

# Currency Unions in Africa: Is the Trade Effect Substantial Enough to Justify their Formation?

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## 1. INTRODUCTION

**I**NTEREST in the adoption of a common currency within Africa is particularly high at the moment, stimulated by the generally small size of individual economies – leading to a desire to promote regional integration as a means of forming more significant units – and by the successful launch of the euro, which is viewed by some as a model for the creation of currency unions in other regions. Monetary (or exchange rate) unions<sup>1</sup> have a rich history in Africa, also making it natural that they should be under consideration in various parts of the continent. Indeed, several regional groupings, including ECOWAS, COMESA and SADC, are considering, or have agreed, timetables for the creation of currency unions among their member countries.<sup>2</sup> In addition, one of the goals of the African Union (AU) is to build on regional currency unions and eventually bring into being a single currency for Africa.

There has been considerable discussion of whether Africa trades less than economic theory and a comparison with other continents would imply. The

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<sup>1</sup> A currency union can take the form of a multilateral monetary union (countries sharing the same central bank and currency) or dollarisation (the unilateral adoption of another country's currency). Examples in Africa of the former are the CFA franc zones (in Western and Central Africa), and of the latter, Liberia's adoption (at various times in the past) of the US dollar. A weaker form of monetary integration is an exchange rate union: a permanent arrangement linking the currencies of member countries at fixed parities (as is the case in the Common Monetary Area, or CMA, in Southern Africa). See Masson and Patillo (2004, Box 1-1).

<sup>2</sup> See Table 1 for the membership of regional economic communities.

main tool for examining that question is the gravity model, which has both solid theoretical underpinnings (see Anderson, 1979; and Baldwin, 2006) and empirical success in explaining the strength of trade linkages. That model posits, and empirical evidence supports, the following variables for explaining the importance of trade for any pair of countries: the level of each country's GDP and GDP per capita, with higher values of both in either country tending to increase trade; the distance between them, which will tend to decrease their trade; and other variables that affect transactions, communication and transportation costs, all of which reduce trade. Africa's trade with the rest of the world, in particular with the euro area, is much larger than intra-African trade, and this is explained in the gravity model by the much higher level of Europe's GDP, which exerts a 'gravitational force' on African countries' trade. But even that trade is not particularly significant from a global perspective, and Africa's share of world trade is under two per cent.

Given the low level of African trade – whether it is fully explained by the gravity model or not – and the benefits from the increased efficiency and stimulus to output that expanded trade is expected to bring, a crucial issue for Africa remains whether there are measures that can be taken to stimulate trade. In this context, a provocative article by Andrew Rose (Rose, 2000) suggests that a solution to this problem may be at hand: two countries sharing a common currency trade, on average, three times more than countries with similar characteristics that have different currencies. While later work by Rose and his collaborators reduces the size of the effect somewhat (Rose and van Wincoop, 2001; and Glick and Rose, 2002), it remains substantial – roughly a doubling of trade.

If one restricts the sample to the African countries alone, the estimates of the effect of currency unions using the same methodology are very close to Rose's estimates (Masson and Pattillo, 2004; and Tsangarides et al., 2006). Despite refinements, the methodology remains subject to numerous criticisms and there is still widespread belief among economists that the size of the Rose effect is implausibly large.<sup>3</sup> Baldwin (2006) concludes that reasonable estimates for Europe should be in the range of a 5 to 15 per cent increase. Estimates for Africa are strongly affected by the treatment of zero observations for bilateral trade (which are widespread, even between pairs of countries sharing a common currency), and their omission probably biases upward the currency effect.<sup>4</sup> However, leaving aside the debate between Rose and his critics, which are not the subject of this paper, and assuming that a reasonable upper bound of the

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<sup>3</sup> Nitsch (2002) shows that seemingly innocuous changes in specification and data corrections reduce the estimated effect. See Baldwin (2006) for an extensive and very readable survey of econometric problems.

<sup>4</sup> These zero observations are routinely dropped when the usual log form of the gravity model is estimated.

effect of a common currency is a doubling of bilateral trade, the paper considers whether such trade effects provide a strong case for proceeding with African currency unions.<sup>5</sup>

In earlier work – Debrun et al. (2005) and Masson and Pattillo (2004) – using a model calibrated to African data, we found that proposed African common currency areas would not be welfare improving for all (or even most) of their potential members. The model is based on an open-economy Barro-Gordon supply equation, a government budget constraint, and a welfare function valuing government spending and output, but penalising higher inflation and taxes. A higher share of internal trade removes incentives on the part of the central bank to stimulate output by causing surprise depreciation relative to neighbouring countries. So a larger monetary union (in the sense of greater internal trade) is a better one, *ceteris paribus*, because it tends to offset the bias toward higher inflation; conversely, the more heterogeneous it is, the less likely the common monetary policy will suit a member country's needs. These two features imply a tradeoff that determines the net welfare effects of membership. However, our earlier work ignored the possible trade-creation effects of a common currency. The current paper examines the robustness of those results to an endogenous increase in trade.

The organisation of the paper is as follows. Section 2 quantifies the potential increase in trade for the African regional economic communities and for Africa as a whole. Section 3 reassesses the potential welfare gains from African regional monetary unions or a single African currency in the light of these potential trade increases. Section 4 concludes.

## 2. QUANTIFYING THE TRADE EXPANSION OF PROPOSED AFRICAN CURRENCY UNIONS

The creation of a common African currency has long been a pillar of African unity, and a timetable for it was established in the 1991 Abuja Treaty that set up the African Economic Community. A single African currency is to be created in stages, and to use regional economic communities (RECs) as building blocks. Within the RECs, free trade areas would first be created, then they would be merged into a common African customs union, leading by 2028 to a single African currency to be issued by an African central bank. Subsequent declarations have suggested

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<sup>5</sup> Some estimates of the currency union effect suggest that a common currency might also increase trade with third countries. While this is plausible for the adoption of the US dollar or the euro, which are international currencies and whose use would facilitate trade with all countries, it makes much less sense for a monetary union with a currency that would not have widespread international use, as is likely to be the case for new African currencies.

TABLE 1  
Composition of Regional Economic Communities and African Union and  
Status of Monetary Union Projects

<i>Grouping</i>	<i>Countries</i>	<i>Monetary Union Status</i>
Arab Maghreb Union (AMU)	Algeria, Libya, Mauritania, Morocco, Tunisia	No project
Common Market for Eastern and Southern Africa (COMESA)	Angola, Burundi, Comoros, D.R. Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia, Zimbabwe	Target date: 2025
Economic Community of Central African States (ECCAS)	CEMAC (Cameroon, C. Afr. Rep., Chad, Equatorial Guinea, Gabon, Rep. Congo) plus Burundi, D.R. Congo, Rwanda, S. Tomé and Princ.	CEMAC countries are members of CFA franc zone; no project for ECCAS as a whole
Economic Community of West African States (ECOWAS)	WAEMU (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo) plus Cape Verde, the Gambia, Ghana, Guinea, Liberia, Nigeria, Sierra Leone	WAEMU countries are members of the CFA franc zone; the non-WAEMU countries aim to form a monetary union in 2009; ECOWAS to achieve a full monetary union at some future date
Southern African Development Community (SADC)	CMA (Lesotho, Namibia, South Africa, Swaziland) plus Angola, Botswana, D.R. Congo, Malawi, Mauritius, Mozambique, Tanzania, Zambia, Zimbabwe	CMA constitutes an exchange rate union; SADC aims to achieve full monetary union by 2016
African Union	All the above members of regional economic communities	Single African currency by 2028

Source: Official websites, April 2006.

that an earlier achievement of an African currency should be the objective. In addition, the RECs themselves (or other groupings of countries) have established their own projects for currency unions, which presumably would be subsumed into the pan-African currency union at a later stage.<sup>6</sup>

The regions that are designated as building blocks for African integration are listed in Table 1, with their present membership. It can be noted that there is overlapping membership; the Democratic Republic of the Congo (Zaire) belongs to three RECs, and several other countries belong to two of them. COMESA, the largest geographical grouping, includes countries from north, central and southern Africa, with vastly different characteristics and no strong leading country, since Egypt, which has by far the largest GDP in the group, takes only a passing interest in its activities (see Appendix Table A1 for data on all African countries

<sup>6</sup> See details in Masson and Pattillo (2004).

in our sample).<sup>7</sup> SADC, in contrast, is more geographically cohesive and benefits from the active participation of the Republic of South Africa, the largest economy in Sub-Saharan Africa. ECOWAS has achieved some of its integration objectives, including the effective deployment of a peace-keeping force largely staffed from Nigeria. ECCAS has not been active, given wars within and between several of its member countries, while AMU has had little impact.

Among the RECs, at least three have explicit projects for creating their own monetary unions: COMESA, ECOWAS and SADC. Of these, ECOWAS is the most advanced. However, a complication that affects prospects for a single currency in West Africa is that there is an existing currency union, the West African Economic and Monetary Union (WAEMU), grouping roughly half of the ECOWAS countries. While expanding that monetary union by admitting the remaining countries might make sense, this is politically unacceptable to the other, mainly Anglophone, countries, who view the CFA franc zone as a relic of France's colonial past. So instead, a subset of ECOWAS countries (the Gambia, Ghana, Guinea, Nigeria and Sierra Leone) have agreed in principle to create a second monetary union, the West African Monetary Zone (WAMZ) and eventually to merge it with WAEMU (on terms to be decided). However, deadlines for creating WAMZ have been missed twice, and the target date, now 2009, may also be ignored given decreasing enthusiasm among potential member countries.

COMESA has an ambitious list of monetary harmonisation objectives, leading eventually to a common currency. However, other aspects of regional integration, in particular implementation of the preferential trading arrangement, have not been achieved as planned. Given the diversity of countries, a comprehensive monetary union may be difficult to achieve.

Leaders of SADC countries, meeting in Maseru, Lesotho, in August 2006, agreed to aim for a regional monetary union by 2016. This would be the culmination of other steps fostering regional integration, including creation of a common market by 2015.

Table 2 first indicates the extent of trade within the main African regional economic communities. It can be seen that, with a few exceptions, intra-regional trade is relatively unimportant as a proportion of each region's total exports. The exceptions are ECOWAS and SADC, where exports to other countries within the region are about ten per cent of exports. This figure is still very low when compared to intra-European Union trade, for instance, which amounts to over 50 per cent of EU exports. Trade *between* African RECs is even lower. The off-diagonal elements are rarely much over one per cent of a region's exports, the one exception being trade between SADC and COMESA (and this is partly due to overlap in their membership).

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<sup>7</sup> Missing are Eritrea, Libya and Somalia. In addition, trade data are not available for some of the other countries.

TABLE 2  
Exports of Regional Economic Communities  
(Sum of member countries' bilateral trade)  
Averages 1995–2000  
(In per cent of each REC's total exports)

<i>REC</i>	<i>Destination of Exports</i>						
	<i>AMU</i>	<i>COMESA</i>	<i>ECCAS</i>	<i>ECOWAS</i>	<i>SADC</i>	<i>European Union</i>	<i>Rest of World</i>
AMU	2.74	0.67	0.11	0.45	0.06	71.78	24.19
COMESA	0.77	5.47	0.74	0.19	5.94	41.25	45.64
ECCAS	0.61	0.67	1.89	0.68	0.95	43.76	51.45
ECOWAS	1.01	0.56	1.61	9.08	1.25	37.15	49.34
SADC	0.19	8.28	0.83	0.79	10.28	36.87	42.76

Source: Masson and Pattillo (2004, Table 9-1).

In contrast, the European Union is a very important destination for African exports, the proportion being highest for the North African countries of the AMU. The AU as a whole sends about 50 per cent of its exports to the European Union. As discussed above, this is consistent with the gravity model's predictions, given the size of EU GDP.

Using existing trade patterns, the importance of intra-regional trade as a proportion of GDP can be quantified, and this is presented in Table 3 for each of the RECs.<sup>8</sup> Using a doubling of trade by currency union membership as an upper bound, the figures in Table 3 also represent the potential gains from increased trade that would result from either the creation of a hypothetical regional currency or adoption of the euro by each region (the last two columns). The gains from intra-regional trade expansion

TABLE 3  
Regional Economic Communities: Intra-regional Trade and Trade with Euro Zone  
(In per cent of GDP)

	<i>Share of AU GDP</i>	<i>Openness (Trade/GDP)</i>	<i>Trade with Euro Zone/GDP</i>	<i>Intra-regional Trade/GDP</i>
AMU	20.35	66.95	43.29	1.50
COMESA	29.40	60.86	22.96	1.52
ECCAS	5.72	65.77	38.36	1.36
ECOWAS	14.54	47.82	25.06	5.57
SADC	34.01	58.91	18.70	7.53
AU (aggregated from RECs)	104.01	62.26	27.75	4.53

Source: Frankel and Rose (2002, Table V) (augmented version from Rose's website), World Bank African Development Indicators for 2001, Masson and Pattillo (2004, Table 9-1), and author's calculations. Trade is the sum of imports and exports.

<sup>8</sup> Note that the sum of the RECs' GDP exceeds 100 per cent as the result of country overlap.

are dwarfed by potential trade increases from adopting the euro.<sup>9</sup> Using the euro would also save on the resource costs of operating a central bank, and the euro would likely be a more stable currency with better attributes of means of payment and store of value than a new African currency. However, adopting the euro would mean transferring seigniorage to the European central bank, loss of monetary sovereignty and abandoning a symbol of African unity. For these reasons, it is unlikely to occur to any great extent – though it may be envisaged by a few African countries.

### 3. WELFARE IMPLICATIONS OF CREATING AFRICAN CURRENCY UNIONS

In Debrun et al. (2005) and Masson and Pattillo (2004), we presented a model of the welfare implications of creating a currency union, based on the assumption that the new central bank could not be guaranteed its independence by statute, but rather would reflect the objectives of the member countries' governments (weighted by their size). Thus, the composition of a monetary union is crucial to the properties of the currency: a monetary union with countries having large financing needs, because of excessive government spending, corruption or inefficient tax collection, would put pressures on the central bank to generate seigniorage for financing those governments. Given costs of inflation, membership in such a currency union for a country benefiting from fiscal discipline could be welfare inferior to maintaining its own currency.

The model assumes that central banks have an incentive to stimulate output through unexpected inflation, leading in an open economy to beggar-thy-neighbour depreciation of the currency. That incentive is, however, decreased in a monetary union, because the latter internalises more trade. Thus, the stimulative effect through currency depreciation is smaller, and the central bank will, other things being equal, produce lower inflation. Thus, the net welfare gains of a monetary union depend on the size of trade within the union, balanced by the effects of fiscal heterogeneity (and also the asymmetry of shocks, as in the standard optimum currency area analysis).

The model can be summarised by three equations – the authorities' objective function, a supply equation and the government's budget constraint. Aggregate supply ( $y$ ) is affected positively by monetary surprises, but negatively by monetary stimulus abroad. Thus there is the possibility of a beggar-thy-neighbour monetary policy, which could be explained by competitive devaluation or by regional congestion effects. A monetary union would eliminate the possibility of each country providing selective stimulus and thus eliminate the temptation to exploit this externality, since all countries would share the same inflation rate. In equation (1), the externality is captured by parameters  $\theta_{i,k}$  representing the marginal effect of a monetary policy action in country  $k$  on output in country  $i$ , and proxied by

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<sup>9</sup> Linking African countries to the euro has been advocated by Honohan and Lane (2001).

the extent of their bilateral trade as a ratio of GDP. Output is also subject to a country-specific shock related to the terms of trade,  $\varepsilon_i$ :

$$y_i = c(\pi_i - \pi_i^e - \tau_i) - \sum_{k \neq i, k=1}^n \theta_{i,k} c(\pi_k - \pi_k^e) + \varepsilon_i, \quad i = 1, \dots, n. \quad (1)$$

The one-period budget constraint (there is no borrowing) is given by:

$$g_i = \mu\pi_i + \tau_i - \delta_i, \quad i = 1, \dots, n, \quad (2)$$

where  $g_i$  and  $\tau_i$  are the ratios of socially beneficial government spending and fiscal revenues to GDP, respectively, and  $\mu$  is the inflation tax base. The fixed parameter  $\delta_i$  accounts for country-specific inefficiencies affecting fiscal policy, such as tax collection costs, the appropriation of tax revenues by corrupt officials and socially wasteful spending.

We assume that policymakers maximise utility functions:

$$U_i^G = \frac{1}{2}\{-a(\pi_i - \bar{\pi}(\varepsilon_i))^2 - b\tau_i^2 - \gamma(g_i - \bar{g}_i)^2\} + y_i, \quad i = 1, \dots, n. \quad (3)$$

The target inflation rate is contingent on supply shocks:  $\bar{\pi}(\varepsilon_i) = -\eta\varepsilon_i$  with  $\eta > 0$ . A negative (positive) output shock thus incites the policymaker to tolerate positive (negative) inflation.

With autonomous monetary policies, policymakers independently choose effective tax rates  $\tau_i$  and inflation rates  $\pi_i$  maximising (3). Policy choices are made simultaneously by all governments, taking the neighbours' policies as given (Nash conjecture). The optimal, time-consistent policy mix is derived under standard assumptions; that is, complete information, rational expectations and the following sequence of events: (i) binding nominal wage contracts are signed, (ii) shocks are realised and perfectly observed by all, and (iii) monetary and fiscal policies are decided. Under monetary autonomy, the time-consistent inflation rate (denoted by a star superscript) for any country  $i$  will be:

$$\pi_i^* = \frac{\gamma\mu b}{\Lambda} F_i + \frac{(b + \gamma) + \gamma\mu}{\Lambda} c - \frac{a(b + \gamma)\eta}{\Lambda} \varepsilon_i, \quad i = 1, \dots, n, \quad (4)$$

where  $F_i = \bar{g}_i + \delta_i$  and  $\Lambda = a(b + \gamma) + \gamma\mu^2 b > 0$ .

In a monetary union, it is assumed that monetary policy is decided by a common central bank, which maximises a GDP-weighted average of national utility functions, and thus is subject to the same type of political pressures as a national central bank would be. The only difference is that, in a monetary union, individual pressures are diluted according to the relative weight of the country in the joint decision process.

Letting the subscript  $A$  designate cross-country, output-weighted averages, and  $\theta_A$  the amount of trade (as a ratio to GDP) internal to the monetary union, the equilibrium rate of inflation will be given by:

$$\pi_{MU}^* = \frac{\gamma\mu b}{\Lambda} F_A + \frac{(1 - \theta_A)(b + \gamma) + \gamma\mu}{\Lambda} c - \frac{a(b + \gamma)\eta}{\Lambda} \varepsilon_A. \quad (5)$$

The properties of the equilibrium policy mix reflect the fact that the gains from monetary unification essentially depend on the ability of the new regime to address the excessive inflation problem. However, this also has implications for fiscal policies (the equations for which are not reported here): with the common central bank now determining seigniorage revenues according to union-wide objectives, policymakers also need to adjust national tax and expenditure choices. The welfare consequences of monetary union thus reflect three separate effects: (1) lower inflation bias, (2) effects of asymmetries in fiscal policies and (3) lack of flexibility to respond to asymmetric shocks (the traditional optimum currency area criterion).

We calibrated the model to available data from all African countries (see Masson and Pattillo, 2004, Appendix A), and that calibration is used in the assessment below of the welfare effects of creating monetary unions for each of the RECs and for the AU as a whole. Simulations in Masson and Pattillo (2004) suggested that each of the regional currency unions would be problematic if they included all countries, because there were large differences in the degree of fiscal discipline and large asymmetries in terms-of-trade shocks. Thus, admitting all countries would lead to the creation of currencies that exhibited high inflation and responded to an average terms-of-trade shock that was not well correlated with that in each member country. This would lead to a fall in welfare for some potential members.<sup>10</sup>

However, neither the analysis of regional currency unions nor of an African currency took into account the potential increase in trade from the creation of a monetary union. In what follows, we assess the welfare effect of African currency unions using the trade-creation effects estimated in Table 3. Tables 4–6 report results for COMESA, ECOWAS and SADC, respectively, comparing the calculations without any induced increase in trade as a result of the currency union with those from a doubling of trade.<sup>11</sup> Not all countries are included in the monetary unions because of a lack of data.

<sup>10</sup> Debrun et al. (2005) presented a sensitivity analysis for ECOWAS, showing that the signs of the welfare results were robust to reasonable variations in the parameters. Optimal policies depend only on the ratios  $a/c$ ,  $b/c$ ,  $\gamma/c$  and  $\eta$ . However, the level of welfare is proportional to  $c$ .

<sup>11</sup> Trade includes an estimate for informal trade equal to 25 per cent of reported trade; this amount is, however, not doubled, since a currency union might well decrease informal trade in some cases. For instance, trade between Niger and Nigeria has in the past been stimulated by the desire of Nigerians to obtain a convertible currency, the CFA franc (see Azam, 1999). Results differ slightly from Masson and Pattillo (2004) because of data changes.

TABLE 4  
COMESA: Net Welfare Gains from Regional Currency  
(Log GDP equivalents)

	<i>GDP Share</i>	<i>Welfare Gain/Loss</i>		<i>Memo: Increase in Exports/GDP (Per cent)</i>
		<i>With No Trade Expansion</i>	<i>With Trade Doubling</i>	
Angola	0.0465	0.1893	0.1973	0.1
D.R. Congo	0.0382	0.1303	0.1443	0.5
Egypt	0.5273	0.0038	0.0236	0.9
Ethiopia	0.0418	0.0980	0.1136	3.5
Kenya	0.0681	-0.0086	0.0117	26.9
Madagascar	0.0245	-0.0313	-0.0102	6.7
Malawi	0.0129	0.0581	0.0756	6.5
Mauritius	0.0279	-0.2191	-0.1920	3.4
Namibia	0.0234	-0.1084	-0.0846	3.0
Seychelles	0.0039	0.2572	0.2578	0.7
Sudan	0.0644	0.0494	0.0673	4.4
Swaziland	0.0090	-0.1259	-0.1015	6.0
Uganda	0.0416	-0.0505	-0.0287	1.1
Zambia	0.0222	0.0326	0.0511	10.3
Zimbabwe	0.0485	0.0665	0.0837	9.4

Source: Author's calculations.

TABLE 5  
ECOWAS: Net Welfare Gains from Regional Currency  
(Log GDP equivalents)

	<i>GDP Share</i>	<i>Welfare Gain/Loss</i>		<i>Memo: Increase in Exports/GDP (Per cent)</i>
		<i>With No Trade Expansion</i>	<i>With Trade Doubling</i>	
<b>WAEMU members</b>		<b>Relative to CFA Franc</b>		
Benin	0.0340	-0.0873	-0.0594	0.4
Burkina Faso	0.0406	-0.0734	-0.0497	1.3
Côte d'Ivoire	0.1706	-0.0853	-0.0580	7.9
Mali	0.0407	-0.0780	-0.0527	0.3
Niger	0.0301	-0.0890	-0.0603	4.1
Senegal	0.0749	-0.0855	-0.0580	2.8
Togo	0.0215	-0.0839	-0.0566	8.7
<b>Non-WAEMU countries</b>		<b>Relative to independent currencies</b>		
Gambia	0.0061	-0.0210	0.0038	0.0
Ghana	0.1078	0.0497	0.0711	5.4
Guinea	0.0597	-0.1153	-0.0862	0.4
Nigeria	0.4037	0.1145	0.1322	5.4
Sierra Leone	0.0104	-0.0397	-0.0139	0.0

Source: Author's calculations.

TABLE 6  
SADC: Net Welfare Gains from Regional Currency  
(Log GDP equivalents)

	<i>GDP Share</i>	<i>Welfare Gain/Loss</i>		<i>Memo: Change in Exports/GDP (Per cent)</i>
		<i>With No Trade Expansion</i>	<i>With Trade Doubling</i>	
<b>CMA</b>				
<b>Relative to existing exchange rate union</b>				
Lesotho	0.0049	-0.0175	-0.0075	13.4
Namibia	0.0184	-0.0338	-0.0147	8.6
South Africa	0.7285	-0.0360	-0.0158	3.8
Swaziland	0.0070	-0.0339	-0.0148	18.8
<b>Non-CMA</b>				
<b>Relative to independent currencies</b>				
Angola	0.0365	0.2320	0.2360	0.3
Botswana	0.0264	0.0874	0.1030	1.7
Congo, D.R.	0.0300	0.2247	0.2316	0.6
Malawi	0.0102	0.1360	0.1490	4.7
Mauritius	0.0219	-0.0907	-0.0684	1.4
Mozambique	0.0177	0.1412	0.1541	2.2
Seychelles	0.0030	0.2539	0.2507	0.4
Tanzania	0.0398	0.0454	0.0628	0.5
Zambia	0.0175	0.1152	0.1292	4.7
Zimbabwe	0.0382	0.1448	0.1575	7.8

Source: Author's calculations.

Estimates for COMESA show significant welfare losses<sup>12</sup> for a number of countries from a common currency, as a result principally of shock asymmetries and because the countries with the losses have more disciplined fiscal policies than the average for the union. Doubling of trade reduces those losses (and increases the gains for the other countries), but, except for Kenya (which has substantial exports to neighbouring countries), does not change the signs of the net welfare gains.<sup>13</sup> Thus, it does not seem likely that all COMESA countries would find it in their interest to join in creating a single currency for the region. If a regional currency were nevertheless created, it would be subject to pressures to provide government financing and would therefore not yield monetary stability.

Turning to ECOWAS, the comparison is made between the welfare derived by existing WAEMU members from their use of the CFA franc, with that from

<sup>12</sup> The units are log GDP equivalents, so that 0.01 indicates the welfare equivalent of a one per cent increase in GDP.

<sup>13</sup> It needs to be noted that since the union's inflation rate reflects the total amount of trade internalised within it, the increase of trade for each country individually is not the main determinant of its welfare gain or loss.

a new common regional currency; for the other countries, their welfare gain is compared to the existing situation of independent currencies (ignoring the potential creation of the WAMZ in the meantime). Here, the WAEMU countries are all welfare losers from the creation of an ECOWAS currency, while the same is true of some of the non-WAEMU countries. The principal gainer is Nigeria, which would have the greatest weight in setting monetary policy because of its size. The very different evolution of its terms of trade from its partners (it is an oil exporter, unlike the others) and its undisciplined fiscal policies would produce a currency whose higher inflation and greater variability would make it unattractive to WAEMU members, as well as to the Gambia and Guinea, when compared to their existing currencies.

Finally, a monetary union for SADC also implies a number of losers as well as gainers. In particular, the countries of the existing CMA would lose by the replacement of their exchange rate union, whose monetary policy is set by South Africa, with a monetary union whose monetary stance would be set to reflect the average conditions of all countries in the region. A doubling of trade would not overturn that result.

In Table 7, a single currency for Africa is evaluated relative to the hypothetical creation of regional currencies in all of the RECs. Here it is assumed that, despite drawbacks highlighted above, regional currencies have been created; and the welfare effects of merging those regional currencies into an AU-wide currency are assessed. Again, asymmetries in fiscal discipline and terms-of-trade shocks come into play, making the single African currency welfare-improving only for COMESA and ECOWAS. These are also the regions having on average the greatest problems with fiscal discipline, so that a currency that included them would be more inflationary than would be desired by the remaining regions. Doubling the trade effects is not unambiguously welfare-improving, because by reducing inflation it also reduces seigniorage available to finance government

TABLE 7  
A Single African Currency: Average Net Welfare Gain Relative to Hypothetical Regional Currencies  
(Log GDP equivalents)

<i>REC</i>	<i>No Trade Expansion</i>	<i>With Trade Doubling</i>	<i>Memo: Increase in Exports/GDP (Per cent)</i>
AMU	-0.0011	0.0104	0.2
COMESA	0.0395	0.0484	0.2
ECCAS	-0.0128	-0.0012	0.7
ECOWAS	0.1125	0.1062	1.0
SADC	-0.0739	-0.0778	0.8

Source: Author's calculations.

spending. In any case, the trade-inducing effects, as ratios to each region's GDP, are very small (note that the increase in exports alone is reported here, while in Table 3 it is the sum of intra-regional exports and imports). Only the sign of AMU's net gain changes to a small positive value with a doubling of trade, thus suggesting that a single African currency would likely run into resistance, even if the regional building blocks were created. Thus, accounting for the potential trade-creation effects of forming a monetary union does not overturn the conclusion that monetary unions in Africa are not likely to be welfare-improving if they included all countries.

#### 4. CONCLUSIONS

The striking empirical results of Rose and others that membership in a currency union might increase trade by a factor of two or more have been used to promote the creation of new currency unions, following the example of the euro zone. Given the small size of Africa's trade, the formation of currency unions seems a logical way to boost trade and to improve monetary policy.

This paper and previous work give several reasons, however, for doubting that currency unions provide a panacea for Africa's problems – or even a partial solution. Favourable effects from forming a currency union depend very much on the membership of that union. A currency union that internalises a high level of trade will be expected to produce more benefits than one where the natural level of trade (e.g. as predicted by the gravity model) is low. In addition, absent institutional guarantees of the central bank's independence (and a clear objective given to the central bank) the properties of the currency will depend on the priorities of the national governments, in particular their financing needs.

A model that incorporates those features was used to analyse the possible currency unions in Africa. Despite potential doubling of trade, the conclusion emerges clearly that asymmetries across countries would make even regional currencies, much less a single African currency, undesirable for some countries. Rather than an all-encompassing project of a continent-wide currency, selective expansion of existing monetary integration projects (principally the CFA franc zone and the CMA, or rand zone), could be envisaged.

Leaving currency issues aside, it is clear that African countries can do much to increase trade. This includes improving infrastructure, reducing political tensions, and reducing tariff and non-tariff barriers to trade. There is much evidence that transportation costs are higher in Africa than elsewhere and are affected by poor infrastructure and civil unrest (Yeats et al., 1996; and Longo and Sekkat, 2004). Efforts should be made to reduce these costs by building better roads and ports, strengthening air links, and making the unloading and processing of merchandise more efficient.

APPENDIX  
COUNTRY DATA AVAILABILITY

TABLE A1  
GDP, Openness and Trade with Euro Zone

<i>Country Name</i>	<i>Euro Zone Share of Trade (Per cent)</i>	<i>Openness Trade/GDP (Per cent)</i>	<i>Euro Zone Trade/GDP (Per cent)</i>	<i>GDP, 1999 (US\$, millions)</i>	<i>Share of Africa GDP (Per cent)</i>
Algeria	62	59	36.58	47,872	9.30
Angola	34	110	37.40	8,545	1.66
Benin	45	63	28.35	2,414	0.47
Botswana	n.a.	n.a.	0.00	5,996	1.16
Burkina Faso	71	41	29.11	2,580	0.50
Burundi	75	33	24.75	714	0.14
Cameroon	69	46	31.74	9,187	1.78
CAR	72	49	35.28	1,053	0.20
Chad	75	76	57.00	1,530	0.30
Comoros	70	64	44.80	193	0.04
Congo, Dem. Rep.	57	59	33.63	7,752	1.51
Congo, Rep.	77	128	98.56	2,217	0.43
Côte d'Ivoire	73	77	56.21	11,206	2.18
Djibouti	38	99	37.62	519	0.10
Egypt, Arab Rep.	38	53	20.14	89,148	17.31
Equit. Guinea	45	154	69.30	696	0.14
Ethiopia	53	38	20.14	6,439	1.25
Gabon	33	93	30.69	4,352	0.85
Gambia, The	51	132	67.32	393	0.08
Ghana	40	60	24.00	7,774	1.51
Guinea	56	48	26.88	3,733	0.72
Guinea-Bissau	73	47	34.31	218	0.04
Kenya	35	73	25.55	10,638	2.07
Lesotho	n.a.	n.a.	n.a.	874	0.17
Madagascar	55	55	30.25	3,721	0.72
Malawi	26	73	18.98	1,810	0.35
Mali	51	60	30.60	2,608	0.51
Mauritania	60	112	67.20	960	0.19
Mauritius	36	122	43.92	4,244	0.82
Morocco	59	61	35.99	34,998	6.80
Mozambique	22	88	19.36	4,142	0.80
Namibia	n.a.	n.a.	n.a.	3,075	0.60
Niger	71	40	28.40	2,018	0.39
Nigeria	34	30	10.20	35,045	6.81
Rwanda	50	36	18.00	1,956	0.38
Senegal	69	69	47.61	4,801	0.93
Seychelles	16	104	16.64	545	0.11
Sierra Leone	54	39	21.06	669	0.13
South Africa	29	50	14.50	131,127	25.46
Sudan	n.a.	n.a.	n.a.	9,718	1.89
Swaziland	n.a.	n.a.	n.a.	1,223	0.24
Tanzania	61	63	38.43	8,760	1.70
Togo	42	75	31.50	1,405	0.27
Tunisia	75	93	69.75	20,944	4.07
Uganda	58	32	18.56	6,411	1.24
Zambia	17	91	15.47	3,150	0.61
Zimbabwe	21	91	19.11	5,608	1.09

Source: Euro zone trade and openness from Frankel and Rose (2002); GDP data from World Bank African Development Indicators.

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