

# IMF Working Paper

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## Africa's Trade Revisited

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**IMF Working Paper**

African and Policy Development and Review Departments

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March 2001

**Abstract**

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The popular impression that Africa has not integrated into world trade, as suggested by the evolution in simple indicators, has been called into question recently by more formal analysis. This paper refines and generalizes this analysis, but lends support to the popular view of disintegration. Africa, especially Francophone Africa, is currently under-exploiting its trading opportunities and has witnessed disintegration over time, a trend that is most pronounced in its trade with the technologically advanced countries.

JEL Classification Numbers: C1, F1, O4

Keywords: Africa, trade, globalization, gravity model, regional integration

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<sup>1</sup> We are grateful to Tam Bayoumi, Hugh Bredenkamp, David Coe, José Fajgenbaum, Markus Haacker, Gunnar Jonsson, Anne McGuirk, Ydahlia Metzgen, Eswar Prasad, Emilio Sacerdoti, Jeffrey Sachs, Hossein Samiei, Antonio Spilimbergo, Alan Winters, Shang-Jin Wei, Bernarda Zamora, and other colleagues at the Fund for helpful discussions and comments, and Nehrunaman Pillay and Vera De Luz for excellent assistance in compiling the dataset. Any remaining errors are our own.

	Contents	Page
I.	Introduction.....	3
II.	Comparison with Previous Research .....	4
III.	Methodology .....	7
IV.	Africa's Trade .....	10
V.	What Are the Plausible Explanations for the Contrasting Trade Performance of Francophone and Anglophone Africa?.....	13
VI.	Is There a Bloc Effect in Intra-African Trade?.....	15
VII.	Conclusions.....	17
 Figures		
1.	Africa's Share of World Trade, 1970-99 .....	5
2.	Africa's Trade, 1980-97.....	11
 Tables		
1.	Alternative Approaches to Assessing Africa's Trade.....	5
2.	The Comparison of Methodologies .....	19
3.	Africa's Trade .....	20
4a.	The Robustness Analysis: Exchange Rate Misalignments, Primary Commodity Exports, and Trade-Related Services.....	21
4b.	The Robustness Analysis: Comparison with Developing Countries .....	22
5.	Preferential Trading Arrangements in Africa .....	23
	References.....	24
 Appendixes		
I.	Legend and Data Sources.....	26
II.	List of Countries .....	28
III.	Preferential Trading Arrangements in Africa .....	30

## I. INTRODUCTION

The state of the current debate on globalization can generally be summarized as: yes, it confers enormous benefits but also poses great challenges. In the case of Africa, however, even the first part of this proposition is not uncontested—globalization’s benefits have largely proven elusive for Africa.<sup>2</sup> Reaping these benefits is predicated on embracing globalization in the first place. Has Africa done so—has it globalized or has it been marginalized from world trade? On this question, there seems to be an uneasy tension between two views with distinct policy implications.

According to the first, popular view, Africa has missed out on the opportunities offered by globalization simply because it has not globalized. The statistic that is commonly invoked in support is a dramatic decline in Africa’s share of world exports during the past three decades, representing a “staggering annual income loss of US\$68 billion—or 21 percent of regional GDP” (World Bank, 2000). Reviving trade is therefore integral to Africa’s economic fortunes, a view that is consistent with the research evidence demonstrating the benefits of integration (Sachs and Warner, 1997; and Collier and Gunning, 1999).

The second view is that Africa did take advantage of trading opportunities in line with the evolution in its income and development. Academic support for this view comes from the spate of evidence that demonstrates that Africa does not trade too little: it is an average trader, trading just as much as can be expected given the underlying determinants of trade, such as income, geography, and size (Foroutan and Pritchett, 1993; Coe and Hoffmaister, 1999; and Rodrik, 1999).

These views lead to distinct policy implications. The former sees Africa’s declining trade as a source of concern and accordingly places considerable emphasis on policy measures to expand trade opportunities (World Bank, 2000; Sachs, 2000). The latter view sees causality running from growth, and other determinants, to trade and hence is less activist on, or at least sees less urgency in, the need to promote trade (Rodrik, 1999).

The evidence provided by the recent literature, however, has a number of limitations. The literature focuses on selected, rather than all, components of Africa’s trade. It is based on a relatively narrow, rather than a general, benchmark for assessing what “average” or “typical” trade is. It treats Africa as a uniform region, failing to distinguish intra-regional specificities. Lastly, econometric methodologies employed in estimating Africa’s trade could be refined further.

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<sup>2</sup> In this paper, Africa refers to sub-Saharan Africa. Globalization refers to integration of goods markets through international trade and not to capital market integration.

This paper seeks to remedy these limitations. It revisits the puzzle of Africa's trade to shed light on the key underlying issues—whether Africa undertrades or overtrades, and how its trading pattern has changed over time.

We find that Africa appears to be disintegrating from the world economy, a result that is especially strong for Francophone Africa and weakly present for Anglophone Africa. The disintegration pattern is particularly evident in Africa's trade with the technologically advanced countries of the North. The only source of dynamism in Africa's trade—trade growing faster than predicted by the underlying determinants—is in Anglophone Africa's trade with itself.

These results are reasonably robust. They do not seem to reflect the fact that African countries are primary commodity exporters. They also do not change when African trade is compared to trade of developing countries rather than a broader world sample.

A preliminary analysis points to two possible explanations for the contrasting experiences of Francophone and Anglophone Africa. Higher trade-related transaction costs, possibly due to greater inefficiencies in key infrastructure services, and currency arrangements in Francophone Africa may have contributed to its relatively inferior trade performance.

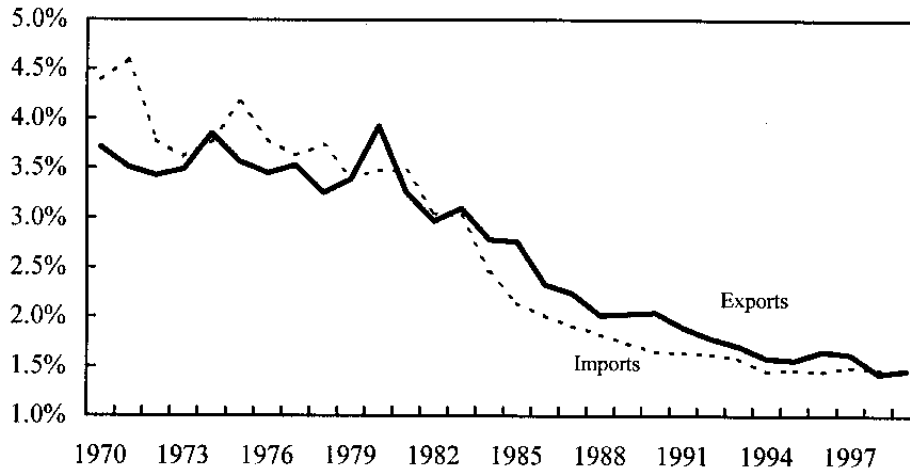
Next, we proceed to examining intra-African trade in greater detail. In particular, we focus on the role of various regional agreements in explaining the dynamism of Anglophone Africa's trade with itself. Our results suggest that rationalizing the proliferation of regional initiatives, especially in Eastern and Southern Africa, by encompassing them into a larger regional bloc deserves consideration.

The rest of the paper is organized as follows. Section II situates this paper in the context of previous research on the topic. Section III describes the theoretical framework, the gravity model, and assesses the methodological issues that arise in estimating it. Section IV discusses the main findings of the paper. Section V presents robustness tests, while also exploring possible explanations of results. Section VI considers the results relating to regional integration in Africa. Finally, Section VII offers concluding remarks.

## **II. COMPARISON WITH PREVIOUS RESEARCH**

Statistics on the evolution in Africa's share of world trade visually suggest that Africa is progressively disintegrating or marginalizing from world trade (Figure 1). Africa's share of world exports declined from over 3.5 percent in 1970 to about 1.5 percent in 1999, while its share of world imports declined from over 4.5 percent to 1.5 percent over the same period.

**Figure 1. Africa's Share of World Trade, 1970-1999**



A series of recent papers have subjected this impression to a formal empirical scrutiny by asking the question of how typical Africa's trade is relative to a pre-selected theoretical benchmark. The salient features of these papers are summarized below (Table 1).

*Table 1. Alternative Approaches to Assessing Africa's Trade*

<i>Study</i>	<i>Aspect of Africa's Trade Examined</i>	<i>Benchmark for Evaluation</i>	<i>Estimation Methodology</i>	<i>Level of Disaggregation</i>
Foroutan and Pritchett (1993)	Intra-African trade	Trade of low and middle income countries with all their partners	Tobit estimation on a sample where zero-valued observations are replaced by small positive values	All Africa
Coe and Hoffmaister (1999)	Africa's bilateral trade with the North	Trade between North and South	NLS without bootstrapping on a sample including zero-valued observations	All Africa
Rodrik (1999)	Africa's aggregate trade	All countries	OLS	All Africa
Subramanian and Tamirisa (2000)	All aspects of African trade: overall, intra-African, and trade with the North and South	Trade between all countries	NLS with bootstrapping on a sample including zero-valued observations	Anglophone and Francophone Africa

Foroutan and Pritchett (1993) use data on trade, excluding that in primary commodities, for the early 1980s to test whether African trade is unusual. Their sample comprises 53 low and medium income countries (with per capita GDP less than US\$3,000) as reporting countries and 95 partner countries. Thus, the benchmark of what constitutes typical trade is trade of the countries that are similar to African countries. The gravity model is estimated using the Tobit procedure. The key finding of their paper is that intra-African trade is not statistically different from other trade and that distance imposes costs on Africa that are no different from those for the other countries in the sample.

Coe and Hoffmaister (1999) test whether Africa's trade is unusual by examining trade flows between developing and industrial countries during 1970-97. They apply a nonlinear procedure to estimate the gravity model and find that in the 1970s Africa overtraded with the North relative to other countries' trade with the North and that over time this overtrading has declined. In the 1990s, Africa's trade was no different from the average developing country's trade with the North.

The model, however, does not control for a key variable, the preferential trading arrangement between the EU and Africa under the Lomé Convention. Hence, it is difficult to assess whether the Africa dummy is merely picking up the effects of this preferential trading arrangement.<sup>3</sup> Indeed, the decline in the magnitude of overtrading with the North is consistent with the decline in preferential margins under the Lomé Convention as most-favored-nation tariff rates in Europe have declined and as Europe has entered into other preferential trading arrangements.

Rodrik (1999) tests whether Africa's aggregate rather than bilateral trade is unusual, after controlling for size, income, and average distance from the world. While the paper does not employ a gravity model, the effect of the gravity variables is controlled for. Like other authors, Rodrik finds that Africa's trade is not dissimilar to other countries' trade.

This paper encompasses the earlier body of work, yet being different from it in a number of ways. First, the paper explores African trade in its entirety. In other words, we test for the typicality of Africa's overall trade, its trade with other African countries, and its trade with developed countries and with developing countries. The earlier studies cited above, in contrast, examine the typicality of a selected component of African trade.

Second, instead of treating Africa as a homogenous region, we disaggregate Africa's trade into that of Central and Western Africa (which we refer to as Francophone Africa) and of Eastern and Southern Africa (referred to as Anglophone Africa). Such a disaggregation appears to be warranted in view of notable differences between these groups of countries in

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<sup>3</sup> In Foroutan and Pritchett (1993), the Lomé dummy variable has a positive and statistically significant coefficient.

terms of institutions, policies, and the overall approach to regional and global integration, and is subsequently validated by our findings.<sup>4</sup>

Third, the paper uses a global benchmark for assessment. It seeks to answer whether Africa's trade—and all its components—differ from those of a broad group of countries. The sample comprises 74 industrial and developing countries, of which 16 are in sub-Saharan Africa.<sup>5</sup> Thus, the benchmark for evaluating “average” trade is a general one, unlike in Foroutan and Pritchett's (1993) paper, which asks whether African trade is different from trade of low and middle income countries, or in Coe and Hoffmaister's (1999) paper, which examines whether Africa's trade with the North is different from other developing countries' trade with the North. Notwithstanding the above, our framework is flexible enough to permit testing the robustness of results to alternative benchmarks.

Finally, the paper employs nonlinear least squares (NLS) to adequately address the problem of zero-valued observations (similarly to Coe and Hoffmaister, 1999), and relies on bootstrapping to make hypothesis testing valid given the non-normality of residuals.<sup>6</sup>

### III. METHODOLOGY

The most commonly used analytical framework for studying bilateral trade flows is the gravity model, and it is well-suited for addressing the questions posed in this paper. There are numerous successful empirical applications of the gravity model dating back to the early 1960s.<sup>7</sup> Theoretical foundations, which were initially viewed as suspect, were subsequently elaborated by Anderson (1979), who showed that the gravity model can be derived from expenditure share equations, assuming that commodities are distinguished by place of production; Helpman (1984) and Bergstrand (1985), who demonstrated that the gravity model can be derived from models of trade in differentiated products; and Deardorff (1995), who showed that the gravity model is consistent with the Heckscher-Ohlin model expanded

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<sup>4</sup> Language is not a criterion for disaggregation in this context. Indeed, in modeling we control separately for commonality of language (and through this partially for historical similarities) between countries.

<sup>5</sup> The sixteen sub-Saharan African countries in our sample account for close to 90 percent of the total trade of sub-Saharan African countries. South Africa is excluded from the sample, given the focus of the paper on the poorer countries of sub-Saharan Africa. Moreover, South Africa's trade data might be distorted: after the demise of apartheid in the early 1990s, the level of *recorded* trade has increased dramatically without necessarily a corresponding increase in the underlying level of trade.

<sup>6</sup> Coe and Hoffmaister (1999) assume that residuals are normally distributed and use the NLS estimator without bootstrapping.

<sup>7</sup> See Frankel (1997) and Helliwell (1998) for a discussion of earlier contributions.



to include transport costs. In the words of Helliwell (1998), the gravity model has gone from being an orphan to being the favored child of all main theories of international trade.

The gravity model relates a measure of bilateral trade to the economic mass of the two countries and the distance between them:

$$(1) \quad TRADE_{ijt} = (Y_{it} Y_{jt})^\alpha (P_{it} P_{jt})^\theta D_{ij}^\beta e^{\mu_{ijt}}$$

where  $TRADE_{ij}$  is bilateral trade between country  $i$  to country  $j$ ,  $Y_i$  is nominal GDP in country  $i$ ,  $Y_j$  is nominal GDP in country  $j$ ,  $P_i$  and  $P_j$  are population in the two countries,  $D_{ij}$  is geographic distance between country  $i$  and country  $j$ , and  $t$  is a time subscript. We expect trade to be positively affected by economic mass ( $\alpha > 0$ ); negatively related to the level of population ( $\theta < 0$ ), indicating that larger countries tend to be more self-sufficient or, alternatively, that poorer countries—countries with larger populations for a given level of GDP—trade less than richer countries; and negatively related to distance ( $\beta < 0$ ).  $\mu_{ijt}$  is given by

$$(2) \quad \mu_{ijt} = \gamma_\kappa + \varphi_\lambda + \epsilon_{ijt}$$

where  $\gamma_\kappa$  are fixed effects for trade between African and other countries,  $\varphi_\lambda$  are fixed effects for other potential determinants of bilateral trade (specifically, membership or participation in the Lomé Convention and the CFA franc zone, and for countries that share common borders or a common language), and  $\epsilon_{ijt}$  is a well-behaved error term.

This formulation allows straightforward tests of whether, after controlling for the economic size, distance and other factors, bilateral trade between or within regions in Africa is different from trade of other regions—the test is simply whether the estimated fixed effects  $\gamma_\kappa$  are significant.

The model is estimated for three points in time—1980, 1990, and 1997—this serves as both a comparison with and an update of other work conducted for earlier periods and also facilitates the analysis of evolution in trade over time. Data and their sources are described in Appendix I.

Following Coe and Hoffmaister (1999), we employ NLS estimation on a sample that includes zero-valued observations for bilateral trade. Since Africa's trade is relatively concentrated, the share of zero-valued observations in the data set is not trivial (11 percent in 1990 and 8 percent in 1997), and thus the choice of an appropriate methodology critically depends on how a given estimator deals with zero-valued observations. The main advantage of an NLS estimator is that it adequately incorporates the information contained in zero-valued observations by treating them as cases where trade is actually zero rather than negligible or not observed.

Critical values for hypothesis testing are obtained by bootstrapping with 1,000 replications, since skewness and kurtosis tests indicate that residuals are not distributed normally. Hypothesis testing under the assumption of residuals' normality would be invalid in this case. Point estimates, in contrast, are independent of the distribution of residuals.

There are two alternatives to the methodology we employ. The first is to exclude zero-valued observations (as in Frankel, 1997) from the sample. However, this would be equivalent to non-random screening of the data and could bias the results. It would also be unsatisfactory from a conceptual point of view, since zero values in our data set indicate the lack of trade, not missing values. Given our focus on Africa's trade, which has a disproportionate share of zero-valued observations (22 percent compared to 11 percent for the sample as a whole in 1990, and 17 percent compared to 9 percent, respectively, in 1997), including zero-valued observations is desirable in this study.

The second alternative is to assign arbitrarily small values to the zero-valued observations and then estimate the model in the logarithmic form. This is the approach adopted in Wang and Winters (1991) and Foroutan and Pritchett (1993). However, using OLS and Tobit estimation procedures on a sample in which zero-valued observations are replaced with small values is not free from problems either. Since the logs of small values are large negative numbers, this approach confers unduly large weights on the adjusted zero-valued observations.

To illustrate differences in these approaches, we estimate a given model using alternative methods: OLS robust estimator on a log-linear model with zero-valued observations excluded, OLS and Tobit robust estimators on a log-linear model with zero-valued observations replaced by small positive values, and NLS estimators without and with bootstrapping. Results are presented in Table 2.

The point estimates for the elasticity of income (GDP) and population (POP) differ considerably across estimation procedures, from about 1.3 for the nonlinear estimators to almost 2.8 for the OLS and Tobit procedures where the zero-valued observations are replaced by small values. The latter coefficient estimates seem implausibly high. Even an elasticity of trade with respect to income of 1.7 (obtained in the OLS estimation excluding zero-valued observations), holding all else constant, is odd given its implication that a doubling of GDP in each of two countries will increase their bilateral trade by 340 percent. Similarly, the coefficient on the distance variable (DIST) varies considerably across estimators, with high values obtained when estimation procedures are used that either exclude the zero observation or assign small values to such observations.

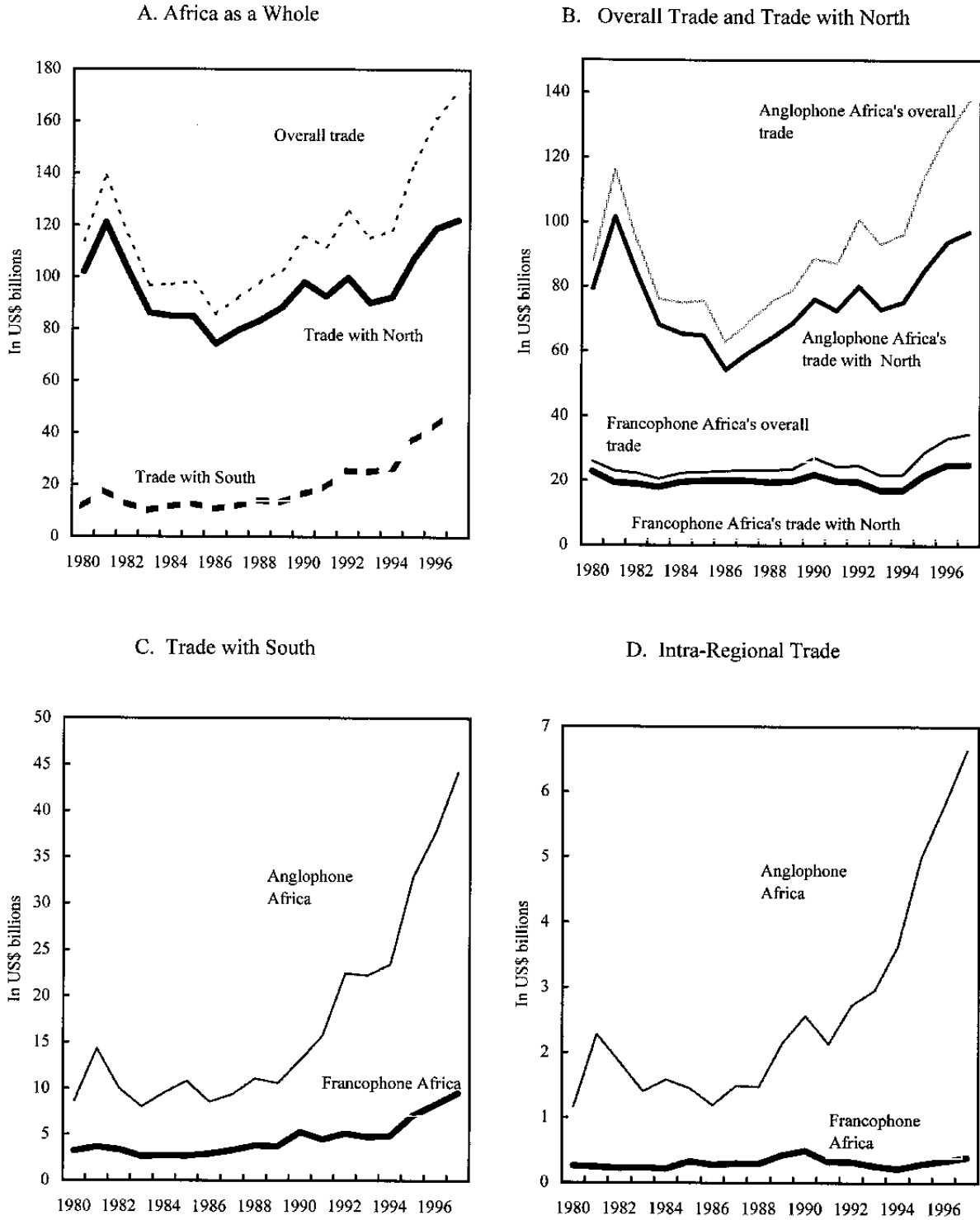
Finally, a comparison between the last two columns of Table 2 illustrates the effect of the bootstrapping procedure. While the coefficient estimates are the same, bootstrapping yields different results in terms of hypothesis testing. Two coefficients—the constant and the common language dummy (LNG)—which are significant under the assumption that residuals are normal turn out to be insignificant with bootstrapping.

#### IV. AFRICA'S TRADE

Africa's trade is not uniform. There are striking disparities in the trade performance of Anglophone and Francophone Africa in the past decades, for example. This is clearly demonstrated in Figure 2, which depicts the evolution in the various components of African trade between 1980 and 1997. Over this period, Anglophone Africa's overall trade grew at an annual average rate of 2.1 percent compared with 1.6 percent for Francophone Africa. For Anglophone Africa, the largest increases were recorded in its trade within the region (annual average growth rate of 9.4 percent) and with the South (8.9 percent), while trade with the North grew at a slower pace (0.9 percent). Although Francophone Africa's trade with the South also grew rapidly, it had no significant impact on the overall trade performance given its small relative magnitude.

In the formal analysis, we represent the different components of African trade by various dummies. (See Appendix II for a list of the countries that are included in dummies.) AFR-ANG is a dummy for Anglophone Africa and takes on a value of 1 when an Anglophone African country is either a reporting or a partner country. AFR-FRN is the analogue for Francophone Africa. The other dummies are all bilateral. The AFRAFR-ANG (AFRAFR-FRN) dummy represents trade among Anglophone (Francophone) African countries. Similarly, AFRS-ANG (AFRS-FRN) denotes Anglophone (Francophone) African countries' trade with other developing countries.

Figure 2. Africa's Trade, 1980-97



AFRNNEU-ANG (AFRNNEU-FRN) denotes Anglophone (Francophone) African countries' trade with industrial countries other than those in the European Union that grant preferences under the Lomé convention.<sup>8</sup> The rationale for differentiating Africa's trade with European Union countries and other industrial countries is related to the effect of the Lomé convention on trade. The long history of preferential trade embodied in the Lomé convention has to be controlled for in determining how typical trade is between Africa and the North. If Africa traded more than expected with the North because of preferential arrangements, that would not necessarily shed light on the underlying pattern of trade.<sup>9</sup> FTA dummy controls for preferential trading relationships.<sup>10</sup>

The main findings on whether Africa undertrades are as follows (Table 3). First, Francophone Africa is a serious undertrader. The coefficients on the Francophone dummy are negative and significant, and, in general, consistently so—this is true for Francophone Africa's total trade, its trade with the North and with the South. The only exception is Francophone Africa's trade with itself.

Second, and disturbingly, the respective coefficients have become more negative over time, signifying increasing disintegration of Francophone Africa from global trade. For example, Francophone Africa's overall trade, which was normal in 1980, was about 52 percent less than average by 1997.

Third, while Francophone Africa is progressively undertrading, the disintegration effect is apparently more pronounced in its trade with the North than with any other group of countries. Between 1980 and 1997, this trade went from being normal to about 75 percent below average, a disintegration effect of over 75 percent. Similarly, its trade with the South declined by about 60 percent. Only its intra-regional trade shows no signs of disintegration. Since technology transfer embodied in capital goods is one of the important channels for trade to enhance growth (see Coe, Helpman, and Hoffmaister, 1997, for example),

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<sup>8</sup> Since the study covers the period from 1980 to 1997, this dummy does not cover recent entrants to the EU.

<sup>9</sup> Although the non-Lomé industrial countries also grant preferences to Africa under the Generalized System of Preferences, these are less broad in product coverage and subject to greater restrictions and conditions than preferences granted under the Lomé Convention.

<sup>10</sup> This dummy is time-varying in the sense that it reflects common membership in a preferential arrangement at the time of (and after) its formal inception. Thus, for 1980, FTA includes the following arrangements: EEC, EFTA, EU-Turkey agreement, the Andean Pact, Australia-New Zealand agreement, Lomé, and CFA. For 1990, it includes, in addition to the above, Israel-U.S. free trade agreement. For 1997, it includes, in addition: Israel-EU free trade agreement, ASEAN, MERCOSUR, NAFTA, Chile-U.S. free trade agreement, and EU-Northern Africa (a.k.a. EU-Mediterranean agreements).

Francophone Africa's substantial undertrading with its Northern partners, typically the most important suppliers of capital and high-technology goods, raises concerns about respective implications for its growth prospects.

For Anglophone Africa, the results are qualitatively different. In 1997, Anglophone Africa was an average trader in aggregate, with the coefficient on the dummy being negative but insignificant. Normal aggregate trade was made up of disparate trends at the level of its components, however. Anglophone Africa traded more with itself than an average country, while its trade with the South and with the non-Lomé industrial country partners was typical.

Nonetheless, Anglophone Africa shows some signs of disintegration from global trade as well: the coefficients on aggregate trade and trade with the North, though insignificant, exhibit a secular decline in magnitude, and in fact, turn negative in 1990 and 1997.

The dynamic component of Anglophone Africa's trade is its trade with itself. The intra-Anglophone African trade dummy, which is negative and insignificant in 1980 became markedly positive and significant in 1997. (We explore the role of regional trading arrangements in this apparent dynamism of intra-Anglophone African trade below.)

Some final remarks on the more general aspects of the results. Coefficients on the standard determinants of the gravity models, such as income, population, and distance, are correctly signed, statistically significant, and yield plausible elasticity estimates broadly in line with those obtained in the literature.

Besides implications for Africa's trade, the results also shed light on the ongoing process of globalization more generally. To the extent that globalization connotes the decreasing importance of geography, the evidence lends support to this proposition. The elasticity of trade with respect to distance declined by almost 30 percent (from -.33 in 1980 to -.23 in 1997), with all the decline occurring in the 1990s. This is consistent with rapid technological progress and wide-ranging liberalization in the trade-related service sectors during the 1990s. The common border dummy also shows a marked increase over time. In 1980, contiguous countries traded 80 percent more with each other than the typical pair of traders. By 1997, they were overtrading by a factor of about 100 percent. Interestingly, the common language dummy, which was significant in 1980 ceased to be so by 1997. One explanation is that sharing a common language other than English may have ceased to confer any advantage in trade (Wei, 2000, obtains a similar result).

## **V. WHAT ARE THE PLAUSIBLE EXPLANATIONS FOR THE CONTRASTING TRADE PERFORMANCE OF FRANCOPHONE AND ANGLOPHONE AFRICA?**

A number of factors may help explain the dissimilar globalization experiences of Francophone and Anglophone Africa. Differences in the commodity composition of trade and in the currency arrangements may play a role in this regard. Likewise, differences in the efficiency of transport and communication sectors could manifest themselves in transaction

costs and thus trade performance. It is also worth exploring if the results are robust when Africa's trade performance is compared to that of developing countries rather than a broader group of countries.<sup>11</sup> We test these possible explanations below.<sup>12</sup>

Francophone Africa could be disintegrating from trade because of their being commodity exporters. In this view, African disintegration could merely reflect the decline in terms of trade, which has been evident during the past several decades. To test this, we run regressions including a dummy for primary commodity exporters (PRIM). Table 4a contains these results. The PRIM dummy is insignificant, suggesting that commodity exporters are not uniquely disadvantaged in trading terms. Moreover, the inclusion of the dummy does not alter the basic results. In particular, Francophone Africa remains a significant undertrader in 1997 and exhibits secular disintegration from trade.

Next we consider if high transport and other trade-related costs are a particular obstacle for Africa's trade. The evolution in these costs would, of course, be affected by certain exogenous factors, such as technological progress, for example. It also crucially depends on domestic policies, which determine the efficiency of certain trade-related service industries, such as transport, port operations, communications, and distribution. Again, the gravity model allows for some preliminary testing of hypotheses about the magnitude of trade-related costs and their evolution over time. As discussed earlier, the distance variable could be considered a proxy for such costs. To test for their effects on African trade, we interacted a dummy for Anglophone and Francophone Africa with the distance variable, denoted in Table 4a by DAFR-ANG and DAFR-FRN, respectively.

The results point toward an increase in trade-related costs for Francophone Africa by about 8 percent between 1980 and 1997.<sup>13</sup> Although an 8 percent deterioration over time does not seem enormous, it must be evaluated against the performance of other countries. The comparable coefficient for Asia, for example, is about 10 percent in 1997. Therefore, Africa trades at a cost disadvantage of some 20 percent compared to Asia: it is as if tariffs on

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<sup>11</sup> The results obtained are reasonably robust to the classification of countries. They remain largely unchanged, for example, when Mauritius is excluded from the sample of Anglophone countries. When South Africa is included in the sample, the coefficient on the AFR-ANG dummy becomes positive and significant in 1980, implying that Africa moved from being an overtrader to a normal trader. The inclusion of South Africa thus appears to strengthen the findings on Africa's disintegration over time.

<sup>12</sup> A more comprehensive analysis of the factors underlying differences in performance of Francophone and Anglophone Africa is beyond the scope of this paper.

<sup>13</sup> For Anglophone Africa, the distance variable turns negative in 1997, but does not appear to be significant.

imports from Africa were 20 percent higher than those on imports from Asia. All in all, this suggests that differences in trade performance of Francophone and Anglophone Africa could owe to differences in trade-related costs.

Another explanation for the differential performance of Francophone and Anglophone Africa relates to exchange rate misalignments. Countries in the CFA zone have pegged their exchange rate to the French Franc.<sup>14</sup> The serious and persistent misalignment of the CFA franc until 1994, when it was devalued by 50 percent, is widely acknowledged to have had a debilitating effect on trade performance of the CFA-zone countries. To test for such misalignment effects, we redefine the Francophone Africa dummy to exclude the non-CFA zone countries (variable AFR-CFA in Table 4a). All the results for Francophone Africa broadly carry over to the CFA zone countries. While not fully conclusive, the results are generally consistent with the possibility that years of misalignment in the CFA zone might have led its members to undertrading. Future research is needed, however, to substantiate this explanation.

While using a general benchmark is appealing, Africa's trade could also be compared with the trade of similar countries. If intra-industry trade between industrial countries is substantially more trade-intensive (after controlling for other factors) than trade involving African countries, for example, Africa's trade may not be below average when the benchmark excludes trade of industrial countries.

One way of addressing this argument is to compare Africa's trade with that of other developing countries. The framework we employ allows for such comparisons. In Table 4b, we add a dummy representing developing countries in the regression equations. Thus, DING denotes the aggregate trade of developing countries, DN-DN their intra-trade, DING-N their trade with the North, and D-NEU their trade with non-EU industrial countries.

A comparison of the African dummy and the corresponding developing country dummy confirms that African trade performance has been inferior to that of other developing countries. For example, in 1997 Francophone Africa's trade with the North is significantly below average (by 77 percent). Developing countries' trade with the North, by contrast, is significantly above average (by 90 percent). Notably, in 1980 both sets of countries were average traders. Over time, Africa has disintegrated, while developing countries in general have integrated rapidly.

## **VI. IS THERE A BLOC EFFECT IN INTRA-AFRICAN TRADE?**

As noted above, the only dynamic aspect of African trade is Anglophone African countries' trade with each other. Anglophone Africa has witnessed in recent years a veritable mushrooming of preferential trading arrangements. (Appendix III lists the membership of

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<sup>14</sup> Since 1999, the peg is to the Euro.



these agreements for countries in the sample.) The Cross-Border Initiative (CBI), comprising 14 countries, was set up in 1993 with the aim of eliminating intra-tariffs and reducing tariffs on third country partners. The Common Market for Eastern and Southern Africa (COMESA), consisting of 21 countries from Egypt in the North to Swaziland in Southern Africa, aims to create a customs union by 2004. The Southern African Development Community (SADC), comprising 14 countries, is currently working on a free trade area to eliminate tariffs on intra-trade within an eight-year period. The East African Community, including Tanzania, Uganda, and Kenya, is working on a plan to create a customs union amongst the three countries. Furthermore, there are a number of bilateral agreements granting one or two-way preferential access on a selected number of commodities (see Subramanian and others, 2000, for a fuller description of these developments).

Is the trend toward preferential integration desirable in the sense that it enhances welfare of the member countries? One way of answering this question is to test for a bloc effect. This is done by adding a dummy variable for all pairs of countries within a bloc and testing for the significance of the dummy. A positive and significant coefficient implies the existence of a bloc effect, namely that trade within the bloc, or the regional grouping, is larger than that for the average set of countries in the sample, after controlling for the familiar set of variables.

This bloc effect formalizes the intuition suggested by Summers (1991) and Krugman (1991) in assessing whether countries are natural trading partners. If two countries overtrade with each other even though the policy-induced barriers to trade are no different from trading with other countries, this suggests a certain complementarity that might lead to reduced prospects for trade diversion once the barriers are dismantled preferentially. In the limit, if a country trades entirely with another country in the absence of preferences, it must unambiguously gain if they enter into a preferential trading arrangement because no trade will be diverted. Frankel's (1994) advocacy of a trading arrangement for East Asia is essentially based on this natural trading bloc argument.<sup>15</sup>

Insofar as the testing for a bloc effect has some validity, it is important that it be done prior to the formation of preferential arrangements. For the period under consideration, this is possible for the various arrangements in Eastern and Southern Africa. In 1990, the regional groupings of interest had either not begun granting preferences (as in SADC) or were far from completing them (as in CBI and COMESA). Even in 1997, the preferences granted under these agreements were far from being fully implemented. Thus, estimating the model

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<sup>15</sup> It should, however, be noted that testing for a bloc effect is essentially a positive, not a normative, exercise. Bhagwati and Panagariya (1998), for example, develop a model where the greater the trade between two countries prior to the formation of a preferential agreement, the more they lose once such an agreement between them is formed. In this class of models, the key determinant of whether preferential agreements are trade diverting or enhancing is the elasticities of export supply of partner and third countries.

for the periods 1990 and 1997 allows one to test the hypothesis of a bloc effect prior to the formation of a preferential arrangement. The results pertaining to the newly formed or in-process preferential trading arrangements are highlighted in Table 5.

CBI and SADC exhibit bloc effects both in the early and late 1990s. Notably, COMESA is the only grouping for which a negative bloc effect is found, meaning that countries within COMESA trade significantly less with each other than the average pair of countries. Moreover, this negative bloc effect has worsened marginally over time (the dummy has become more negative between 1990 and 1997), which is consistent with the view of COMESA being a grouping of disparate countries. Eastern and Southern Africa as a whole also exhibits positive and statistically significant bloc effects. This suggests that it would be sensible to rationalize the multiplicity of regional initiatives within Eastern and Southern Africa into a larger agglomeration encompassing all the countries of the region.

## VII. CONCLUSIONS

The popular “marginalization-from-trade” hypothesis argues that Africa has not benefited from globalization because it has not globalized in the first place. This view has been challenged recently in a series of papers, which have shown more formally that Africa has not been left behind: Africa trades as much as any other set of traders, given the underlying determinants of trade.

This paper, however, finds support for the “marginalization-from-trade” hypothesis. Francophone Africa is a serious undertrader and, moreover, the degree of its undertrading has increased over time. Anglophone Africa is currently an average trader, but signs may be emerging that Anglophone Africa is not keeping pace with global integration as well. Thus, both parts of Africa have exploited fewer trading opportunities, albeit from different starting points and to different degrees.

Ominously, Africa’s trade with the North appears to have suffered most over time. Ominous because trade with the technologically advanced North is one of the more important channels for globalization’s benefits to be disseminated to Africa. Trade with the North also constitutes the largest component of Africa’s overall trade and is hence likely to have a more significant impact on growth.

These results appear to be robust. Apparently, they do not reflect the fact that African countries are primary commodity exporters. They hold when Africa’s trade performance is measured relative to that of a broad group of developing and industrial countries. When African countries are compared with other developing countries, the disparity in performance is even more striking, because developing countries as a whole seem to have strengthened their links with the global economy over time.

A preliminary analysis suggests two possible explanations for the contrasting performance of Anglophone and Francophone Africa. Trade-related costs seem to have increased for Francophone Africa. The currency arrangements in the CFA zone may have

exerted a depressing effect on trade owing to persistent exchange rate misalignments. More research is needed in the future, however, to substantiate these findings.

Overall, the results in this paper suggest that the sanguine policy prescription stemming from the view that Africa trades adequately may need to be reconsidered. Policy action to assist Africa to better exploit its trade opportunities would seem appropriate. Of course, views differ on the nature of such action—from calls for active government intervention to facilitate export diversification (Sachs, 2000) to the need to maintain competitiveness (World Bank, 2000). At the very least, trade regimes that continue to be highly distorted in a number of African countries need to be liberalized (Subramanian and others, 2000).

A key trade policy concern in Eastern and Southern Africa is rationalizing the multiplicity of overlapping, even conflicting, regional agreements. The results suggest that folding these initiatives into a larger, encompassing Eastern and Southern African trading bloc would be beneficial as such a bloc appears to possess some characteristics of a natural trading entity. As far as the individual initiatives are concerned, while CBI and SADC exhibit positive bloc effects, COMESA does not. Preferential integration in the context of COMESA may, therefore, need to be seriously re-evaluated

Table 2. The Comparison of Methodologies 1/ 2/

Variables	Log-Linear with Zero-Valued Observations Excluded	Log-Linear with Zero-Valued Observations Replaced with Small Values	Tobit with Zero- Valued Observations Replaced with Small Values	Nonlinear without Bootstrapping	Nonlinear with Bootstrapping
GDP	1.673*	2.619*	2.748*	1.27*	1.27*
POP	-0.746*	-0.931*	-0.966*	-0.51*	-0.51*
DIST	-0.891*	-1.244*	-1.299*	-0.23*	-0.23*
CONST	-0.639	-8.083*	-8.897*	-2.36*	-2.36
AFR	0.303*	-1.373*	-1.524*	-0.28	-0.28
ADJ	0.833*	0.072	-0.013	0.69*	0.69*
LNG	0.666*	1.930*	2.043*	0.16*	0.16
FTA	0.682*	2.162*	2.324*	0.59*	0.59*
Adjusted R-squared	0.77	0.33		0.86	0.86
F statistic	1686	258		3954	3954
Wald Ch2			1962		
Log likelihood			-18231		
Number of observations	4822	5356	5356	5356	5356
Number of countries	74	74	74	74	74

Source: authors' estimates.

1/ \* indicates significance at the five percent level.

2/ Refers to 1997.

Table 3. Africa's Trade 1/

Variables	Africa's Trade with the World			Intra-African Trade			Africa's Trade with the North			Africa's Trade with the South		
	1980	1990	1997	1980	1990	1997	1980	1990	1997	1980	1990	1997
GDP	1.27*	1.38*	1.27*	1.25*	1.38*	1.27*	1.26*	1.38*	1.27*	1.25*	1.38*	1.27*
POP	-0.57*	-0.60*	-0.51*	-0.55*	-0.60*	-0.51*	-0.56*	-0.60*	-0.51*	-0.54*	-0.60*	-0.51*
DIST	-0.33*	-0.32*	-0.23*	-0.33*	-0.32*	-0.23*	-0.33*	-0.32*	-0.23*	-0.33*	-0.32*	-0.23*
CONST	0.31	-1.86	-2.36	0.44	-1.86	-2.36	0.35	-1.86	-2.36	0.44	-1.86	-2.36
AFR-ANG	0.90	0.29	-0.22									
AFR-FRN	0.19	-0.25	-0.73*									
AFRAFR-ANG				1.11	1.88*	1.77*						
AFRAFR-FRN				0.05	0.94	0.90						
AFRNNEU-ANG							1.07	0.43	-0.05			
AFRNNEU-FRN							-0.25	-0.92*	-1.44*			
AFRS-ANG										-0.54	-0.53	-0.42
AFRS-FRN										-0.95	-0.79	-0.95*
ADJ	0.59*	0.60*	0.69*	0.59*	0.60*	0.69*	0.59*	0.60*	0.69*	0.59*	0.60*	0.69*
LNG	0.43*	0.35*	0.16	0.44*	0.35*	0.16	0.43*	0.35*	0.16	0.44*	0.35*	0.16
FTA	0.54*	0.59*	0.59*	0.53*	0.59*	0.59*	0.54*	0.59*	0.59*	0.53*	0.59*	0.59*
Adjusted R-squared	0.83	0.85	0.86	0.82	0.85	0.86	0.83	0.85	0.86	0.82	0.85	0.86
F statistic	2563	3362	3514	2742	3362	3514	2562	3363	3514	2542	3362	3514
Number of observations	4899	5188	5356	4899	5188	5356	4899	5188	5356	4899	5188	5356
Number of countries	74	74	74	74	74	74	74	74	74	74	74	74

Source: authors' estimates.

1/ \* indicates significance at the five percent level.

Table 4a. The Robustness Analysis:  
Exchange Rate Misalignments, Primary Commodity Exports, and Trade-Related Services 1/

Variables	Africa's Trade with the World							
	1980	1990	1997	1980	1990	1997	1980	1997
GDP	1.27*	1.38*	1.27*	1.36*	1.38*	1.26*	1.26*	1.27*
POP	-0.57*	-0.60*	-0.51*	-0.64*	-0.61*	-0.50*	-0.56*	-0.51*
DIST	-0.33*	-0.32*	-0.23*	-0.31*	-0.32*	-0.22*	-0.33*	-0.23*
CONST	0.31*	-1.86	-2.36	-0.32	-1.92	-2.35	0.35	-2.35
AFR-ANG	0.90	0.29	-0.22	0.55	0.21	-0.11		
AFR-FRN				0.11	-0.25	-0.74*		
AFR-CFA	0.18	-0.28	-0.75*					
DAFR-ANG							0.10	-0.03
DAFR-FRN							0.02	-0.08*
ADJ	0.59*	0.60*	0.69*	0.60*	0.60*	0.69*	0.59*	0.69*
LNG	0.43*	0.35*	0.16	0.44*	0.35*	0.16	0.43	0.16
FTA	0.54*	0.59*	0.59*	0.59*	0.60*	0.60*	0.53*	0.59*
PRIM				0.84*	0.10	-0.42		
Adjusted R-squared	0.83	0.85	0.86	0.83	0.85	0.86	0.82	0.86
F statistic	2563	3362	3514	2393	3027	3172	2622	3608
Number of observations	4899	5188	5356	4899	5188	5356	4899	5356
Number of countries	74	74	74	74	74	74	74	74

Source: authors' estimates.

1/ \* indicates significance at the five percent level.

Table 4b. The Robustness Analysis: Comparison with Developing Countries 1/

Variables	Africa's Trade with the World			Intra-African Trade			Africa's Trade with the North						Africa's Trade with the South		
	1980	1990	1997	1980	1990	1997	1980	1990	1997	1980	1990	1997	1980	1990	1997
GDP	1.14*	2.02*	1.69*	1.23*	1.42*	1.35*	1.18*	2.04*	1.64*	1.24*	1.89*	1.56*	1.23*	1.42*	1.35*
POP	-0.43*	-1.25*	-0.94*	-0.53*	-0.65*	-0.59*	-0.46*	-1.26*	-0.89*	-0.53*	-1.13*	-0.83*	-0.53*	-0.65*	-0.59*
DIST	-0.34*	-0.29*	-0.38*	-0.33*	-0.32*	-0.21*	-0.34*	-0.29*	-0.35*	-0.33*	-0.29*	-0.33*	-0.33*	-0.32*	-0.21
CONST	0.89	-5.94*	-3.55*	0.54	-2.20	-2.99	0.73	-6.07	-3.58	0.46	-5.00	-2.99	0.54	-2.19	-2.99
AFR-ANG	0.89	-0.08	-0.31												
AFR-FRN	0.16	0.09	-0.47												
AFRAFR-ANG				1.58*	1.01	1.24									
AFRAFR-FRN				0.51	0.08	0.44									
AFRNNEU-ANG							1.08	-0.01	-0.21	1.10	0.04	-0.35			
AFRNNEU-FRN							-0.25	-0.54	-1.23*	-0.23	-0.74	-1.42*			
AFRS-ANG													-0.12	-1.45*	-1.02*
AFRS-FRN													-0.55	-1.73*	-1.52*
ADJ	0.62*	0.52*	0.59*	0.59*	0.61*	0.71*	0.61*	0.53*	0.56*	0.60*	0.53*	0.57*	0.59*	0.61*	0.71*
LNG	0.40*	0.43*	0.13	0.44*	0.35*	0.14	0.41*	0.43*	0.13	0.42*	0.42*	0.17	0.44*	0.35*	0.14
FTA	0.46*	0.91*	0.35*	0.52*	0.61*	0.60*	0.49*	0.91*	0.44*	0.52*	0.84*	0.43*	0.52*	0.61*	0.60
DING	-0.21	0.92*	0.75*												
DN-DN				-0.54	1.06	0.83							-0.54	1.06	0.83
DING-N							-0.15	0.92*	0.64*						
D-NEU										-0.07	0.80*	0.61*			
Adjusted R-squared	0.83	0.86	0.87	0.82	0.86	0.86	0.83	0.86	0.87	0.83	0.86	0.87	0.82	0.86	0.86
F statistic	2320	3216	3645	2291	3074	3266	2315	3184	3446	2308	3179	3522	2291	3074	3267
Number of observations	4899	5188	5356	4899	5188	5356	4899	5188	5356	4899	5188	5356	4899	5188	5356
Number of countries	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74

Source: authors' estimates.

1/ \* indicates significance at the five percent level.

Table 5. Preferential Trading Arrangements in Africa 1/

Variables	ESA		COMESA		SADC		CBI	
	1990	1997	1990	1997	1990	1997	1990	1997
GDP	1.377*	1.268*	1.374*	1.266*	1.377*	1.268*	1.377*	1.268*
POP	-0.602*	-0.505*	-0.600*	-0.504*	-0.602*	-0.505*	-0.602*	-0.505*
DIST	-0.324*	-0.226*	-0.325*	-0.227*	-0.324*	-0.226*	-0.324*	-0.226*
CONST	-1.846	-2.356	-1.821	-2.332	-1.846	-2.356	-1.846	-2.356*
ESA 2/	2.446*	2.279*						
COMESA			-1.151*	-1.399*				
SADC					1.730*	2.574*		
CBI							2.505*	2.375*
ADJ	0.602*	0.693*	0.602*	0.695*	0.602*	0.693*	0.602*	0.693*
LNG	0.345*	0.156	0.344*	0.156	0.345*	0.156	0.345*	0.156
FTA	0.590*	0.588*	0.588*	0.585*	0.590*	0.588*	0.590*	0.588*
Adjusted R-squared	0.85	0.86	0.85	0.86	0.85	0.86	0.85	0.86
F statistic	3884	4060	3887	4065	3884	4060	3884	4060
Number of observations	5334	5504	5334	5504	5334	5504	5334	5504
Number of countries	75	75	75	75	75	75	75	75

Source: authors' estimates.

1/ \* indicates significance at the five percent level.

2/ Excluding South Africa.



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### Legend and Data Sources

<i>Variable</i>	<i>Definition</i>
Trade	Sum of bilateral exports and imports (Direction of Trade Statistics, IMF)
GDP	GDP of the reporting country times the GDP of the partner country (World Economic Outlook (WEO), IMF)
POP	Population of the reporting country times population of the partner country (WEO)
DIST	Geographical distance between capitals of the reporting and partner countries (Fitzpatrick and Modlin, 1986)
ADJ	Dummy that takes on a value of 1 when reporting and partner countries share a common border
LNG	Dummy that takes on a value of 1 when reporting and partner countries share a common language (Coe and Hoffmaister, 1999)
CBI	Dummy that takes on a value of 1 when reporting and partner countries are members of the Cross-Border Initiative
ESA	Dummy that takes on a value of 1 when reporting and partner countries are in Eastern and Southern Africa
COMESA	Dummy that takes on a value of 1 when reporting and partner countries are members of the Common Market for Eastern and Southern Africa
SADC	Dummy that takes on a value of 1 when reporting and partner countries are members of the Southern African Development Community
AFR-ANG	Dummy that takes on a value of 1 when either the reporting or partner country is an Anglophone African country
AFR-FRN	Dummy that takes on a value of 1 when either the reporting or partner country is a Francophone African country
AFRS-ANG	Dummy that takes on a value of 1 when the reporting or partner country is an Anglophone African country and the partner or reporting country is a developing country
AFRS-FRN	Dummy that takes on a value of 1 when the reporting or partner country is a Francophone African country and the partner or reporting country is a developing country
AFRAFR-ANG	Dummy that takes on a value of 1 when the reporting and partner country are Anglophone African countries
AFRAFR-FRN	Dummy that takes on a value of 1 when the reporting and partner country are Francophone African countries
AFRNNEU-ANG	Dummy that takes on a value of 1 when the reporting or partner country is an Anglophone African country and the partner or reporting country is a non-Lomé industrial country
AFRNNEU-FRN	Dummy that takes on a value of 1 when the reporting or partner country is a Francophone African country and the partner or reporting country is a non-Lomé industrial country
FTA	Dummy that takes on a value of 1 when the reporting or partner country is a member of one of the free trade or regional integration agreements listed in footnote 10 of the paper
AFR-CFA	Dummy that takes on a value of 1 when reporting and partner countries are members of the CFA currency zone
DAFR-ANG	Dummy that takes on a value of the distance variable when the reporting country is an Anglophone African country and zero otherwise
DAFR-FRN	Dummy that takes on a value of the distance variable when the reporting or partner country is a Francophone African country and zero otherwise
PRIM	Dummy that takes on a value of 1 when the reporting or partner country is predominantly a primary commodity exporter

DING	Dummy that takes on a value of 1 when the reporting or partner country is a non-African developing country
DN-DN	Dummy that takes on a value of 1 when the reporting and partner country are non-African developing countries
D-NEU	Dummy that takes on a value of 1 when the reporting or partner country is a non-African developing country and the reporting or partner country is a non-Lomé industrial country
DING-N	Dummy that takes on a value of 1 when the reporting or partner country is a non-African developing country and the reporting or partner country is an industrial country

**Lists of Countries**

<i>Africa</i>	<i>Francophone Africa</i>	<i>Anglophone Africa</i>	<i>Lomé</i>	<i>CFA</i>	<i>Non-Lomé Industrial</i>	<i>Developing Countries</i>
Cameroon	Cameroon	Ethiopia	Cameroon	Cameroon	Australia	Algeria
Congo, DRC	Congo, DRC	Ghana	Congo, DRC	Congo, REP.	Canada	Argentina
Congo, REP.	Congo, REP.	Kenya	Congo, REP.	Cote d'Ivoire	Japan	Bangladesh
Cote d'Ivoire	Cote d'Ivoire	Malawi	Cote d'Ivoire	France	New Zealand	Bolivia
Ethiopia	Madagascar	Mauritius	Ethiopia	Senegal	Israel	Brazil
Ghana	Senegal	Nigeria	Ghana		United States	Chile
Kenya		South Africa	Kenya		Austria	China
Madagascar		Tanzania	Madagascar		Finland	Hong Kong
Malawi		Uganda	Malawi		Iceland	Colombia
Mauritius		Zambia	Mauritius		Norway	Costa Rica
Nigeria		Zimbabwe	Nigeria		Sweden	Egypt
Senegal			Senegal		Switzerland	Guatemala
South Africa			South Africa			Guyana
Tanzania			Tanzania			India
Uganda			Uganda			Indonesia
Zambia			Zambia			Iran
Zimbabwe			Zimbabwe			Jamaica
			Belgium			Korea
			Denmark			Malaysia
			France			Turkey
			Germany			
			Greece			
			Ireland			
			Italy			
			Luxembourg			
			Netherlands			
			Portugal			
			Spain			
			UK			

*Full Sample 1/*

Algeria*	Guatemala	Pakistan
Argentina	Guyana*	Paraguay
Australia	Hong Kong, SAR	Peru*
Austria	Iceland	Philippines
Bangladesh	India	Portugal
Belgium	Indonesia	Saudi Arabia*
Bolivia*	Iran*	Senegal
Brazil	Ireland	Singapore
Cameroon	Israel	South Africa
Canada	Italy	Spain
Chile*	Jamaica	Sri Lanka
China	Japan	Sweden
Colombia	Jordan	Switzerland
Congo, Republic of*	Kenya	Taiwan, province of china
Congo, Democratic Republic of	Korea	Tanzania*
Costa Rica	Madagascar	Thailand
Cote D'Ivoire*	Malawi*	Tunisia
Denmark	Malaysia	Turkey
Egypt	Mexico	Uganda*
Ethiopia*	Mauritius*	United Kingdom
Finland	Morocco	United States
France	Netherlands	Uruguay
Germany	New Zealand	Venezuela*
Ghana*	Nigeria*	Zambia*
Greece	Norway	Zimbabwe*

1/ Asterisks denote primary commodity exporters.

**Preferential Trading Arrangements in Africa**

*ESA*

Ethiopia  
Kenya  
Madagascar  
Malawi  
Mauritius  
Tanzania  
Zambia  
Zimbabwe  
Congo, Dem. Rep.  
Uganda

*SADC*

Malawi  
Mauritius  
Tanzania  
Zambia  
Zimbabwe  
Congo, Dem. Rep.

*COMESA*

Egypt  
Ethiopia  
Kenya  
Madagascar  
Malawi  
Mauritius  
Tanzania  
Uganda  
Zambia  
Zimbabwe  
Congo, Dem. Rep.

*CBI*

Kenya  
Madagascar  
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Tanzania  
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