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Trade and Colonial Status

Abstract

Does colonisation explain differences in trade performance across developing countries? In this paper, we analyse the differential impact of British versus French colonial legacies on the current trade of African ex-colonies. We initially find that former British colonies trade more, on average, than do their French counterparts. This difference might be the result of the relative superiority of British institutions. However, a core concern is the non-random selection of colonies by the British. Historians argue that with Britain, trade preceded colonisation. Using an instrument based on colonisation history to control for this endogeneity, we find no evidence of a systematic difference between the British and French colonial legacies with respect to trade. This finding suggests that the apparent better performance of British ex-colonies might be instead explained by pre-colonial conditions.

Keywords: Trade, colonisation, Africa

JEL classifications: F10, F54, O55

Commerce et statut colonial

Résumé

La colonisation explique-t-elle les écarts de performance commerciale des pays en développement? Pour répondre à cette question, nous exploitons une particularité de l'histoire coloniale en comparant l'héritage colonial laissé par les Anglais et les Français en Afrique. Nous montrons qu'en moyenne les ex-colonies britanniques commercent davantage aujourd'hui que les ex-colonies françaises. Ce résultat pourrait corroborer les travaux témoignant de la supériorité relative des institutions britanniques. Cependant, il pourrait également s'expliquer par une sélection non aléatoire des colonies britanniques. En effet, les études historiques suggèrent que, dans le cas britannique, le commerce a précédé la colonisation. Nous utilisons un instrument basé sur l'histoire coloniale pour contrôler ce problème d'endogénéité. Il en résulte que la différence entre colonisation britannique et française n'a plus d'impact sur le commerce de leurs ex-colonies. Cela suggère que la meilleure performance apparente des ex-colonies britanniques pourrait être expliquée par les conditions précoloniales.

Mots-clefs : Commerce, colonisation, Afrique

Classifications JEL : F10, F54, O55

Trade and Colonial Status

1 Introduction

Africa accounts for a tiny share of world trade (2.9% in 2008 according to the WTO). Even if there is considerable variation across countries, this marginalisation is problematic.[1] International trade is a driver of productivity change and a vehicle of technology in the interest of catching up with high-income economies (Grossman and Helpman, 1991). Africa's marginalisation in international trade is nevertheless considered as 'normal' with regard to its income level and geography (see Coe and Hoffmaister, 1999; Foroutan and Pritchett, 1993; Rodrik, 1998). Geography is considered to be an exogenous determinant of trade and strongly affects African trade, notably through landlockness (Fontagné and Coulibaly, 2006) and ruggedness (Nunn and Puga, 2009). However, bad geography may be 'trumped' by the quality of institutions (Rodrik *et al.*, 2004). Institutions could be modified and improved in ways that would increase trade. For instance, the improvement of the quality and security of the roads or the reduction of border delays may be expected to result in significantly improved trade performance in Africa (see Freund and Rocha, 2010).

In this paper, we focus on institutions inherited from the colonial period and their potential effects on the current trade situation of former colonies. Numerous

[1] As an example, in our sample of 29 African countries (see the list in appendix), the average trade per capita is US$ 1,402 (representing 4% of that of the leading exporter, i.e., Germany) with high variability; Gabon has a trade per capita ratio that is 54 times greater than that of the Central African Republic. These statistics are based on the latest available data reported by the WTO in March 2010.

papers have focused on the effect of the colonial legacy on economic growth and development (see Nunn, 2009).[2] However, its effect on trade has scarcely been studied.[3] Africa is a particularly interesting continent in which to examine this issue for two reasons. First, Africa is a more homogeneous area with respect to the pre- and post-colonial context than are all former colonies taken together.[4] Second, for the half-century following World War I, France and Britain, the two major colonial European powers, controlled approximately four-fifths of the African continent. Today, over 36 countries and 770 million people in Africa are concerned by the legacies of British and French colonial institutions. We exploit this historical feature to investigate the differential effect of institutions inherited from the colonial period on current African trade. This investigation contributes to the recent empirical literature on the role of institutions in international trade.

[2]In particular, several studies have shown former British colonies to perform better on average than their French counterparts in terms of economic growth (e.g., Grier, 1999; Bertocchi and Canova, 2002). However, Acemoglu *et al.* (2001) highlight the importance of the conditions in the colonies and the subsequent strategy of colonisation (extraction *versus* settlement) independent of the identity of the colonising power. They argue that settlement colonies, with their low mortality rates of European settlers, had institutions that enforced the rule of law and encouraged investment. These institutions persisted to the present and determine current economic development.

[3]Empirical evidence suggests that 'common colonial ties' between the colony and its coloniser and/or between countries colonised by the same coloniser have strongly affected *past* colonial trade (Mitchener and Weidenmier, 2008) and *current* trade (e.g., Rose, 2000), even if their impact partly eroded after independence (Head *et al.*, 2010). Beyond the impact of common colonial ties on trade, it is unclear whether a country's prior colonial status matters *per se*.

[4]In Central and South America, the process of colonisation dates back to the 16th century and Asian colonisation is more heterogeneous due to the early experience of India and the specificities of Japanese colonisation of Taiwan and Korea (see Bertocchi and Canova, 2002).

A wealth of social science literature documents the existence of systematic institutional differences between the British and French colonial systems.[5] There are three potential sources of institutional differences in colonial legacies. First, legal rules differ among legal origins, which were typically introduced through conquest and colonisation. British common law appears to offer stronger legal protections to investors than does French civil law, implying more developed financial markets (La Porta *et al.*, 1997, 1998). British common law countries are also characterised by a lower level of corruption (Treisman, 2000), better government efficiency, more secure property rights, and better (less intrusive) regulation than French civil law countries (La Porta *et al.*, 1999 and La Porta *et al.*, 2008 for a review). Second, the British more often opted for the so-called 'indirect rule' working through indigenous rulers and preserving traditional institutions. In contrast, the French adopted a more direct rule of administration, abolishing indigenous institutions, and imposing colonial officers in a Jacobin tradition of omnipresence of the republican state (e.g., Crowder, 1968). These differences in colonial rule may have long-term effects on institutional quality and governance (Lange, 2004; Nunn, 2007).[6] Overall, differences in legal origin and in colonial rule may impact trade. Cross-country differences in the quality of institutions are now recognised to influence international trade, especially in

[5]There is a debate among historians of the 'contrast' school, who argue that colonial powers had different colonial philosophies (e.g., Crowder, 1968) and those of the 'similarity' school, who point out a tendency of the contrast school to exaggerate differences rather than similarities between colonial policies (e.g., Fieldhouse, 1982; Firmin-Sellers, 2000; Kiwanuka, 1970).

[6]Lange (2004) finds a negative relationship between the extent of indirect rule and various measures of post-colonial governance. However, he only focuses on British ex-colonies.

contract enforcement, protection of property rights, and corruption (Anderson and Marcoullier, 2002; Levchenko, 2007 and Rauch, 1999). Furthermore, the attitude of the British Empire towards international trade was quite different from that of the other European powers, among them France. Britain had a free trade colonial policy and colonial trade was open to all foreign countries until 1932, whereas the French generally enforced mercantilist and protectionist measures in colonial trade (see Bairoch, 1989; Fieldhouse, 1982; Findlay and O'Rourke, 2007, chap 7, pp. 401-02). Such institutional differences may be a source of comparative advantage.

To investigate the differential effect of British and French institutional legacies on current African trade, we use a theoretical gravity model and a large sample of countries. We initially find that former British colonies in Africa trade more, on average, than do their French counterparts. This 'British effect' is robust to multilateral resistances and specific observable differences between the British and French Empires. We further investigate the source of this 'British effect,' as it might be related to specific pre-colonial trade patterns.

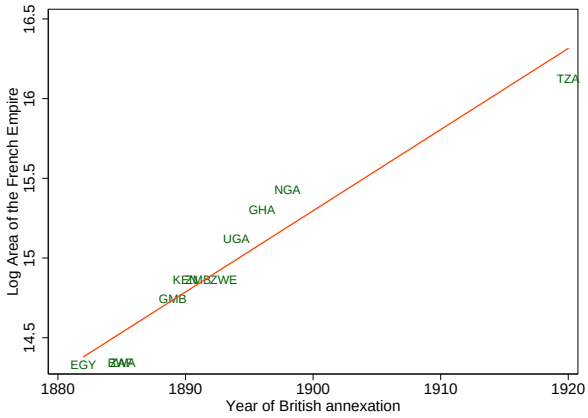
A core concern is, indeed, the non-random selection of colonies by the British. Historians argue that British colonisation seems related to pre-colonial trade (e.g., Crowder, 1968; Fage, 2002). Indeed, looking closely into the history of African colonisation, we find evidence that "with Britain trade preceded the flag, or directed where the flag should be flown" (Crowder, 1968, p. 70). Selection, based on pre-colonial trade may produce an overestimation of the 'British effect'. To overcome

this endogeneity bias, we use an instrumental variable approach. The reliability of this approach lies on the identification of an appropriate instrument for the British colonisation.

To instrument the probability of being colonised by the British, we exploit a striking feature of colonisation in Africa: the 'race' between European powers. In less than thirty years starting from the mid 1870's, most of Africa was colonised and divided up between the British and the French (Pakenham, 1992). This 'Scramble for Africa' was encouraged by European rivalries (e.g., Coquery-Vidrovitch, 1970; Gallagher, Robinson, 1953; Griffith, 1993). The French expansion led Britain to approve and support formal annexation (instead of a simple occupation of particular areas). Based on this feature, we construct a simple instrument explaining colonisation: the area (in square kilometres) colonised by the other empire in Africa at the time of colonisation of a given territory. Figure 1 plots the logarithm of the area colonised by the French against the year in which each British territory was colonised, showing a strong positive relationship.

This instrument seems consistent with the non-random selection of British colonies and should have no effect on current trade, other than the effect through British colonisation. In fact, the very first colonies may have been the ones where there was minimal colonisation by the other power and are also likely to be the ones that had excellent pre-colonial trade opportunities. In the first stage of our instrumental variable approach, we find that an increase in the size of the French empire leads

Figure 1: Size of the French Empire *versus* years of British annexation



to an increase of the area colonised by the British. In the second stage, the initial 'British effect' vanishes. Indeed, controlling for the endogeneity in the relationship between colonisation and trade, we find no evidence of a systematic differential effect of British *versus* French colonisation on former colonies' current trade. We interpret this result in light of the role played by the pre-colonial conditions.

The rest of the paper is structured as follows. In Section 2, we present the empirical model. In Section 3, we describe the data and discuss some estimation issues. In Section 4, we report the basic estimates of the 'British effect' on international trade of former colonies. In Section 5, we address the endogeneity between colonisation and trade. Finally, in Section 6, we summarise and discuss our findings.

2 Empirical model

To investigate the effect of the colonial status of the former British and French colonies on current trade, we use a theoretical gravity model (see Anderson and

van Wincoop, 2003). This model relates the bilateral exports (X_{ij}) of country i to country j to the size of their respective economies (Y_i and Y_j), their implicit price indices (P_i and P_j), and bilateral trade costs (τ_{ij}) as follows:

$$X_{ij} = \frac{Y_i Y_j}{Y_w} \left(\frac{\tau_{ij}}{P_i P_j} \right)^{1-\sigma}, \tag{1}$$

where Y_w is the nominal world income, $\sigma > 1$ the elasticity of substitution between all goods, and

$$P_i = \left(\sum_j \theta_j \left(\frac{\tau_{ij}}{P_j} \right)^{1-\sigma} \right)^{1/1-\sigma}, \tag{2}$$

where θ_j is country j's share of world income, and

$$P_j = \left(\sum_i \theta_i \left(\frac{\tau_{ij}}{P_i} \right)^{1-\sigma} \right)^{1/1-\sigma}. \tag{3}$$

Price indices (P_i) and (P_j), termed "multilateral resistance" indices in the literature, account 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).

Furthermore, we assume trade costs (τ_{ij}) to be a loglinear function of some observable factors:

$$\tau_{ij} = \prod_{m=1}^{M} (z_{ij}^m)^{\gamma_m} \times \exp\left(British\_col\right)_{i/j}^{-\gamma_{uk}}, \tag{4}$$

where z_{ij}^m is a list of observable arguments that affect bilateral trade, such as

distance, common language, regional free trade agreements, and common colonial relationships (i.e., between colonisers and their former colonies or between countries colonised by the same coloniser). In addition, we aim to measure the differential effect of British *versus* French colonial legacies on trade. We argue that this difference may result in differences in trade costs affecting the volume of trade. As noted above, British common law countries appear to have less corruption, better contract enforcement, and better protection of property rights. This overall higher institutional quality may reduce trade costs (Anderson and Marcoullier, 2002; Levchenko, 2007 and Rauch, 1999). Moreover, the British favoured free trade policies, whereas the French generally enforced protectionist measures. This may also translate into differences in trade costs. Hence, to capture the differential impact of British and French legacies on trade cost we introduce in equation (4) a $British\_col_{i/j}$ dummy variable that is equal to one if the exporter (i) or the importer (j) is a former British colony and 0 if it is a former French colony (see below). Accordingly, we expect γ_{uk} to be positive.

Applying a log transformation to equation (1), replacing the trade cost factor with the set of observable elements in equation (4), introducing time subscripts and adding the traditional error term ϵ_{ijt}, which captures all other determinants of bilateral trade, yields:

$$\begin{aligned} \ln(X_{ijt}) &= k + \ln(Y_{it}) + \ln(Y_{jt}) + \sum_{m=1}^{M} \lambda_m \ln(z_{ijt}^m) \\ &+ \alpha(British\_col)_{i/j} - (1-\sigma)P_{it} - (1-\sigma)P_{jt} + \epsilon_{ijt}, \end{aligned} \tag{5}$$

where k is a constant, $\lambda_m = (1-\sigma)\gamma_m$, and $\alpha = (\sigma-1)\gamma_{uk}$.

The coefficient of interest to us is α, which measures the differential impact of British *versus* French colonial legacies on the current trade of former African colonies. The estimation of α raises some issues about: (1) the sample designed for interpretation of the differential effect of the colonial status; (2) the estimation of the multilateral resistances that depend on trade barriers between each country and all of its trading partners (not just the bilateral partner); and (3) the endogenous selection of the British colonies. In the next section, we present the data and address the first two estimation issues. Then, after presenting a benchmark estimation of α, we will devote a section to the endogeneity issue.

3 Data and estimation issues

3.1 Data

Our sample includes 53 countries, of which 29 are African countries, all of which are former French or British colonies, and 24 non-African countries (21 OECD countries and 3 large emerging countries - Brazil, Russia and China). The list of countries is detailed in appendix (Table 3). The time period of our sample is 2000-2006. Trade data come from the DOTS database provided by the International Monetary Fund (IMF). Other variables such as GDP were obtained from various sources (see Table 4 in appendix).

3.2 Estimation issues

The first issue concerns the design of the sample. The overall sample comprises all bilateral trade relationships between our 53 African and non-African countries, i.e., potentially 19,292 observations ($53 * 52$ countries $*$ 7 years). This overall sample allows for general results, but complicates the interpretation of our variable of interest, the $British\_col_{i/j}$ dummy. In fact, in this sample, trade performances of former British colonies are not strictly compared with those of former French colonies. To compare these two groups of colonies directly, we introduce into the regression a dummy variable (called NonAfrica_{ij}) identifying trade between non-African countries, i.e., OECD or emerging countries. In this way, former French colonies become the base group against which all comparisons are made. We also adopt a different strategy to identify the British colonisation effect. We use a reduced sample, focusing on bilateral trade between African countries and non-African countries. This use amounts to a removal from the overall sample of the trade relationships (1) between non-African countries, and (2) between African countries. This reduced sample comprises potentially 9,744 observations (29 African countries $*$ 24 OECD or emerging countries $*$ 7 years $*$ 2). In this case, if the exporter i is an OECD or an emerging country, the importer j is always a former British colony *or* a former French colony. Conversely, if the exporter i is a former British or French colony, the importer j is always an OECD or an emerging country. In this reduced sample, the definition of the $British\_col_{i/j}$ dummy implies that the former French

colonies are the base group against which comparisons are made.[7]

A second major issue is the control of time-dependent and country specific multilateral resistance indices, (P_{it}) and (P_{jt}). We use four different specifications to address this issue. The first is a fairly simple and efficient approach. We use an OLS estimator with a vector of exporter and importer country dummies and estimate equation (5) year-by-year (e.g., Feenstra, 2004). In the second specification, we use again an OLS estimator with a vector of country-year dummies (i.e., country dummies interacted with year dummies) and estimate equation (5) on the panel sample (2000-2006) (e.g., Baldwin and Taglioni, 2006).[8] These two specifications are appropriate only for the overall sample, however. In the reduced sample, our variable of interest ($British\_col_{i/j}$) would be absorbed by the country or the country-year dummy variables. A third solution to capture multilateral resistance indices in our (overall or reduced) panel data set consists of using the *within* estimator. This solution entails the introduction of country-pair dummies (called dyad fixed effects) instead of country dummies. In this way, we control for any time-invariant factor affecting bilateral trade, i.e., country- and dyad-specific factors. Using this third specification, we implicitly assume the multilateral resistance terms to change little over time. This assumption seems reasonable, as we consider a short time period

[7]Note that, as in Acemoglu *et al.* (2001), we are interested here in the effect of different colonial legacies, conditional on being colonised.

[8]Instead of the OLS estimator, Santos Silva and Tenreyro (2006) suggest the use of a Poisson quasi-maximum likelihood estimator (PQML) with country or country-year dummies to avoid selection bias due to the existence of zero trade observations. However, we elected not to use the PQML estimator because we have very few zero trade observations (ranging from 6% to 8% of all observations, depending on the sample).

from 2000 to 2006. A caveat of the within estimator is its inability to estimate the coefficient of our variable of interest, i.e., the $British\_col_{i/j}$ dummy, which is time-invariant. To solve this problem, we adopt a fourth specification using the Mundlak (1978) approach. The Mundlak approach reconciles the random effect estimator and the within estimator.[9] It posits that the dyad fixed effects can be projected upon the group means of the time-varying variables. As a consequence, addition of the mean of the time-varying variables to the equation picks up the correlation between the dyad fixed effects and the explanatory variables. In this case, a random effect estimator should yield unbiased estimates (see Wooldridge, 2002). In panel specifications 3 and 4, we also add a vector of time dummies to control for the general evolution of trade.

4 Baseline estimates: the 'British effect'

Our baseline results are reported in Table 1. We use the overall sample in the first four columns and the reduced sample in the last two columns (see above).

In column (1), we estimate equation (5) on the overall sample for a single year (2006).[10] In this cross-sectional model, we introduce a vector of exporter and importer country dummies (specification 1). They account for the multilateral resistance terms and all the other country characteristics, including market size. In this

[9]Recall that the random effect estimator is inconsistent when some of the explanatory variables are correlated with the unobserved dyad fixed effects, while the within estimates are always unbiased.

[10]Note that the results are not sensitive to the choice of a particular year. Year-by-year regressions are available upon request.

specification, all coefficients are statistically significant, except for the common language dummy variable. As expected, a larger distance between the trade participants deters bilateral trade, while regional trade agreements (RTA) favour trade. Former *common* colonial relationships also matter. Two countries that have been colonised by the same coloniser (France or Great Britain) still trade nearly eight times more [=exp(2.07)], all other things being equal. We also find that both France and Great Britain have special trade relationships with their ex-colonies, mirroring other estimates in the literature (e.g., Rauch, 1999; Rose, 2000; Glick and Taylor, 2006). However, the results show that France trades more with its ex-colonies than does Great Britain. The difference between $ColonUK_{ij}$ and $ColonFRA_{ij}$ is indeed statistically significant. This finding may reflect the persistency of a colonial legacy related to the attitude towards trade. As pointed out above, the British Empire favoured free trade policies, whereas the French generally enforced protectionist measures in their colonial trade (see Bairoch, 1989; Fieldhouse, 1982; Findlay and O'Rourke, 2007, chap 7, pp. 401-02). Thus, French colonies were forced to import from France, to sell their goods to France and to use French ships.

Recall that our overall sample comprises all bilateral trade relationships between our 53 African and non-African countries. Accordingly, to compare the trade performance of former British colonies with that of former French colonies, we add into the regression a dummy variable (NonAfrica_{ij}) identifying trade between non-African countries. Former French colonies thus become the base group against which all com-

parisons are made. Thus, we find that countries that were colonised by the British trade as much as 4.5 times more [=exp(1.51)] than do those that were colonised by the French, all other things being equal. Surprisingly, we find a negative estimate for the non-African bilateral dummy (NONAFRICA_{ij}). This could be because our first specification with country dummies does not account properly for the *bilateral* factors affecting bilateral trade (see below).

In column (2), we estimate equation (5) on the overall sample for the whole time period 2000-2006. We use our second specification and introduce country-year fixed effects to account for time-varying multilateral resistance terms, as suggested by Baldwin and Taglioni (2006). The $British\_Col_{i/j}$ coefficient is still highly significant and differs little from its estimate in column (1).

In column (3), we use the same sample and time period as in column (2). However, we now use the within estimator (specification 3) to control for any bilateral time-independent factor affecting bilateral trade. This benchmark estimation is then compared with the estimates of column (4). In this latter column, we use the Mundlak (1978) approach (specification 4), i.e., we add to the estimated equation the means of all time-varying regressors (the GDP variables and the RTA dummy) and use a random effect estimator. As expected, the coefficients on the time-varying variables are very similar in columns (3) and (4). The estimate of the $British\_Col_{i/j}$ dummy is of smaller magnitude than in the first two columns, yet still highly significant. This finding indicates that, on average, a former British colony trades 43%

Table 1: Baseline results

Dep. var:	ln of bilateral exports					
Method	Country FE	Country-year FE	Dyad FE	Dyad RE Mundlak	Dyad RE Mundlak	Dyad RE Mundlak
Time period	2006	2000-2006	2000-2006	2000-2006	2000-2006	2000-2006
Model	(1)	(2)	(3)	(4)	(5)	(6)
British_Col$_{i/j}$	**1.51**^{a}	**1.26**^{a}	**-**	**0.36**^{a}	**0.55**^{a}	**0.48**^{a}
	(0.34)	(0.29)		(0.09)	(0.11)	(0.13)
ln GDP$_{it}$	-	-	0.47^a	0.46^a	0.46^a	0.57^a
			(0.09)	(0.09)	(0.14)	(0.15)
ln GDP$_{jt}$	-	-	0.37^a	0.35^a	0.37^a	0.36^a
			(0.07)	(0.07)	(0.08)	(0.08)
ln Distance$_{ij}$	-1.51^a	-1.43^a	-	-0.98^a	-1.02^a	-1.27^a
	(0.09)	(0.08)		(0.06)	(0.10)	(0.11)
Language$_{ij}$	0.16	0.26^b	-	0.24^b	0.03	0.04
	(0.13)	(0.12)		(0.11)	(0.12)	(0.13)
RTA$_{ijt}$	0.45^a	0.32^a	0.11	0.11	0.21^b	0.21^b
	(0.14)	(0.11)	(0.09)	(0.09)	(0.08)	(0.09)
NonAfrica$_{ij}$	-0.46^b	-0.20	-	0.43^a	-	-
	(0.21)	(0.16)		(0.11)		
Comcol$_{ij}$	2.07^a	1.95^a	-	1.38^a	-	-
	(0.26)	(0.22)		(0.18)		
ColonUK$_{ij}$	1.30^a	1.26^a	-	1.09^a	0.94^a	0.89^a
	(0.25)	(0.27)		(0.30)	(0.31)	(0.33)
ColonFRA$_{ij}$	2.32^a	2.35^a	-	2.12^a	2.22^a	2.14^a
	(0.25)	(0.23)		(0.22)	(0.22)	(0.22)
EngFrac$_{i/j}$						3.80
						(2.80)
Landlocked$_{i/j}$						-1.13^a
						(0.14)
ln GoldProd$_{i/j}$						0.05^a
						(0.01)
ln OilProd$_{i/j}$						-0.03^c
						(0.02)
ln Infrastructure$_{i/j}$						-0.58^b
						(0.24)
Rule of Law$_{it/jt}$						0.01
						(0.12)
R-sq	0.83	0.82	0.65	0.76	0.61	0.64
# of observations	2,503	17,167	17,077	17,077	8,963	7,619

Notes: Robust standard errors clustered at the country-pair level in parentheses. ^{a}, ^{b} and ^{c}: significance at the 1%, 5% and 10% level resp. FE=fixed effects; RE=random effects. Sample: overall in col. (1)-(4), reduced in col. (5)-(6). Specific effects and means of time-varying variables (col. 4-6) are not reported.

[=exp(0.36)-1] more with OECD, emerging and African countries than does a former French colony. The Mundlak specification is our preferred specification. It controls more properly for country-pair (unobserved) factors affecting bilateral trade. As a consequence, it avoids overestimation of the coefficient of the $British\_Col_{i/j}$ variable. Moreover, the NONAFRICA$_{ij}$ estimate appears now to be positive.

In the last two columns, we use the Mundlak specification on the reduced sample, focusing on the trade of African countries (i.e., former French and British colonies) with OECD and emerging countries. This sample eases the interpretation of the $British\_Col_{i/j}$ dummy (see section 3). Estimation results reported in column (5) are broadly similar to those in column (4), which corresponds to the overall sample. There are a few exceptions, however. The magnitude of the British effect is slightly larger due to the removal of trade between African countries from the sample. Without speculating too much about the differences in magnitude, this result suggests that the relative advantage of former British colonies is larger for trade with OECD and emerging countries than it is for trade with African countries. The common language dummy becomes no longer significant. This dummy appears to be highly correlated with the common colonial variables ($Comcol$, $ColonUK$ and $ColonFRA$), especially in the reduced sample. The regional trade agreement (RTA) variable becomes statistically significant.

A concern is that our results may be driven, at least in part, by omitted systematic differences between the former British and French colonies. These differences

may impact their current trade and explain the British effect. We address this concern in column (6). We introduce into the regression five country characteristics to further differentiate the groups.[11] First, the use of English as the world's dominant language could offer the former British colonies an advantage in promoting international trade. Thus, we introduce a variable measuring the fraction of the population speaking English using data from Hall and Jones (1999). Second, geography influences trade costs in Africa (see Coulibaly and Fontagné, 2006) and may be a source of potential differences between both groups. Thus, we add a dummy variable identifying landlocked countries. Third, we control for the different natural resources endowments of former British and French colonies. The former British Empire includes major gold producers, such as South Africa or Zimbabwe, while several ex-French colonies such as Gabon or Congo are specialised in oil production. Consequently, we introduce into the estimated equation two variables measuring the annual average per capita production of gold and oil between 1970 and 2000 (in log terms). Fourth, we add an index of infrastructure quality constructed by Limao and Venables (2001) from road, rail and telecommunication density. Infrastructure affects trade costs, and the apparent higher infrastructure quality of British ex-colonies could explain their better trade performance (see Table 5 in appendix). Finally, we add an indicator measuring the current institutional quality in former colonies. We use the index of rule of law developed by Kaufmann *et al.* (2008), which aims to

[11] See Table 5 in appendix for raw differences between the former British and French colonies and Table 4 for definition and sources of the variables.

capture the quality of contract enforcement, security of property rights, and predictability of the judiciary (see also Levchenko, 2007). Using this rough measure, we observe the institutional quality to be higher in the former British colonies than in the French ones (see Table 5 in appendix).

The estimation results for these additional control variables are largely as expected. As in Melitz (2008), we find that the use of English has no specific impact on trade.[12] Moreover, landlocked countries are found to trade less than coastal countries. Gold production slightly increases trade, while oil production appears to have a negative and less significant effect on trade. Better infrastructure (i.e., a lower value of the index) reinforces trade. Finally, the rule of law index does not seem to impact trade.[13] Other estimates are only slightly affected. In particular, the estimate of the $British\_Col_{i/j}$ variable remains positive and highly significant. Thus, none of these additional current country characteristics appears to explain why former British colonies perform significantly better in terms of trade than do their French counterparts.

In summary, despite differences in magnitude, the cross section and panel estimates reveal a positive and significant differential effect of British *versus* French

[12]Melitz (2008) finds that major European languages are important vectors of international trade, but English appears to be no more effective at fostering trade than are the other major European languages, including French.

[13]We have instead introduced a Rule of Law$_it$ variable for the exporter and a Rule of Law$_it$ variable for the importer. We find that the impact is positive and significant for the importer country but not for the exporter country. This finding is in line with the idea that the exporter incurs some fixed costs to export and cares about the importer's legal framework in cases of disputes.

colonial legacies on current international trade of former colonies.

5 Endogeneity issues: history matters!

Previous results indicate that former British colonies trade more than their French counterparts. However, the estimation of equation (5) might be affected by an endogeneity bias in the relationship between colonisation and trade. A positive correlation between British colonisation and trade may simply reflect the role of pre-colonial trade patterns. In the first sub-section, we present historical evidence for the importance of pre-colonial trade for the British and their strategy of colonisation. In a second sub-section, we present our instrumental variable strategy and the estimates.

5.1 Historical evidence

Based on her sea-power, Britain was quite influential in Africa starting from the eighteenth century. Compelling historical evidence suggests that Britain was attracted, prior to the Berlin conference (1884-1885), by the economic opportunities in Africa, and by foreign trade in particular. On the export side, Britain was looking for outlets for her manufactured goods. This was the time of the Industrial Revolution. Thus, "a sizeable proportion of British shipping, trading and manufacturing capital had become dependent on selling goods to Africa, and to West Africa in particular" (Fage, 2002, p. 334). On the import side, Britain sought to secure supplies of raw

materials.[14] However, at that time, Britain exerted her influence without any formal annexation of large territories.[15] Colonisation was considered too costly. Thus, before the Berlin Conference and the 'Scramble for Africa', the British developed commercial interests in Africa and helped their traders in their business without engaging in colonisation (e.g., Crowder, 1968; Wesseling, 2002).

In contrast, "the French interest cannot be so surely demonstrated in economic terms" (Fage, 2002). France, lagging behind, did not have the same pressing needs for African products and markets. Its economy was far less dependent on foreign trade than was Britain's (Fage, 2002). France's interest in Africa was more related to political pressures (Fieldhouse, 1982). Conquest was seen as a means to compensate for the humiliating defeat against the Germans in 1871 and was supposed to offer great opportunities for promotion and honors of the military.

The French strategy of conquest exacerbated European rivalry. This rivalry is a crucial factor that explains the British change of attitude toward colonisation and the 'Scramble for Africa' (e.g., Coquery-Vidrovitch, 1970; Gallagher, Robinson, 1953; Griffith, 1993). The threat of foreign expansion led Britain to accept formal annexation and to engage in the scramble. "After 1888, Salisbury, Rosebery and Chamberlain accepted the Scramble for Africa as a painful but unavoidable necessity which arose from a threat of foreign expansion and the irrepressible tendency of trade

[14]For instance, palm oil, used as a lubricant for industrial machinery, was a vital commodity for Britain's industrial expansion.

[15]Before the Berlin Conference, the British had limited their colonial commitments to small enclaves on the coast from which they could secure their trading interests.

to overflow the bounds of empire" (Gallagher, Robinson, 1953, p.12). Thus, in a very short period of time, most of Africa was colonised and divided up among European powers (Pakenham, 1992).

The example of West Africa is particularly striking in illustrating differences between the British and French colonisation strategies (see Crowder, 1968 and Fage, 2002). For France, land quantity appeared more important than their quality. In contrast, "the areas Britain claimed were those in which her traders had been active, or saw future profit. Thus where with France, the flag tended to precede trade, with Britain trade preceded the flag, or directed where the flag should be flown, with the result that Britain gained the smaller but richer part of West Africa" (Crowder, 1968, p. 70). This historical evidence leads to the hypothesis that the British selected their colonies based on their pre-colonial trading patterns.

5.2 Instrumental variable estimates

Formally, the above historical evidence amounts to a correlation between the error term and the British colonisation variable. To overcome this endogeneity bias, an indicator reflecting pre-colonial trade could be introduced to the estimated equation. However, data on pre-colonial trade are not readily accessible. As a result, we pursue a different strategy. To account for this typical endogeneity problem, we use an instrumental variable (IV) estimator, as described in Wooldridge (2002). The first step consists of the estimation of a Probit equation that explains the probability of being colonised by the British as a function of some observable factors, including an

instrument (i.e., an exclusion variable).

We exploit a striking feature of colonisation in Africa to find an instrument for British colonisation: the 'race' between European powers. As pointed out above, the French expansion led Britain to approve and support formal annexation. In West Africa for instance, the French advance on the lower Niger at the beginning of the 1880's urged Britain to formally annex Nigeria. Hence, one natural instrument for British colonisation is a measure of the area colonised by the other empire in Africa before the formal colonisation of a given territory.[16] Figure 1 (see above) reveals a strong positive relationship between the area colonised in Africa by the French and the year in which the British territories were colonised. Our instrumentation strategy, conditional on the controls included in the regression, is based on the idea that the area colonised by the French in Africa has no effect on the current trade of former British colonies other than the effect through British colonisation.

Construction of the instrument is as follows. First, for each former British and French colony, we determine the year of first annexation as reported in the Correlates of War (COW) database.[17] In most cases, the year of the first annexation corresponds to what is currently recognised as the date of colonisation (see Table 3 in appendix). Then, we measure the total area (in square kilometers) annexed by the other major coloniser (France for a British colony or Britain for a French one)

[16]To control for the endogeneity between colonisation and past colonial trade, Mitchener and Weidenmier (2008) also use an IV approach. Their instrument for empire is the five-year lagged value of the world size of other empires.

[17]Correlates of War Project. Territorial Change Dataset. Version 3.0. Online: http://correlatesofwar.org. See Tir *et al.* (1998).

in Africa before the year of first annexation of a given colony.[18] Thus, for each former colony, we obtain a quantitative measure of the extension of the other Empire before colonisation. This variable should proxy the extent of foreign expansion that contributes to explain formal colonisation. We specify this excluded instrument in a logarithmic form.

The results of the IV estimates are reported in Table 2. The bottom row of column (1) corresponds to the first stage estimation and shows that our instrument, the log of the size of the other empire, has a highly significant effect on the probability of British colonisation.[19] Furthermore, as expected, the estimate is positive. This suggests that, other things being equal, the British tended to increase their empire with the French colonial expansion. This result supports the simple correlation shown in Figure 1.

In the second stage, we use the estimated probability to compute an unbiased estimate of the impact of British *versus* French colonisation on trade. We use the Mundlak specification on the reduced panel as in column (5) of Table 1. Results of this second stage are reported at the top of Table 2 (column 1).[20] Strikingly, the estimate of the $British\_col_{i/j}$ dummy is no longer significant. Hence, the endogeneity

[18]Data on annexed area also come from the COW database (see Table 4 in appendix).

[19]The gravity regressors also significantly impact the probability of being colonised by the British (results are available upon request). Note, however, that in the first stage, the model used to explain the probability of being colonised by the British does not have to be correctly specified (Wooldridge, 2002, p. 623).

[20]Note that, in this specification, several coefficients of our empirical model cannot be estimated. $Comcol$ and $NonAfrica$ are not relevant in the reduced panel. Moreover, $ColonUK$ and $ColonFRA$ are dropped because they predict success or failure perfectly in the first stage.

Table 2: Instrumental variable (IV) estimates

	IV results (stage II) Dyad RE Mundlak Reduced sample	
Dependent variable:	ln of bilateral exports	
Model	(1)	(2)
British_Col$_{i/j}$	**0.36**	**0.43**
	(0.56)	(0.53)
ln GDP$_{it}$	0.46^{a}	0.52^{a}
	(0.08)	(0.09)
ln GDP$_{jt}$	0.37^{a}	0.35^{a}
	(0.08)	(0.09)
ln Distance$_{ij}$	-1.01^{a}	-1.07^{a}
	(0.14)	(0.13)
Language$_{ij}$	0.06	0.01
	(0.17)	(0.18)
RTA$_{ijt}$	0.19	-
	(0.18)	
R-sq	0.59	0.53
# of observations	8,566	7,434
Year fixed effects	yes	yes
	Coefficients on the excluded instrument in stage I Probit regression	
Dependent variable:	British_Col$_{i/j}$	
Model	(1)	(2)
ln AreaEmpire$_{i/j}$	0.22^{a}	0.34^{a}
	(0.03)	(0.03)
Wald stat.	73.53	93.15
p-value	0.00	0.00

Notes: Robust standard errors clustered at the country-pair level in parentheses. ^{a} and ^{b} denote the significance at the 1% and 5% level respectively. The constant, year dummies and the coefficients on the mean of time-varying variables are not reported. Other control variables in the first stage regression are not reported. See text for more details.

bias seems to account for the majority of the initial British effect.

This result could be affected by a weak instrument problem. If the instrumental variable correlates only weakly with the endogenous explanatory variable (British *versus* French colonisation), then statements of statistical significance may be misleading. However, the Wald statistic for the first stage regression is quite high. Moreover, it is reassuring that the standard errors on the second stage estimates are not much larger than those in the basic random effect model of Table 1, with the exception of the $British\_col_{i/j}$ dummy.

To test the robustness of our results and further minimise a potential weak instrument problem, we drop from the sample the very first British colonies (Egypt in 1882, Botswana and South Africa in 1885). These areas were already colonised at the very beginning of the Scramble. When we drop these first British ex-colonies, our instrument appears to give an even better prediction of British *versus* French colonisation (see bottom row of column 2). The second stage estimates, reported at the top of column (2), are qualitatively similar. Again, we do not find any evidence of a British effect.

Hence, it seems that the apparent better trade performance of former British colonies (the 'British' effect) is largely explained by pre-colonial trade patterns. When we do not control for such pre-colonial conditions, the 'British effect' is overestimated. It is impossible to determine with certainty the exact origin of these favourable pre-colonial conditions in future British colonies, but one possible in-

terpretation relates to the British influence. As noted above, Britain was quite influential in Africa starting from the eighteenth century and trade preceded the flag. Hence, before formal colonisation, Britain may have implemented institutions favouring trade and a pro-free trade attitude in its future colonised areas. This pro-free trade attitude could have resulted in larger trade flows between future colonies and Britain, as well as with other countries.

6 Concluding remarks

From the mid 1870's onwards, the 'Scramble for Africa' gave Britain and France virtually the entire African continent. We use this historical evidence to evaluate the impact of the British and French colonial legacies on the current trade performance of former colonies. This research relates to a growing literature linking Africa's current under-development to colonial legacies. Numerous papers have focused on the effect of the colonial legacy on economic growth and development. However, its effect on trade has scarcely been studied. It is unclear whether a country's prior colonial status matters *per se*. Do the different legacies associated with the British and French colonial powers matter? If so, it could be advisable to adapt institutions in one particular direction.

Using a theoretically founded gravity model of trade, we initially find that former British colonies trade more on average than do their French counterparts. This result is in line with the literature emphasising the relative superiority of British institutions and could lead to the conclusion that the institutional environment left

by the British is more conducive to trade. However, a core concern is the endogenous selection of colonies by the British. The current trade performance of former British colonies could be explained by their pre-colonial trade patterns. Indeed, historical evidence suggests that "with Britain trade preceded the flag, or directed where the flag should be flown" (Crowder, 1968, p. 70). After controlling for the non-random selection of the former British colonies, we find no evidence of a systematic difference between British and French colonial legacies.

Thus, the identity of the coloniser does not seem to impact the current trade performance of former colonies. This result may corroborate the 'similarity' school, which emphasises that the colonial experience was not so different under the major colonial powers (see section 1). As argued by Acemoglu *et al.* (2001), "researchers are [probably] overestimating how 'bad' French institutions are" (p. 1388). However, our finding could also mean that the systematic differences between the two types of colonial institutions have been simply reduced or eliminated over time. In other words, differences in colonial institutions could not have persisted long enough to affect the current trade of the former colonies.

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Appendix

Table 3: List of countries in our sample with the year of first annexation in brackets

Former French Colonies	Former British Colonies	OECD and Emerging countries
Benin (1894)	Botswana (1885)	Australia
Burkina Faso (1895)	Egypt (1882)	Austria
Central African Republic (1894)	Ghana (1896)	Belgium-Luxembourg
Ivory Coast (1889)	Gambia (1889)	Canada
Cameroon (1919)	Kenya (1890)	Denmark
Congo (1880)	Nigeria (1898)	Germany
Algeria (1830)	Tanzania (1920)	Finland
Gabon (1885)	Uganda (1894)	Great Britain
Guinea (1849)	South Africa (1885)	Greece
Morocco (1903)	Zambia (1891)	Ireland
Madagascar (1896)	Zimbabwe (1893)	France
Mali (1891)		Italy
Mauritania (1909)		Japan
Niger (1893)		the Netherlands
Senegal (1817)		Norway
Chad (1911)		Portugal
Togo (1919)		New Zealand
Tunisia (1881)		Spain
		Switzerland
		Sweden
		USA
		Brazil
		Russia
		China

Notes: Data on the year of first annexation are computed using the Correlates of War database (Territorial Change Dataset. Version 3.0. Online: http://correlatesofwar.org). See text for more details and Table 4.

Table 4: Data and variable definitions

X_{ijt}	Export data come from the IMF (DOTS database).
$GDP_{it/jt}$	Current GDP data come from the World Bank (WDI database).
$Distance_{ij}$ $Language_{ij}$	Bilateral distance and common language dummies come from the CEPII database. See www.cepii.fr/francgraph/bdd/distances.htm
Rta_{ijt}	The Regional Trade Agreement dummy is computed using informations from the WTO.
$Landlocked_{i/j}$	Dummy variable identifying landlocked countries. Data come from Nunn (2008).
Gold and Oil $Production_{i/j}$	Annual average per capita production between 1970 and 2000 of gold and oil. Data come from Nunn (2008).
$Engfrac_{i/j}$	Fraction of the population speaking English. Data come from Hall and Jones (1999).
$Infra_{i/j}$	Index constructed from road, paved road and rail densities and telephone main lines per person. A higher value indicates worse infrastructure. Data come from Limao and Venables (2001).
Rule of $law_{i/j}$	Index measuring the extent to which agents have confidence in and abide by the rules of society, in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence. This index ranges from -2.5 to 2.5, with higher values corresponding to better governance outcomes. Data come from Kaufmann *et al.* (2008).
$AreaEmpire_{i/j}$	Total area (in square kilometers) annexed by the other coloniser (France for British colonies or Great Britain for French ones) before the date of first annexation (see Table 3). Data on area and date of annexation come from the Correlates of War database (Territorial Change Dataset. Version 3.0. Online: http://correlatesofwar.org. See Tir *and al.*, 1998). The date of a treaty is used as the date of annexation. If no treaty was involved in the territorial change, then this date corresponds to the date (a) when action to take the territorial ceased, (b) a plebiscite occurred, or (c) an act of annexation took place.

Table 5: Summary Statistics

	Former British colonies			Former French colonies			Difference	
	# of obs.	Mean	Std Dev.	# of obs.	Mean	Std Dev.	Diff.	Std Err.
ln Exports	1,613	1.999	3.383	2,682	0.754	3.716	1.244	0.113
ln Imports	1,813	2.900	2.702	2,901	2.140	2.549	0.759	0.078
ln GDP	1,824	23.267	1.617	3,024	22.472	1.153	0.794	0.039
ln Distance	1,848	8.906	0.424	3,024	8.655	0.596	0.251	0.016
Language	1,848	0.227	0.419	3,024	0.129	0.336	0.097	0.011
RTA	1,848	0.070	0.256	3,024	0.060	0.238	0.010	0.007
ColonFra	1,848	0	0	3,024	0.041	0.200	-0.041	0.004
ColonBrit	1,848	0.042	0.200	3,024	0	0	0.042	0.003
EngFrac	1,848	0.015	0.001	3,024	0	0	0.015	0.000
Landlocked	1,848	0.364	0.481	3,024	0.278	0.448	0.086	0.014
Gold Prod	1,848	2.358	0.144	3,024	0.083	0.002	2.275	0.113
Oil Prod	1,848	0.168	0.008	3,024	1.141	0.059	-0.973	0.076
Infrastructure	1,386	1.663	0.007	2,618	2.438	0.018	-0.775	0.026
Rule of Law	1,848	-0.463	0.618	3,024	-0.703	0.490	0.240	0.016
ln AreaEmpire	1,848	14.940	0.517	3,024	14.210	2.462	0.730	0.058

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