations	3530	3209	3209	2942	2946
R-squared	0.163	0.210	0.540	0.232	0.234

Note: All estimates include an intercept, regional and period dummies. Column (3): the estimate also includes country dummies. Robust standard errors in parentheses. * Significant at 10 %, ** significant at 5 % and *** significant at 1 %.

Appendix 4: Correction of selection bias in the IV estimates (Method of Semykina and Wooldridge 2008)

Dependent variable	**Trade intensity**		**Synchronicity**	
	TI1	**TI2**		
	[1]	[2]	[3]	[4]
Conflict	**0.00166**	**0.00000**	**-0.12641*** **	**-0.13018*** **
	(0.00107)	**(0.00010)**	**(0.04760)**	**(0.04714)**
TI1			0.26122	
			(2.45343)	
TI2				1.12234
				(4.1334)
Production specialization	-0.00100***	-0.00091***	-0.17958***	-0.17230***
	(0.00038)	(0.00026)	(0.03047)	(0.03033)
Governments similarity	0.00077***	0.00037***	-0.00258	-0.00303
	(0.00028)	(0.00013)	(0.02221)	(0.02222)
Polity2	0.00001	-0.00000	-0.00304***	-0.00310***
	(0.00001)	(0.00000)	(0.00088)	(0.00088)
Log (Phone lines)	0.00034***	0.00018***	0.00997***	0.00963***
	(0.00005)	(0.00002)	(0.00284)	(0.00286)
Log (GDP)	0.00011	0.00004	-0.01725**	-0.01741**
	(0.00011)	(0.00003)	(0.00775)	(0.00770)
Inverse Mills ratio	**0.00003**	**-0.01142*** **	**Dropped**	**Dropped**
	(0.01295)	**(0.00372)**		
Partial R2 of excluded instruments	0.0103	0.2798	0.0326	0.0332
F test of excluded instruments	18.60***	142.21***	54.25***	55.78***
Hansen J statistic	2.545	0.551	0.598	0.578
Probability	0.111	0.458	0.439	0.447
Hausman test	3.250	5.064	5.738	6.289
Probability	0.0714	0.0244	0.0166	0.0121
Observations	2942	2946	2942	2946

Note: All estimates include an intercept, regional and year dummies. TI1= Regional average of bilateral trade divided by the sum of the total trade of countries in the pairs. TI2= Regional average of bilateral trade divided by the sum of the output of countries in the pairs. The variables Production specialization and Governments similarity measure respectively the similarity of productive structures and the similarity of Government consumption with the other partners in a given cluster. The conflict variable is instrumented with a dummy for assassination attempts of leaders and the logarithm of the number of refugees hosted. The null hypothesis of the Hausman test is the exogeneity of the covariate of interest. The null hypothesis of the Hansen test is the validity of the instruments. Robust standard errors in parentheses. * Significant at 10 %, ** significant at 5 % and *** significant at 1 %.