Independence and trade: new evidence from French colonial trade data

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September 2011

Very preliminary. Please do note cite.

Abstract

The consequences on international trade of country breaks-up have received an increasing attention. This paper investigates the effect of independence on bilateral trade of former French colonies with a focus on Sub-Saharan Africa. Thanks to an original dataset including data on pre-independence bilateral trade we obtain more accurate results. We also show that former French colonies in Sub-Saharan Africa exhibit distinctive post-colonial trade patterns as compared to other former French colonies.

Author Keywords: Trade; Decolonization; French Empire.
JEL classification codes: F10; F54.

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1 Introduction

The economic consequences of historical events have been receiving an increasing attention notably in the area of international trade. For instance, a paper by Head *et al.* (2010) examines the impact of decolonization on post-colonial trade using a worldwide data set over the period 1948-2006. They show that post-independence trade with the colonizer does not exhibit immediate significant changes, but that after several decades, the accumulated trade erosion is large and statistically significant. On average, trade between a colony and its colonizer is reduced by 65% after four decades. They interpret their finding as the result of the deterioration of business networks or **similar** institutions after independence. This study yields two other sobering results. Decolonization reduces trade between siblings, i.e. former parts of the same colonial empire, in a comparable extent. Independence also decreases trade of former colonies with the rest of the world. Most recently, Berger et al. (2011) provide evidence that increased political influence, arising from CIA intervention during the cold war, was use to created a larger foreign market for American products. Following CIA interventions, imports from the US increased dramatically while total exports to the US were unaffected. This paper stands at the intersection of these two works.

It investigates the consequences of independence on bilateral trade of former French colonies with a focus on Sub-Saharan Africa. Analyzing the bias in post-colonial trade patterns in the case of the French colonial Empire is particularly relevant for two major reasons. Firstly, it allows to overcome the main difficulty when investigating the impact of national independence on bilateral trade: the lack of data on pre-independence (colonial) trade. Almost all papers use trade data from the International Monetary Fund's Direction of Trade Statistics (DOTS), which scarcely report data prior to colonies' independence. Contrary to the general belief, trade flows of former colonies were not recorded as a part of the international trade of their former colonial power. For instance, trade flows of the former French Central and West African colonies were simply not included in the DOTS database even as part of the French imports or exports. We build a new original data set on colonial trade by gathering data from various official French sources on bilateral trade of former French colonies from 1948 to their independence. Secondly, we are able to analyze the effects on trade of the singular links between France and Sub-Saharan Africa after the severing of colonial ties in 1960. Indeed, in this region, independence did not radically change relations between France and its former colonies. On the contrary, at least until the mid 1990's, the metropole and its former colonies kept on having a very close, stable, and continuous relationship known under the name *Françafrique*. While these peculiar relationships or, more generally, the French African policy is a highly controversial subject, to the best of our knowledge its consequences on exports and imports of former French African colonies have never been explored at least in a comprehensive empirical fashion.

Using a gravity model of trade and an original dataset including new colonial data, we first investigate the impact of independence on bilateral trade (exports and imports) of former French colonies worldwide. We obtain more accurate results as compared to the one obtained on the (limited) DOTS database. Second, we show that former French colonies in Sub-Saharan Africa do have distinctive post-colonial trade patterns as compared to other former French colonies. Finally, we explore the underlying mechanisms of the French-African relationships after independence and check the robustness of our results.

The paper is structured as follows. In section 2, we discuss the potential influence on trade of independence and *Françafrique* as well. Then we introduce the empirical model, and discuss some estimation issues in section 3. In section 4, we estimate the gross impact of independence on former French colonies' trade (imports and exports) and compare the results obtained with the DOTS dataset and the ones obtained on the expanded dataset (including DOTS and new colonial data). In section **??**, we investigate the specific French-African relationship by comparing the impact of independence for Sub-Saharan African countries and for other former French colonies. Finally, we summarize our findings and add concluding remarks in section 6.

2 The influence of independence on trade of former French colonies

2.1 Independence from France and post colonial trade pattern of former French colonies

Independence may raise trade costs by putting an end to a series of special relationships - some formal, some informal - built up within the French empire so as to promote imperial trade at the expense of trade with the rest of the world. Informal arrangements cover business networks and all the products of historical and political connections between the metropole and its dependencies. These connections are likely to weaken following independence. Formal relationships refer to preferential trade agreements and imports licensing policies or put more generally to an Imperial system of preferences. France and most of its colonies adopted a customs union in 1892 (Mitchener and Weidenmier, 2008). Under this regime, colonies enjoyed free trade with France for most products while non-colonies were subject to tariffs. Generally suspended during World War II, tariffs had been progressively reintroduced in most French colonies. Broadly speaking, trade within the French customs territory (France, Algeria, and overseas departments) and trade between the French customs territory and the French empire was exempted from customs duties for most prod-

ucts or benefited from preferential duties[1]. As regards trade with the rest of the world, colonies belonging to the French customs territory applied the metropolitan tariffs and other colonies generally applied their own tariffs (that could be nil as in the case of Madagascar). For instance, in French West Africa, a fiscal import duty was levied in all goods and additional imports duties were charged on goods originating outside the French empire. The French imperial preference systems is generally considered as strong, i.e. strong enough to have distorted what might be considered as the normal pattern of trade within the French empire. Thus, independence we expect independence to have increase bilateral trade costs with France and other countries in the colonial empire. Increasing trade costs with former colonial power and siblings may then increase trade with the rest of the world. Nevertheless, Anderson (2010) emphasizes that the total impact of an increase in the number of countries on world openness ultimately depends on the specificities of country divisions. In a study on country breaks-ups since 1948, Lavallée and Vicard (2010) show that on average, newly independent states trade less with former members of the same country (or their former colonizer) but trade more with the rest of the world.

2.2 French African special relationships

The specificity of the relationships between France and its former colonies of Sub-Saharan Africa (SSA) could have influenced post-colonial trade patterns and induces a lower influence of independence on trade for several reasons.

Firstly, contrary to the situation in Indochina and North Africa, Sub-Saharan African independencies took place essentially without violence. Indeed, Head et al. (2010) show that peaceful breaks-up lead to a slower erosion of colony-metropole trade, but that, in the long run, amicable and hostile breaks-up lead to similar levels of trade erosion.

Secondly, after independence French-African relationships have been reenforcing (Dozon, 2003, p.231). In these countries, independence did not lead to sweeping changes in governance. On the ground nothing changed (Gounin, 2009). Colonial administrators remained in office and became integrated in the new French cooperation mechanism. French consultants (generally former colonial administrators) were put at the disposal of African Presidents and Ministers as technical assistance. In France, the executive power kept great interest for Africa through its *"cellule africaine"*. Managed by the emblematic Jacques Foccart[2], this opaque and complex system melting secret services, hight level politicians and diplomats allowed African Presidents a privileged access to the French President. The Presidents of new African states were generally trained in France and maintained

[1]Except Equatorial French Africa, Djibouti, Togo and Cameroon obliged by international conventions to not introduce preferential regime and Morocco.

[2]The "cellule africaine" is generally associated with the scandals of the *Françafric* such as *l'affaire Elf* or *l'Angolagate*.

close ties with it. It is exactly the cases, among others, of Léopold Sédar Senghor in Senegal and of his successor Abdou Diouf, or of the Malagasy first President Phillipe Tsiranana. The new independent states copied the state structure of their former colonizer. They reproduce its constitution but also its administrative framework. While similarities in institutional frameworks are considered as a legacy of colonial era, it is widely agreed that in former French colonies it reached a quite caricatural top (Gounin, 2009, p. 23; Badie, 1992; Bayard, 1989). This continuity in institutional frameworks, the strong political relations between France and its former colonies may have promoted French-African trade and lowered the negative effect of independence. Indeed, sharing similar institutional frameworks should increase bilateral trade by easing contract enforcement and reducing transaction costs. Lavallée (2006) shows that the fact that countries share the same legal origin, i.e. have similar institutions, increases trade by 35%.

Thirdly, after attaining their independence, most of the newly African states decided to keep a common exchange rate mechanism. The Franc Zone [3] which dates back to the colonial period provides the unlimited convertibility guarantee from the French Treasury and a fixed exchange rate between the CFA Francs and the Comorian Franc on the one hand and the French Franc (now the euro) on the other hand. This mechanism could ease trade between France and its former colonies or between former colonies belonging to the same monetary union. However, CFA countries exhibit large border effects, despite the sharing of a common currency (de Sousa and Lochard, 2005)[4].

Besides, migratory exchanges between France and Sub-Saharan Africa could also reduce the erosion of colonial trade for these former colonies. Indeed, paradoxically there had never been as many African in France and French people in Africa as after independence. France put a large number of public agents at the disposal of new independent states. While there were less than 7,000 colonial administrators in 1956, there were in the new independent States 8,749 persons serving on Voluntary Service in 1963, 9,364 in 1973 and 10,292 in 1980 (Gounin, 2009, p. 23). This phenomenon is not confined to the public sphere. A kind of neo-colonial society set up in the Sub-Saharan Africa capital cities of the former Empire. For instance, according to Dozon (2003), there were almost 50,000 French people living in Ivory Coast in 1970, five times more than in 1960. At the same time, the fifth French Republic organized a strong immigration policy for the nationals of former French colonies of Africa. Yet, several papers show that the role of networks, particularly ethnic networks, tend to foster international trade (see Rauch, 1999, 2001 for instance). Ethnic networks are a way of overcoming informal barriers (information costs, risk and uncertainty) to

[3]The Franc Zone is made up of France and fifteen African states (eight members of the West African Economic and Monetary Union, six members of the Central African Economic and Monetary Community and the Comoros).

[4]Moreover, in our estimations, these arrangements should be taken into account by the country pair fixed effects since the Franc Zone exists since 1939, before the beginning of our period of investigation.

trade by building trust and substituting for the difficulty of enforcing contracts internationally.

Finally, tied aid between France and Sub-Saharan Africa could have influenced post-colonial trade patterns. Tied aid can be defined broadly speaking as foreign aid that must be spent in the country providing the aid (the donor country). This mechanism is considered to have guaranteed for a long time a quasi-monopoly for French firms in the carrying out of infrastructure projects in Africa (Gounin, 2009; Dozon, 2003). Tied aid can lead to export stimulation that can even exceed the amount that is directly tied (Wagner, 2003).

For all the above reason we expect independence to have a lower influence on Sub-Saharan African post-colonial trade patterns. The following section present the data and the empirical strategy we use in order to investigate this issue.

3 Data and Empirical model

3.1 Trade data

To investigate the effect of independence on trade of former French colonies we use data for bilateral trade of 13 reporting countries or federations of countries (former French colonies or overseas departments or territories) with 190 partner countries for the period 1948-2007. The list of reporting countries or federations of countries and their years of independence is described in appendix (Table 5). As mentioned in the introduction, the main database recording bilateral trade for a long period of time is the International Monetary Fund's Direction of Trade Statistics (DOTS). However, it has two major drawbacks. First, trade of some former colonies was not recorded in the DOTS before their independence. For instance, trade flows of the former French Central and West African colonies were simply not included in the DOTS database even as part of the French imports or exports. Second, when trade of former colonies is recorded, it is often recorded as zero. As noticed by Head *et al.* (2010), trade between France and Vietnam, Laos and Cambodia is recorded as zero in the DOTS between 1948 and 1953 or 1954 (the year of independence) and then becomes positive. These missing and 'fake' zeros may introduce various bias in the estimation.

A first step to improve the coverage of these data is to use mirror data. The DOTS database reports two values for the same flow (imports of country A from country B and exports of B to A). When imports data are missing or recorded as zero, we substitute imports data with the reverse flow (exports), whenever available. We add 10% to the export flow to adjust for the fact that exports are reported FOB and imports are recorded CIF, as in Head *et al.* (2010).

In a second step, we complement the DOTS data with bilateral trade data during the colonial era coming from three main sources:

- *Commerce extérieur des Etats d'Afrique et de Madagascar de 1949 à 1960*, Institut National

de la Statistique et des Etudes Economiques (INSEE);

- *Annuaire statistique de l'Union Française d'Outre Mer*, Ministère de la France d'Outre-Mer (1938-1949);
- *Annuaire statistique des Territoires d'Outre Mer*, INSEE (1959, 1960, 1961);

During the colonial era, trade was generally reported for federations of colonial possessions, like the French Equatorial Africa (*Afrique Equatoriale Française*) which contained four territories: Gabon, Middle Congo (now the Republic of the Congo), Oubangui-Chari (now the Central African Republic) and Chad (see Table 5 in appendix). Thus, for these federations of colonies, we aggregated data for post-colonial trade (coming from the DOTS) and for every determinant of trade on the entire period of estimation. For monadic determinants (such as population or GDP per capita), we simply computed the sum on individual countries belonging to the federation. This strategy however also constrains the introduction of explanatory variables, in particular dummy variables. For instance, we cannot introduce a CFA Franc dummy variable for countries sharing the same currency because some countries belonging to federations left or joined the currency union during our period of investigation. For instance, Mali, which left the CFA Franc Zone in 1962 (and came back in 1984) is recorded jointly with Senegal (which stayed in the currency union during the whole period) and with Mauritania (which left the CFA Franc Zone in 1973). The same applies to Guinea, which left in 1960 and which is recorded jointly with Niger, Benin and Burkina Faso.

3.2 Baseline model and estimated equation

To investigate the role of independence on bilateral trade of the former French colonies, we use a gravity model. The gravity model relates bilateral trade, T_{ijt}, (e.g. imports) between country i and country j at time t, to their economic sizes (Y_{it} and Y_{jt}), and bilateral trade costs (τ_{ijt}). More generally, the gravity equation can be written as:

$$T_{ijt} = \delta_0 (Y_{it})^{\delta_1} (Y_{jt})^{\delta_2} (\tau_{ijt})^{\delta_3}, \tag{1}$$

Trade costs (τ_{ijt}) are generally modeled as a function of some observable factors, including bilateral distance between trade partners, the existence of a common border or a common language, or regional trade agreements (RTA). We also introduce a set of indicators ($Indep$) related to past colonial ties.

$$\tau_{ijt} = dist_{ij}^{\gamma_1} \times \exp\left(border_{ij}\right)^{\gamma_2} \times \exp\left(lang_{ij}\right)^{\gamma_3} \times \exp\left(RTA_{ijt}\right)^{\gamma_4} \times \exp\left(Indep_{ijt}\right)^{\gamma_5}, \tag{2}$$

In our basic specification, we break up the set of indicators related to past colonial ties into three dummy variables:

$$Indep_{ijt} = \{Indep\_FRA_{ijt}, Indep\_SIB_{ijt}, Indep\_ROW_{ijt}\}$$

The first one is equal to 1 for relationships between former French colonies and France for each year since (and including) independence and 0 otherwise. The second dummy variable ($Indep\_SIB_{ijt}$) is equal to 1 for relationships between former French colonies for each year since (and including) independence and 0 otherwise[5] and the third one ($Indep\_ROW_{ijt}$) is equal to 1 for relationships between former French colonies and the rest of the world for each year since (and including) independence and 0 otherwise.

For reasons explains in section 2.1, we expect independence to increase bilateral trade costs with France and other countries in the colonial empire. Increasing trade costs with former colonial power and siblings may then increase trade with third countries(Anderson and van Wincoop, 2003).

Replacing the trade cost factor in equation 1, we obtain the estimated equation in its multiplicative form :

$$\begin{aligned} T_{ijt} &= GDPCap_{it}^{\beta_1} \times Pop_{it}^{\beta_2} \times GDPCap_{jt}^{\beta_3} \times Pop_{jt}^{\beta_4} \\ &\times \exp\left(\beta_5 ACP\_EU_{ijt} + \beta_6 Indep\_FRA_{ijt} + \beta_7 Indep\_SIB_{ijt} + \beta_8 Indep\_ROW_{ijt} + \alpha_{ij} + \lambda_t\right) + \epsilon_{ijt} \end{aligned} \quad (3)$$

We proxy countries' economic size (Y) by GDP per capita and population to account for size and development effects.[6] Bilateral *time-invariant* factors affecting trade, such as bilateral distance, common language or common border, are accounted by bilateral fixed effects (α_{ij}). We add a dummy variable to capture the effect of the ACP (Africa–Caribbean–Pacific) agreements which are the most important RTA for the countries under consideration. Indeed, the European Union offers trade preferences to a large number of African Caribbean and Pacific countries through the Cotonou agreement (previously Yaoundé and Lomé conventions).[7] Our empirical model also include time dummies (λ_t) which control for the general evolution of trade. The error term ϵ_{ijt} captures all other determinants of bilateral trade. It is supposed to have zero mean and is independent of the

[5]We adopt a 'large' definition by granting that the $Indep\_SIB_{ijt}$ is equal to one as soon as one of the trade partner obtains independence. For instance, for the trade relationship between Cameroon (independent in 1960) and Djibouti (independent in 1977), the $Indep\_SIB_{ijt}$ dummy will be equal to one from 1960 onwards.

[6]GDP per capita is a standard gravity control variable used in many empirical papers (e.g. Eaton and Tamura, 1994).

[7]Note that it is also difficult to introduce other RTA dummy variables (such as a CFA Franc dummy variable for instance) because in our colonial dataset we have data for federations of countries instead of individual countries (see section 3.1).

regressors.

3.3 Estimation issues

Anderson and van Wincoop (2003) argue that the gravity equation should include multilateral resistance terms accounting for the fact that "the more resistant to trade with all others a region is, the more it is pushed to trade with a given bilateral partner" (Anderson and van Wincoop, 2003). In panel empirical analysis, these country specific multilateral resistance indices are generally taken into account by country-year fixed effects. However, this method is computationally burdensome and even impossible to apply in the case of large datasets including many countries and years. In our case, this method would imply adding more than 10,000 country-year dummies, which is practically unfeasible.[8] We therefore adopt another solution which consists in using the fixed effects method of estimation. While this solution is not fully satisfactory notably because it amounts to consider that multilateral resistance terms are time-invariant, it has several advantages. It exploits the time series properties of the data. The effect of independence is thus estimated by comparing, within each pair of countries, the evolution of trade *before* and *after* independence. Moreover, it allows to control for every unobservable time-invariant country- and country-pair characteristics that affect trade.

A second estimation issue relates to potential simultaneity in the relationship between independence and trade. Indeed, it may be the case that a colonizer chooses to give independence because it does not expect any further gain from trade with its former colonies. In this case, the traditional estimators, such as the OLS estimator or even the Within estimator, will be biased. However, we argue that in the case of the French Empire, simultaneity is quite unlikely. The decolonization process which took place mainly in the 60's is more related to political issues than to strictly economic and international trade issues.

A third issue relates to the presence of zero trade in the dataset. Indeed, the most current approach consists in estimating the gravity model in a logarithmic form, which amounts to drop zero values of the dependent variable (i.e. trade). In our dataset, we have 239,574 observations in total, of which 41,387 correspond to zero trade for imports (17%) and 51,551 for exports (21%). There are several ways to handle this problem. The first one is to simply drop the zero trade observations. However, this method will yield biased estimates if the zeros are not randomly distributed, which is quite likely.[9] The second one is to use a Tobit estimator. However, this method is highly sensitive to the trade value used as the left censor value (see Head *et al*, 2010).

[8] Another possible method to account for multilateral resistance indices is to use the 'tetrad' approach of Head *et al.* (2010), but the results are sensitive to the choice of the reference countries.

[9] Zero trade is more likely to occur for small and distant countries (see Santos Silva and Tenreyro, 2006).

A third solution consists in using a Poisson quasi-maximum likelihood (PQML) estimator. The PQML estimator incorporates the zeros and is robust to different patterns of heteroskedasticity (see Santos Silva and Tenreyro, 2006; Westerlund and Wilhelmsson, 2011). Indeed, Santos Silva and Tenreyro (2006) show that "heteroskedasticity is quantitatively and qualitatively important in the gravity equation, even when controlling for fixed effects" (p. 643) and that the log-linear gravity specification leads to inconsistent estimates. Thus, numerous recent papers provide supporting evidence for the PQML estimation approach (see e.g. Siliverstovs and Schumacher, 2009).

These arguments extend to panel data. Among panel data models, the fixed effects Poisson estimator has strong robustness properties. In particular, it allows for arbitrary dependence between the fixed effects and the explanatory variables, as in the linear model. The only assumption required for the estimator to be consistent concerns the conditional mean of the dependent variable (see Wooldridge, 1999 and Wooldridge, 2002, ch. 19). Therefore, in our main estimation tables we choose to use the fixed effects Poisson estimator. Note that this estimator may also produce biased estimates if the zeros are not 'true' zeros (i.e. if trade flows are incorrectly recorded as zero trade flows). Head *et al.* (2010) report several cases in the DOTS database where there are zeros which should be indeed coded as missing. Thanks to the original data we gathered, we are able to solve partly this issue since we can distinguish between 'true' zeros and missing trade.

The following sections present our empirical results. First, we estimate the gross impact of independence on former French colonies' trade (imports and exports) and compare the results obtained with the DOTS dataset and the ones obtained on the expanded dataset (including DOTS and colonial data) (section 4). Second, we estimate the specific impact of independence on Sub-Saharan African former colonies to investigate the special relationships between France and its former colonies in Sub-Saharan Africa (section **??**).

4 The impact of independence on former colonies' trade

4.1 New evidence on the impact of independence on former colonies' trade

Table 1 displays our estimations results about the influence of independence on post-colonial trade patterns. Estimation results of equation (3) are reported both for the DOTS dataset (columns 1 and 3) and for the expanded dataset (including new colonial data in columns 2 and 4)). In

both cases, we use mirror data to complete each database (see section 3.1). We report separate estimation results for former French colonies' imports (columns 1 and 2) and for former French colonies' exports (columns 3 and 4). On the whole, our empirical model seems to work reasonably well. All control variables are significant and have the expected sign, except the population variable in the origin country for the estimation on imports. Nevertheless, it is worth noting that there is no significant impact of the RTA variable on trade (imports and exports). This may be due to the specialization of several former colonies in primary goods (which are mostly non-traded intra-regionally). The dummy variable for the ACP (Africa–Caribbean–Pacific) agreements is also non significant in exports regressions. Indeed, since its creation, the European Union has offered trade preferences to a large number of African Caribbean and Pacific countries through the Cotonou agreement (previously Yaoundé and Lomé conventions). The ACP agreements are found to have no impact on former colonies' exports. This is not surprising since many papers argue that these agreements do not have any significant impact on developing countries (Panagariya, 2002).

For former colonies' imports, we observe substantial differences between the estimates based on the DOTS dataset and the ones based on the expanded dataset. The impact of independence is always lower in the expanded dataset as compared to the DOTS dataset (column 1 *versus* 2). This is particularly true for imports from France. Using the DOTS, we find that independence decreases imports from the metropole by 67% $[= (exp(-1.12) - 1) * 100]$[10], whereas when we add our colonial trade data the effect of independence on imports from France becomes non-significant. This difference is mainly due to the better coverage of our expanded database. Indeed, the DOTS contain pre-independence data for few colonies: Tunisia, Morocco, Algeria, Madagascar, Cameroun and Vietnam, Laos and Cambodia. For the last three, pre-independence trade in the DOTS is recorded as zero, and we know that they are false zero. Using, the DOTS we identify the effect of independence on imports from the metropole with this little set of former colonies. Nevertheless, whatever the data base we use we find that independence to reduce import from siblings and increase imports from the rest of the world by respectively 50% $[= (exp(-0.70) - 1) * 100]$ and 230% $[= (exp(1.19) - 1) * 100]$(column 2).

As regards exports, the discrepancy between results obtained using the two databases is less pronounced which can be explained by the fact that our expanded database contains less additional pre-independence flows than in the case of imports. Our estimations yield the following results: following independence, exports to France and exports to siblings have decreased respectively by 54% $[= (exp(-0.78) - 1) * 100]$ and 84% $[= (exp(-1.84) - 1) * 100]$ on average over the entire post-independence period (column 4) whereas exports to the rest of the world have increase by

[10]Note that in the Poisson regression model, the interpretation of the estimated coefficients is similar to the one in the standard log-linear model. Coefficients on variables in logarithmic form (such as the GDP per capita or the population) can be interpreted as elasticities and the impact of dummy variables is $exp(\beta) - 1$ (see Winkelmann, 2003).

270% [$= (exp(1.31) - 1) * 100$].

When using our expanded database, another finding emerges from these first results is that after independence imports have been reoriented less easily than exports. This can be explains by two reasons. First, colonies exported mainly homogeneous primary products to their metropole, whereas they imported manufactured goods from their colonial power. These imports may ultimately reflect the slowly changing preference patterns of the whole society (Kleiman, 1976). Consequently, one can think that, after independence, imports may have been reoriented less easily than exports. Second, colonial trade policies also differed systematically between exports to and imports from the metropole.

Table 1: The effect of independence on former colonies' imports and exports

Trade flows	Imports		Exports	
Data sources	DOTS	DOTS+Colonial	DOTS	DOTS+Colonial
ln(GDP per cap$_{it}$)	1.39^a	1.35^a	1.75^a	1.72^a
	0.16	0.16	0.24	0.24
ln(GDP per cap$_{jt}$)	1.42^a	1.43^a	0.68^b	0.68^b
	0.13	0.13	0.32	0.32
ln(Pop$_{it}$)	1.22^a	1.18^a	1.11^c	0.96
	0.47	0.45	0.62	0.60
ln(Pop$_{jt}$)	2.08^a	2.09^a	2.17^a	2.17^a
	0.25	0.25	0.51	0.51
rta$_{ijt}$	0.07	0.07	-0.09	-0.09
	0.07	0.07	0.09	0.09
acp_to_eu$_{ijt}$			0.25	0.17
			0.22	0.21
Indep_FRA$_{ijt}$	-1.12^a	-0.67	-0.69^c	-0.78^b
	0.31	0.47	0.37	0.30
Indep_ROW$_{ijt}$	1.08^a	0.70^b	1.39^a	1.31^a
	0.22	0.30	0.29	0.28
Indep_SIB$_{ijt}$	-1.45^a	-1.19^a	-1.86^a	-1.84^a
	0.32	0.40	0.49	0.49
Observations	65251	66793	63533	64300

Notes: Fixed effects Poisson estimations. Standard errors clustered at the country-pair level in parentheses. ^{a} denotes significance at the 1% level. Year dummies estimates are not reported.

4.2 The impact of Sub-Saharan African independence

We now investigate empirically the consequences of these French-African relationships. Do these special relationships have an impact on former colonies' trade after independence? Does the im-

pact of independence differ for these former French colonies? To answer these questions, we introduce in our empirical model several additional interactive dummy variables. The first one ($Indep\_FRA\_Afr$) is equal to 1 for relationships between former French colonies in *Sub-Saharan Africa* and France for each year since (and including) independence and 0 otherwise.[11] We also include similar dummy variables for relationships between former French colonies in Sub-Saharan Africa for each year since (and including) independence ($Indep\_SIB\_Afr$) and for relationships between former French colonies in Sub-Saharan Africa and the rest of the world for each year since (and including) independence ($Indep\_ROW\_Afr$). The $Indep\_FRA$, $Indep\_SIB$ and $Indep\_ROW$ dummy variables now measure the impact of independence on trade with France, siblings and the rest of the world for former French colonies in other parts of the world (North Africa, Middle East and Asia).

Table 2 displays our results for former colonies' imports and exports. As in Tables 1, every dummy variable measures the impact of independence by comparing, for each pair of countries, trade before and after independence. We report different specifications, introducing progressively these additional dummy variables.

We acknowledge that the interpretation of interaction effects captured by these dummy variables is quite complex. Indeed, generally, with the poisson regression model the interaction effect cannot be interpreted directly by looking at the sign, magnitude, or statistical significance of the coefficient on the interaction term (see Ai and Norton, 2003; Winkelmann, 2003). The interaction effect is conditional on the independent variables and can thus vary across observations. however, we will focus on the conditional first difference or, in other words, the treatment effect among the treated. Following Mullahy (1999),in this peculiar case sign, magnitude, or statistical significance of the coefficient of the interactive variables give us a proper test of the absence of such interactions effects. [12]

For former colonies' imports, we find a France-Africa effect since $Indep\_FRA\_Afr$ is positive and significant (column 1 and 2). Thus, our results indicate that on average, after independence Sub-Saharan African former colonies import significantly more from France than other former French colonies. However, we find no difference between the Sub-Saharan group of countries and the other former French colonies after independence on imports from siblings and the rest of the

[11] These former colonies include French Equatorial Africa (Congo, Gabon, Chad, Central African Republic), French West Africa 1 (Senegal, Mali, Mauritania), French West Africa 2 (Niger, Benin, Burkina Faso, Guinea), Ivory Coast, Cameroon, Togo, Madagascar and Djibouti.

[12] Let's consider our first interactive variable ($Indep\_FRA\_Afr$). It is equal to our dummy variable ($Indep_FRA$) times a dummy variable (Afr) denoting that the colonies belong to sub-saharan Africa). In this case, a proper test of the absence of such interaction effect would be a test of the linear-in-parameter null hypothesis according to which the sum of the coefficients of the variables ($Indep\_FRA\_Afr$) and (Afr) is nil. In a fixed effect model, we can not estimate the coefficient of the variable (Afr) because it is time invariant. Therefore, we can interpret the sign of the interaction effect from the coefficient on the interaction term.

world. For former colonies' exports, there is no comparable France-Africa effect. Sub-Saharan former colonies do not export more to France than the other former colonies since independence. Such a result is consistent with *Françafrique* thesis which denounces the asymmetry of the relations between France and its former colonies of sub-saharan Africa at the expenses of the latest. Nevertheless, we find a significant difference between both groups of countries for exports to siblings after independence. Our results indicate that former French colonies of Sub Saharan Africa export more to their siblings after independence than their sibling do.

Table 2: The effect of Sub-Saharan African independence on imports and exports

Trade flows	Imports		Exports	
$\ln(\text{GDP per cap}_{it})$	1.39^a	1.40^a	1.73^a	1.73^a
	0.16	0.16	0.24	0.24
$\ln(\text{GDP per cap}_{jt})$	1.43^a	1.43^a	0.68^b	0.68^b
	0.13	0.13	0.32	0.32
$\ln(\text{Pop}_{it})$	1.24^a	1.25^a	0.97	0.96
	0.44	0.44	0.61	0.61
$\ln(\text{Pop}_{jt})$	2.09^a	2.09^a	2.16^a	2.16^a
	0.25	0.25	0.50	0.50
rta_{ijt}	0.08	0.08	-0.09	-0.09
	0.07	0.07	0.09	0.09
acp_to_eu_{ijt}			0.07	0.08
			0.24	0.25
Indep_FRA_{ijt}	-1.04^a	-1.05^a	-0.91^a	-0.90^a
	0.36	0.36	0.29	0.29
$\text{Indep\_FRA\_Afr}_{ijt}$	0.95^a	0.96^a	0.40	0.39
	0.29	0.29	0.34	0.34
Indep_ROW_{ijt}	0.70^a	0.60^b	1.33^a	1.37^a
	0.26	0.30	0.27	0.36
Indep_SIB_{ijt}	-1.19^a	-1.19^a	-1.84^a	-2.26^a
	0.37	0.39	0.49	0.51
$\text{Indep\_ROW\_Afr}_{ijt}$		0.37		-0.10
		0.48		0.41
$\text{Indep\_SIB\_Afr}_{ijt}$		0.00		1.33^a
		0.49		0.51
Observations	66793	66793	64300	64300

Notes: Fixed effects Poisson estimations. Standard errors clustered at the country-pair level in parentheses. ^{a}, ^{b} and ^{c} denote significance at the 1%, 5% and 10% level respectively. Constant and year dummies estimates are not reported.

4.3 The impact of Sub-Saharan African independence over time

As regards imports from France, we investigate how the post-independence difference between former French colonies in sub-saharan Africa and the other former French colonies changes over time. To do so, we break up our set of indicators related to past colonial ties for Sub-Saharan African countries ($Indep_FRA_Afr$, $Indep_SIB_Afr$, $Indep_ROW_Afr$) into dummy variables denoting the number of years since at least one trade partner is independent from France, up to a maximum we set at 45 and interact this set of dummies with an indicator variable turning on for trade with at least a Sub-Saharan African country. Estimation results are displayed in Figure **??**. It shows that the difference between former African colonies and the other French colonies is significant after 8 years of independence and increases the next 20 years. After, this difference decreases progressively to become insignificant. This timing and this 20 years increasing difference correspond for most Sub-Saharan African former colonies to the period between 1968 and 1990, the gold era of French-African relationships.

5 Underlying mechanisms and robustness checks

5.1 Underlying mechanisms

As explained previously, Françafrique has a lot of expressions (migrations, aid, political proximity...). So we explore the underlying mechanisms of the Françafric. Unfortunately, at the present moment, we have only data relative to political connections between France and its former colonies of Sub-Saharan Africa. More precisely, we have data on Diplomatic exchanges, Military Alliance and Political proximity (using UN vote data). We add these variables to our model. Their introduction does not change neither the magnitude nor the significance of our estimates of the variables Françafrique. In other words, our Dummy Françafrique captures other elements that these political connections.

5.2 Robustness checks

In last step, we test the robustness of our results by increasing the size of our sample. The idea is to increase our control group in order to see if there is a francafrique effect or just an African effect.

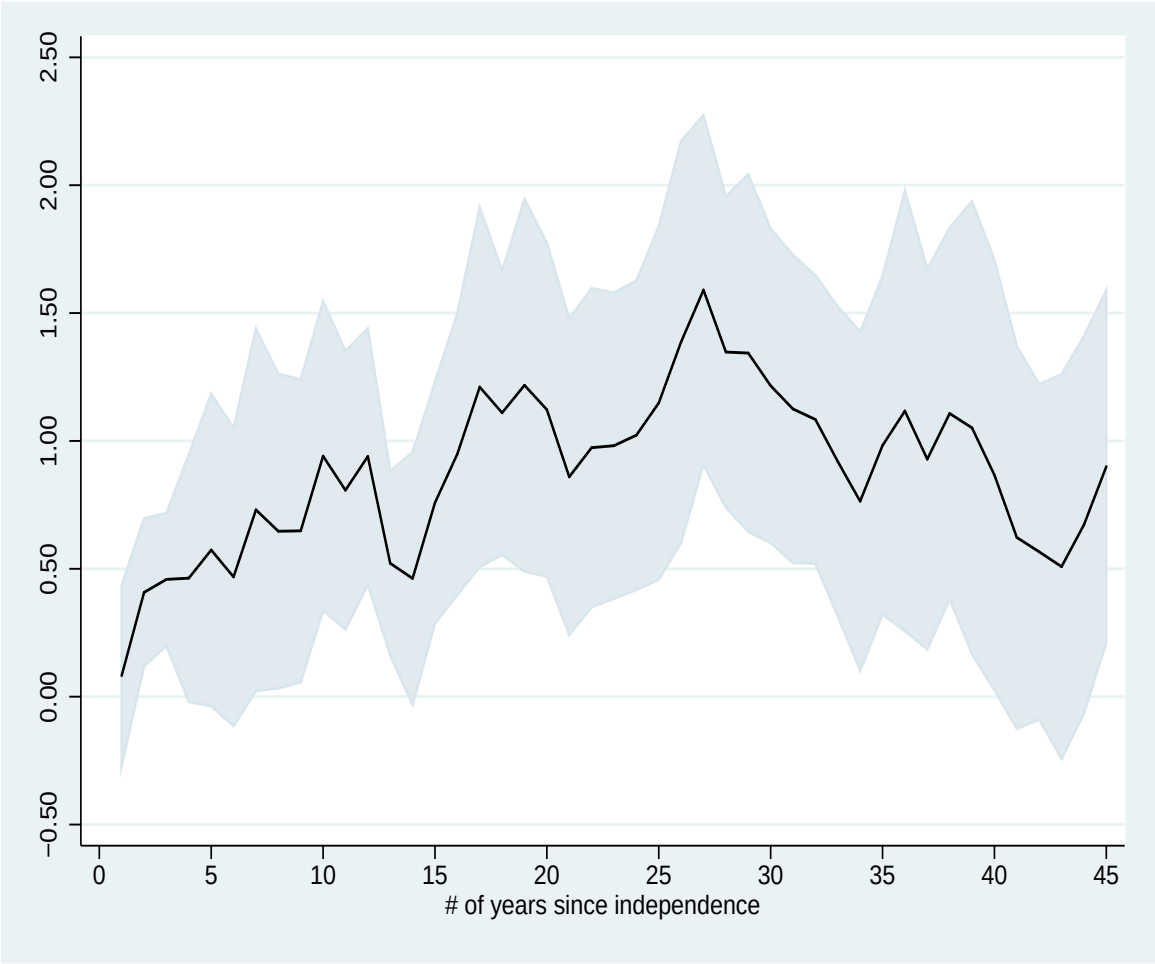
71 reporting countries or federations of countries with 190 partner countries. 13 former French colonies, 34 former British colonies, 11 other former colonies (Belgian, Portuguese, Dutch), 13

Table 3: Underlying mechanism

	Bench	Diplo Exch	Bench	Alliance	Bench	UN votes
ln(GDP per cap$_{it}$)	1.35^{a}	1.36^{a}	1.09^{a}	1.08^{a}	1.42^{a}	1.42^{a}
	0.18	0.18	0.16	0.16	0.17	0.17
ln(GDP per cap$_{jt}$)	1.48^{a}	1.46^{a}	1.45^{a}	1.47^{a}	1.27^{a}	1.26^{a}
	0.14	0.15	0.11	0.11	0.17	0.16
ln(Pop$_{it}$)	1.32^{a}	1.30^{a}	0.99^{b}	0.94^{b}	0.26	0.24
	0.48	0.48	0.42	0.42	0.47	0.47
ln(Pop$_{jt}$)	2.16^{a}	2.13^{a}	2.34^{a}	2.17^{a}	1.74^{a}	1.72^{a}
	0.26	0.26	0.23	0.24	0.23	0.23
rta$_{ijt}$	0.10	0.10	0.19^{a}	0.17^{b}	0.09	0.09
	0.07	0.07	0.07	0.07	0.08	0.08
Indep_FRA$_{ijt}$	-0.90^{b}	-1.20^{a}	-1.10^{a}	-1.12^{a}	-1.02^{a}	-1.04^{a}
	0.36	0.36	0.35	0.34	0.32	0.32
Indep_FRA_Afr$_{ijt}$	0.94^{a}	0.94^{a}	0.93^{a}	1.04^{a}	1.06^{a}	1.08^{a}
	0.28	0.28	0.31	0.37	0.26	0.26
Indep_SIB$_{ijt}$	-1.11^{b}	-1.36^{a}	-1.50^{a}	-1.29^{a}	-0.99^{a}	-0.98^{a}
	0.44	0.44	0.34	0.37	0.37	0.37
Indep_ROW$_{ijt}$	0.81^{a}	0.53^{c}	0.51^{c}	0.51^{c}	0.76^{a}	0.75^{a}
	0.29	0.30	0.26	0.26	0.27	0.27
Diplo Exch$_{ijt}$		0.33^{a}				
		0.10				
Alliance$_{ijt}$				-0.29^{c}		
				0.16		
UN Votes$_{ijt}$						-0.05
						0.04
Observations	54726	54726	53254	53254	51224	51224

Notes: Fixed effects Poisson estimations. Standard errors clustered at the country-pair level in parentheses. ^{a}, ^{b} and ^{c} denote significance at the 1%, 5% and 10% level respectively. Constant and year dummies estimates are not reported.

Figure 1: Evolution of the *Françafrique* effect over time



labelfig:graphtime

countries that became independent before 1945 or that have never been colonized.

As you can see, our dummy Indep_{FrA} $frisstillsignificantwhereastheequivalentdummyforformerBritishcoloniesinA$

6 Conclusion

We find that, following independence, trade (imports and exports) of former colonies increase with the rest of the world and decrease with other former colonies.

Table 4: Underlying mechanism

Dataset	Global dataset	
Trade flows	Imports	Exports
ln(GDP per cap$_{it}$)	1.03^{a}	1.09^{a}
	0.08	0.16
ln(GDP per cap$_{jt}$)	1.26^{a}	1.03^{a}
	0.11	0.15
ln(Pop$_{it}$)	0.89^{a}	1.15^{a}
	0.18	0.24
ln(Pop$_{jt}$)	1.75^{a}	1.63^{a}
	0.17	0.27
rta$_{ijt}$	0.16^{b}	0.08
	0.06	0.08
acp_to_eu$_{jt}$		0.01
		0.13
Indep_FRA$_{ijt}$	-1.09^{a}	-0.65^{a}
	0.20	0.19
Indep_FRA_Afr$_{ijt}$	0.88^{a}	0.15
	0.25	0.28
Indep_GBR$_{ijt}$	0.19	-0.00
	0.67	0.38
Indep_GBR_Afr$_{ijt}$	-0.32	-0.77^{c}
	0.69	0.46
Indep_OTH$_{ijt}$	-1.74^{a}	-1.41^{a}
	0.18	0.15
Indep_OTH_Afr$_{ijt}$	1.46^{a}	0.65
	0.45	0.46
Indep_SIB$_{ijt}$	0.05	-0.06
	0.20	0.12
Indep_ROW$_{ijt}$	0.78^{a}	1.26^{a}
	0.13	0.20
Observations	291176	293086

Notes: Fixed effects Poisson estimations. Standard errors clustered at the country-pair level in parentheses. ^{a}, ^{b} and ^{c} denote significance at the 1%, 5% and 10% level respectively. Constant and year dummies estimates are not reported.

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Appendix

Table 5: List of reporting countries (former French colonies or overseas departments or territories) with years of independence

Countries/Federations of countries	Current country name	Years of independence
French Equatorial Africa	Congo, Gabon, Chad, Central African Republic	1960
French West Africa 1	Senegal, Mali, Mauritania	1960
French West Africa 2	Niger, Benin, Burkina Faso, Guinea	1960
Ivory Coast		1960
Cameroon		1960
Côte française des Somalis	Djibouti	1977
Algeria		1962
Guadeloupe		-
French Guiana		-
Indochina	Vietnam, Cambodia, Laos	1954
Lebanon		1943
Morocco		1956
Madagascar		1960
Martinique		-
New Caledonia		-
French Polynesia		-
Reunion		-
Saint Pierre & Miquelon		-
Syria		1946
Togo		1960
Tunisia		1956
Wallis & Futuna		-