

Does Language Matter for Development?

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This paper argues that having a non-universal language, such as French, increases transaction costs and reduces trade with developing countries, in turn limiting growth. Empirical analyses, based on a comparison of trade patterns of Francophone and Anglophone African countries using Rwanda's recent official language change, illustrate the effects.

The Theory

Previous scholarship has found a number of immutable factors that affect a country's output, including topographical-geographical factors and the colonial origin of a country's legal system and institutions (Acemoglu et al. 2001 and 2002, inter al.). Language differences, on the other hand, should have little effect on trade, as the market would quickly compete them away. To investigate this, let's take the case of French. French, which was once the international business language, has long given way to English and is now the language of a few countries, predominantly in Sub-Saharan Africa (SSA). Having French as the national language has two real effects. First, since bilingual lawyers are more expensive than monolingual ones, language differences increase the costs of drawing up and enforcing contracts. Similarly, language differences make it more expensive for foreign customers to monitor quality and production processes. Thus, in theory at least, Francophony is tantamount to a transactions cost, and while these costs may be low for advanced economies, they may be prohibitive for developing ones. Second, Francophone countries will be more likely to trade with each other. This means that Francophone countries will be less able to seek out other developing markets for inputs, which increases the cost of their exports and reduces growth. With fewer trading partners, they will be less able to take advantage of comparative advantage and their firms will come into contact with

new business, management, and entrepreneurial ideas only slowly, slowing development. Thus, Francophony leads to a form of path-dependency. But is this actually the case?

This theory entails two assumptions that can be tested very easily. First, Anglophone developing countries should have a greater share of imports from developing countries than Francophone developing countries do. Second, increased trade with developing countries should be associated with increased growth.

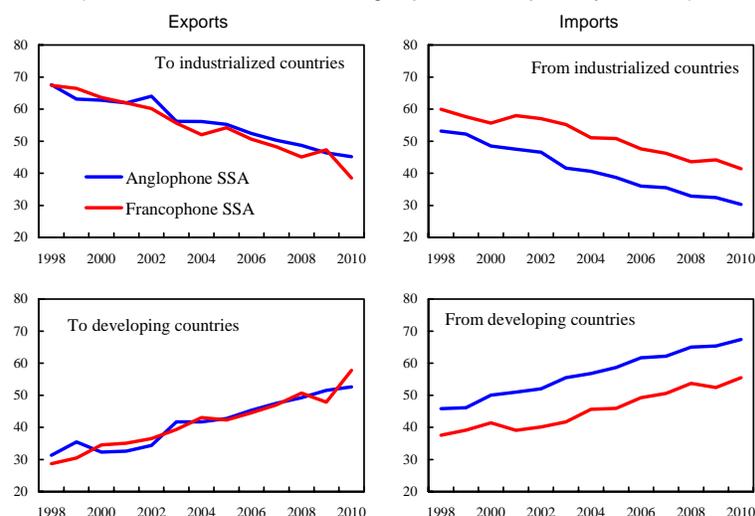
Models and Tests

A small-population means test supports the first assumption: the share of imports from industrialized and developing countries by the mean Anglophone and Francophone countries are statistically different at the 0.10 level (Table 1). This difference is illustrated stylistically in Figure 1.

Table 1. Results of Means Test for Export and Import Levels
(Difference of means between Francophone and Anglophone countries; *t* values)

	Exports	Imports
From/to industrialized countries	-0.17	1.55*
From/to developing countries	-0.01	-1.64*

Figure 1. Exports and Imports by Trading Partner Economic Classification, 1998–2010
(Percent of total; SSA, excluding exports and imports by Rwanda)



Source: IMF, *Direction of Trade Statistics*, various issues.

But do differences in trade patterns affect growth? Our second assumption implies a causal relationship, viz. that the share of imports from developing countries will have a positive effect on nominal GDP. As a simple test of this, we append the share of trade with developing countries to an extended Cobb-Douglas production function and see whether the variable is significant. Our equation is, thus:

$$\ln(GDP_{i,t}) = \alpha_i + \beta \times \ln(LABOR_{i,t}) + \gamma \times \ln(GFC_{i,t}) + \delta \times DEVM_{i,t}, \quad (1)$$

where GDP is nominal GDP (in millions of U.S. dollars), $LABOR$ is the size of the labor force (in millions), GFC is gross fixed capital formation (in millions of U.S. dollars), and $DEVM$ is the share of imports from developing countries (ranging from 0 to 1). The subscripts denote country i at time t . If our theory is correct, the coefficient δ will be significantly positive.

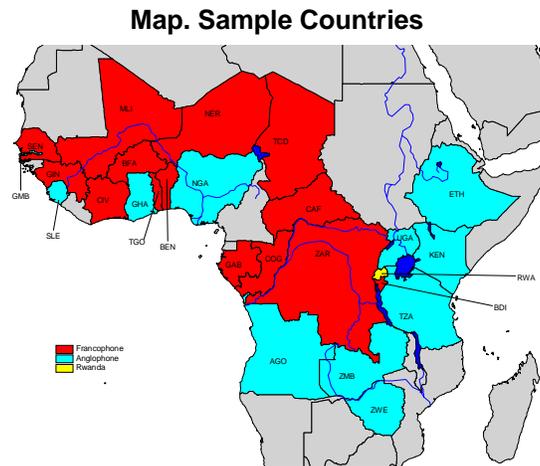
Equation (1) suggests a panel data regression using a fixed effects model. This has important implications. First, we must assume that countries have different technological abilities (the A in the traditional Cobb-Douglas production function) and second (and more importantly), I assume that the level of technology for each country is time-invariant.

To test these assumptions, I collected data from 1998 to 2010 on GDP, gross fixed capital formation, labor, and trade for developing SSA countries that have one official commercial language, either French or English.¹ I excluded SSA countries with more than one official commercial language and the countries that use the rand.

There are four potential omitted variables that I should address here. First, 11 of the 14 Francophone countries are in currency unions (BCEAO and BEAC) for which international payments are made through accounts in the French Treasury, and this may have an additional

¹ The sources for languages are the CIA's *World Factbook* and the U.S. Department of State's *Background Notes*. Where the two sources differed (e.g., Seychelles), the one listing more official international languages was used. The economic variables are from IMF, *Direction of Trade Statistics* and *International Financial Statistics*; and World Bank, *World Development Indicators*.

effect on the direction of trade. Second, the Francophone countries in our sample do not have direct access to Africa's east coast (Map), which suggests that geographical and topographical elements may also have an effect on the results. Third, my study does not consider legal origins. While our Anglophone countries comprise former British, Dutch, German, and Italian colonies, possibly averaging out effects of different systems, the Francophone ones are almost all former French or Belgian colonies, which may skew our results. Lastly, trade statistics are not always accurate, and it is common in the IMF's *Direction of Trade Statistics* for the sum of country values not to equal their aggregate totals. It is thus possible that some of the trends presented here may actually reflect better record-keeping or more accuracy in import declarations.



Estimating Equation (1) yields the following coefficients:

$$\ln(GDP_{i,t}) = \alpha_i + \beta \times \ln(LABOR_{i,t}) + \gamma \times \ln(GFC_{i,t}) + \delta \times DEVM_{i,t}$$

3.8793***	0.0243	0.6306***	0.7101***
(0.2152)	(0.2678)	(0.0482)	(0.2171)

Adjusted R²: 0.9724 RSS: 6.3449 Std Error: 0.1777 Durbin-Watson: 0.7999

These results seem to be robust. A Hausman Test, which would indicate whether I misspecified the equation by running a fixed effects rather than a random effects model, indicates that there is a significant difference between the two models and that the adjusted R² of the fixed effects

model is better (that for the random effects model is 0.8682). Although the standard error of δ (*DEVM*) is again high—just under a third of the coefficient—the share of trade with developing countries is positive and significant and while *LABOR* is not significant. That is, given the supply-side constraints of human labor noted in the literature,² the share of imports from developing countries is a much better predictor of GDP growth, which supports our theory.³

Case Study: Rwanda

Can a country escape this path dependency by changing its official commercial language? Countries do not change their official languages often, and usually do so only because of territorial mergers. However, with a series of laws culminating with making English the mandatory language of instruction in October 2008, Rwanda, a former Belgian colony, changed its official commercial language from French to English specifically in order to promote economic growth. Although change has been slow, especially given the shortage of Anglophone teachers, the Rwandan government was credible in its policy change: In addition to joining the British Commonwealth, changing the school curriculum, and investing in training centers, small material changes—such as replacing all of the French signs on government buildings with English ones, changing street names, and changing the default language on government Web pages to English—were evident across the country.

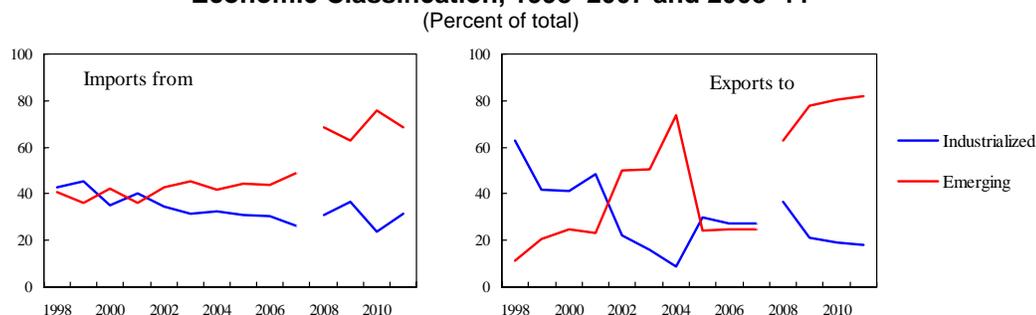
But did this have an economic effect? The data suggest it did (Figure 2): The share of imports from developing countries increased from an average of 45.7 percent for 2005–07 to an average of 68.9 percent for 2008–10. In addition, exports to emerging countries averages 75.8

² See Douglas 1976 (South Africa) and Lusigi and Thirtle 1997 (47 African countries, 1961–91, where the coefficient of labor is 0.21), although Frisvold and Ingram 1995 find a coefficient as high as 0.59 (28 African countries, 1973–85). For all least developed countries, Wiebe et al. (2001) find a coefficient of 0.20 (1961–87).

³ The Durbin-Watson statistic indicates collinearity at the 0.01 confidence level, but this is implied by the Cobb-Douglas production function.

percent for 2008–11, exceeding the previous high of 73.8, the result of a one-time surge in exports to Indonesia in 2004.

**Figure 2. Rwanda: Exports and Imports by Trading Partner
Economic Classification, 1998–2007 and 2008–11**



Source: IMF, *Direction of Trade Statistics*, various issues.

Given the short time-series and limited degrees of freedom, it is too soon to compare the coefficients (and even technology— A) of a Cobb-Douglas production function before and after the change. However, we can compare the slope of the lines in Figure 2. So, if I regress the share of imports from developing countries on the share of imports from industrialized countries—that is:

$$DEVM = \alpha + \beta \times INDM, \quad (2)$$

where $INDM$ indicates the share of imports from industrialized countries—a Chow test indicates a break in 2008 that is significant at the 0.01 level. That is, we are confident that there was a structural break in the slope of the tradeoff between share imports from industrialized and developing countries that coincided with the change of commercial language in 2008.⁴

So, how did Rwanda's trade patterns change? Imports from developing Asia, the Middle East, and Sub-Saharan Africa all increased in 2008. More importantly, the gains to the “winners” vastly outweighed the loss to the “losers”: trade with several partners doubled or trebled as a

⁴ At the same time, some caution is needed. The shares of trade stylized in Figure 2 do not add up to 100 percent, and if errors in reporting are not random, then these results lose robustness.

result of the change, but all of the losers but France, Germany, and Kenya lost only fractions of a percent of trade (Table 2). As trade did not shift one-for-one from one partner to another, this lends some anecdotal support to our assumption that an increase in the import base leads to growth through the ability to identify opportunities and not simply through swapping trade from one trade partner to another.

Table 2. Rwanda: Trade Partners by Percent of Total Imports

	Share of imports					Rank of change		
	2003	...	2006	2007	2008			2009
Uganda	6.18	...	5.39	11.43	14.46	15.00	1	Gained the most
China,P.R.: Mainland	1.08	...	2.19	4.77	8.37	6.59	2	
United Arab Emirates	2.00	...	2.69	2.53	8.40	6.93	3	
Tanzania	1.46	...	1.61	1.55	4.67	4.84	4	
Sweden	0.27	...	1.93	0.54	2.80	4.02	5	
South Africa	3.35	...	2.00	2.05	6.62	2.77	6	
Korea	0.11	...	0.23	0.19	0.88	3.26	7	
Spain	0.27	...	0.15	1.05	1.22	2.71	8	
India	1.58	...	2.29	1.80	3.47	2.78	9	
Finland	0.11	...	0.06	0.35	2.02	0.50	10	
...	
Russia	0.55	...	0.24	0.08	0.01	0.22	99	Lost the most
Japan	2.18	...	1.17	1.90	1.43	1.25	100	
Belgium	6.25	...	5.24	5.70	5.89	5.57	101	
Israel	0.80	...	2.28	0.81	0.60	0.55	102	
Congo, Dem. Rep. of	2.53	...	2.79	2.69	0.98	1.02	103	
France	4.76	...	1.92	1.70	2.64	1.88	104	
Germany	7.17	...	7.77	5.92	3.44	5.22	105	
Kenya	23.52	...	19.49	18.80	16.03	16.62	106	

Conclusions

This study has demonstrated that (1) Sub-Saharan African countries that have English as the sole official commercial language have a larger share of imports from developing countries and (2) an increased share of imports from developing countries increases GDP—a 1 percent increase in the share of imports from developing countries increases GDP (in millions of dollars) by 0.71 percent, which is larger than the effect of a US\$1 million increase in gross fixed capital formation (0.63 percent). The example of Rwanda illustrates that when a country adopts a *lingua franca* commercial language, it trades more with the larger pool of *lingua franca* countries, increasing its ability to exploit its comparative advantages. There are several potential omitted variables in our model that could be addressed in future studies, aside from the questions of legal

system, not the least of which is information on payments systems and black market trade, the latter of which could provide further light into the role of language.

I assumed at the beginning of this paper that the benefits of trade would be best realized through seeking new sources for imports. Further research could investigate why this is the case and why developing Anglophone countries have not been able to identify better markets for their exports than Francophone countries have been—that is, why the spread in the right-hand panels of Figure 1 are not reflected in the left-hand ones.

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