

Any views expressed in the Departmental Memoranda (DM) Series represent the opinions of the authors and, unless otherwise indicated, should not be interpreted as official Fund views.

DM/84/29

INTERNATIONAL MONETARY FUND

Research Department

Monetary and Payments Problems in
Economic Integration of Developing Countries

Prepared by Omotunde Johnson*

Approved by Anthony Lanyi

April 27, 1984

Summary

This paper examines the main macroeconomic issues that arise in economic integration among developing (particularly West African) countries. On the assumption that full integration involves a common currency, rather than permanently fixed exchange rates between different national currencies, the paper focuses on the process of replacing the previous national currencies by a Union currency. The exchange rates that would emerge during this process may differ from the pre-Union exchange rates.

Once the Union is established, and factors of production are willing and able to move, a once-for-all gain ensues from the reallocation of factors that occurs; real income of the Union residents increases as does money demand relative to income. Also relative factor prices and rentals change with distributional and monetary consequences. It is argued that, with free factor mobility and competition among regional governments, the ratio of government expenditure to GDP may tend to be lower than in the pre-Union situation, while the cost of servicing government domestic debt may rise. These static effects will be tempered over time if the dynamic effects of the Union include increased national savings relative to income.

It is argued that the regions will have to coordinate a number of macroeconomic policies, particularly as regards tax rates, the terms and volume of government security issues, and foreign borrowing and debt policies. Macroeconomic decisions to be taken and implemented by institutions and bodies operating at the level of the Union include those of a

* Paper delivered at a Colloquium on West African Economic Integration, January 1984, in Lome, Togo, and to be published in the proceedings of the Colloquium. The author would like to thank Malcolm Knight, Donald Mathieson, and Koffi Yao for comments on an earlier draft. Nevertheless, he remains solely responsible for the views expressed in the paper.

medium- and long-term nature relating to the common external tariff, the exchange regime and restrictions, the management of the foreign assets of the banking system and the distribution of the seigniorage from printing the Union currency. Short-term macroeconomic management involves the policies of the central bank of the Union and would be implemented with the assistance and/or guidance of some Union economic management body. Such management consists of setting overall objectives for employment or the price level as well as for net foreign asset holdings; the instruments of the central bank will then be used to help assure the targets.

Finally, the paper discusses the nature of tax, subsidy and incentive schemes that may have to be instituted when factor price equalization is precluded by nonprice hindrances to factor mobility and/or factor price rigidity.

I. Introduction

This paper discusses the main macroeconomic issues that arise in economic integration, with special reference to problems of maintaining domestic and international monetary equilibria. The focus of the discussion is on economic integration among developing countries (LDCs), particularly among West African countries. The analysis owes much to the economics of common currencies as well as general monetary theory and some aspects of international trade theory.

In addition to the general analysis of the economics of common currencies, 1/ the benefits, costs and problems involved in economic integration in West Africa have received some attention in the academic literature. 2/ The conviction that there is need for cooperation, whatever the costs and problems, if "accelerated and sustained economic development" is to be realized, has provided the stimulus for the attempts to achieve closer economic integration among the West African states. The formation of the Economic Community of West African States (ECOWAS) is the latest attempt in that "long road" to economic integration. 3/

1/ See especially Mundell (1961, 1973), Ishiyama, and Tower and Willett.

2/ See for example Nowzad, and Renninger, African Department Study Group, Bhatia, and Nana-Sinkam.

3/ The Treaty gives the major principles, goals and institutions of the Community. The current members of ECOWAS are Benin, the Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, and Upper Volta. ECOWAS has as its ultimate objective the "accelerated and sustained economic development of their states and the creation of a homogeneous society, leading to the unity of the countries of West Africa, by the elimination of all types of obstacles to the free movement of goods, capital and persons" [page 2 of the Treaty].

The literature on monetary union has dealt with the benefits and costs of such an arrangement. 1/ As far as benefits go, a monetary union increases the usefulness of the domestic monetary unit both as a medium of exchange and as a store of value and eliminates some cost of currency conversion. Furthermore, pooling of international reserves reduces reserve "need". Moreover, from the viewpoint of balance of payments disturbance and adjustment, there is some risk pooling, similar to insurance, tending to spread adjustment costs over space and time. Finally, and particularly if monetary integration involves full integration of the economies, there are the added benefits that ensue from larger market size (e.g., attraction of foreign investment and possibilities for increased industrialization). 2/ The major disadvantage or cost of such unions is the loss of autonomy over monetary and fiscal policies.

Section II of this paper examines the nature of macroeconomic equilibrium with monetary union as it compares with the situation of independent countries and regions having separate currencies, controlled factor mobility between countries or regions, and flexible exchange rates between the respective currencies. In Section III there is a discussion of some important issues related to the need for policy coordination which is entailed in the loss of autonomy over monetary and fiscal policies. Section IV contains a brief conclusion.

II. Macroequilibrium

Two or more previously separate geographical areas can be said to have fully integrated markets when all official and legal barriers to economic transactions are removed between them. Economic theory implies that, in the absence of nonpecuniary obstacles to factor mobility, price differentials between the different regions will tend to result only from costs relating to the acquisition of information, market transactions and transport. Under full integration, the previously separate regional markets for commodities, factors of production and financial assets become single markets.

1. Monetary reform

Consider a situation in which two countries or regions, R1 and R2 respectively, decide to form a union such that the financial and product markets are fully integrated in the sense that we have stated above. The process of moving towards full integration would involve institutional changes of a purely monetary nature. It is assumed that R1 and R2 issue a

1/ See again the works of Mundell, Ishiyama, and Tower and Willett already cited.

2/ See for example Nowzad, and Renninger.

common currency after integration. For ease of exposition we shall call this currency the kala. The kala would be issued by a common central bank or monetary authority which would be one of the institutions set up by the Union. The question that arises is how the monetary system is converted from the two currencies (of R1 and R2) to the kala. Suppose that the common central bank defines the assets (e.g., convertible currencies, gold) that it will accept in exchange for the kala and let these assets be called the Union reserve assets (URAs). The exchange rates, or the method of determining the exchange rates, between the kala and the URAs will be agreed in negotiations between the (pre-Union) central banks of R1 and R2. The common central bank will then accept URAs presented to it by the central banks of R1 and R2 and will issue kala to the central banks in exchange, at the agreed exchange rates. The central banks of R1 and R2 will then use the kala thus obtained to redeem their own local currencies, say C1 and C2 respectively, at exchange rates between the kala and the local currencies that are consistent with full redemption using the kala at the disposal of the regional central banks. It is interesting to see how these exchange rates will be related to each other.

In the absence of any lending or borrowing of kala or URAs by the regional central banks, the cross exchange rates between C1 and C2 that would result from the above process would depend upon the ratios of URAs to domestic high-powered money (H). Suppose we symbolize the high-powered or base money stock of R1 by $H(R1)$ and that of R2 by $H(R2)$; suppose also that the exchange rates of C1 and C2 vis-a-vis some numeraire reserve asset, say the U.S. dollar (\$), are given by e_1 and e_2 , defined as the number of U.S. dollars per C1 and C2 respectively. Then, without lending or borrowing of kala or URAs, the static equilibrium exchange rates e_1 and e_2 will be related as follows: 1/

1/ The central bank of each region will accept only domestic currency or private (including commercial bank) deposits with it (i.e., the central bank) in exchange for the kala it supplies. Assume, without loss of generality, that the URAs are to be all changed to the U.S. dollar before presentation to the central bank of the Union for kala. Suppose, also without loss of generality, that the dollar/kala rate fixed by the Union central bank is unity. Then each central bank will be able to obtain as many kalas as it has URAs (in U.S. dollars) and will have to exchange the kalas for all its own (domestic) currency in circulation plus private deposits with it; i.e., for all the domestic high-powered money. Then the exchange rate that will achieve this aim without borrowing or lending of URAs will be $URA(R_i)/H(R_i) = e_i$ for $i = 1, 2$. It follows then that equation (1) will give the relation between e_1 and e_2 . Note, finally, that since in each region the equilibrium money stock (M_0) is related to high-powered money through the ex post money multiplier (m), it is possible to write equation (1) in terms of the money stock also.

$$\frac{URA(R1)/H(R1)}{URA(R2)/H(R2)} = \frac{e_1}{e_2} \quad (1)$$

The e_1 and e_2 established in equation (1) may be completely different from the exchange rates with the numeraire currency before the Union was established, say e_1^0 and e_2^0 . We will say that the currency of region 1 was overvalued before the Union if $e_1/e_1^0 < 1$ and undervalued before the Union if $e_1/e_1^0 > 1$. Comparing the two currencies C1 and C2 we shall say the C1 was relatively undervalued (i.e. relative to C2), relatively appropriate, or relatively overvalued, before the Union, according as

$$RE = \frac{e_1/e_2 >}{e_1^0/e_2^0 <} 1 \quad (2)$$

In other words, if $RE > 1$, C1 was relatively undervalued before the Union while if $RE < 1$ it was C2 that was relatively undervalued. 1/

Measured in the numeraire reserve asset, the holders of the relatively overvalued currency will lose wealth relative to the holders of the relatively undervalued currency. In a certain sense, this relative wealth change would simply make explicit what would have been implicit if the two regions were compared before the Union. That is, the region with the relatively overvalued currency would most likely have had a more restrictive exchange and trade system, weaker balance of payments performance for some time, and/or lower savings ratio. 1/ The relative change in wealth makes explicit that, measured in terms of purchasing power over internationally-traded goods, holders of the relatively overvalued currency were less wealthy relative to holders of the other currency than was apparent, simply by looking at exchange rates, and that this fact was only masked--mainly by differences in the restrictive systems.

Prices, rentals and aggregate output

Suppose that once the Union is established, factor owners are willing to move; i.e., there are no nonpecuniary obstacles to factor mobility.

1/ The concepts of relative undervaluation and overvaluation used here are merely for expositional convenience.

2/ Alternatively, the relatively overvalued currency had a relatively small backing of its money stock in the form of foreign assets (URAs). Now we have in general

$$\frac{URA}{MO} = \frac{URA}{H} \cdot \frac{H}{MO}$$

This means that the degree of backing for the domestic money stock is a function of the backing for the high-powered money (i.e. URA/H) and the inverse of the money multiplier (i.e. H/MO).

Consider the new equilibrium for nonmonetary financial assets (F); monetary assets (MO), labor (N), real reproducible capital assets (K), fixed non-reproducible capital assets (L), and real output (y), of the regions. After all the adjustments have been made and the new system has settled down, what are the interesting aspects of prices, rentals and quantities of these economic magnitudes? First of all, the rates of interest (or rentals) on money (r_m), on nonmonetary financial assets (r_f), on real reproducible capital assets (r_k) and on real nonreproducible (immobile) capital (r_l) will be the same in both regions. So will be the wage rates (W), the rate of inflation (\hat{P}), the prices of F (P_f) and of K (P_k). Assume that in the absence of integration r_m , r_f , r_k , r_l , \hat{P} , W, P_f and P_k would have differed between the regions. Assume also, for the time being, that the total quantities of assets (in real terms) in the Union are equal to the sum of what they would have been in the absence of integration. Then a second interesting aspect of the new equilibrium with integration is that the shares of F, MO, N, K and y will be different between the regions as compared to the pre-Union allocations, while the prices of L (but not its rate of rental, r_l) will be different both between regions and from what they were before the Union.

The reallocation of N and K between the regions is an improvement from the viewpoint of the Union as a whole; this follows from the presumption that the factor rentals (wages and interest rates) differed before the Union and now move to equality net of information, transactions and transport costs. The improved allocation of resources implies increased Union y over the sum of the y's of R1 and R2 before the Union.

There will be important wealth-distributional consequences of this static reallocation of factors and its effects on factor rentals and prices. One such consequence is due to the differential movements in the prices of immobile nonreproducible assets, L, in the two regions. For instance, if N and K move in such a way that N/L and K/L rise in R1 and decline in R2, relative to pre-Union equilibria, then the price of L tends to increase in R1 and decline in R2 (relative to pre-Union); W/r_l and r_k/r_l would fall in R1 and rise in R2 as compared with pre-Union, although they will be equal between the regions after the formation of the Union. Also of importance is that the Union static equilibrium would result in an aggregate N/K ratio in the Union economy lying between the pre-Union ratios of R1 and R2. In the event, on average, wage earners might gain or lose relative to capitalists in the Union as a whole compared with the pre-Union; at any rate, wage earners from the region with the higher initial N/K ratio would gain relative to wage earners in the other region and vice versa in the case of capitalists. 1/

1/ The analysis in the text implicitly assumes linear homogeneous production functions. Although these functions are considered to be the same in the two regions, yet the commodity composition of output (y) differs between the regions because of differences in quantity and in types of the immobile factor L (i.e. L is not homogeneous).

The increase in real income that results from improved allocation of resources in the two regions, with the Union, would tend to increase real demand for monetary assets. But the effect of income redistribution on money demand is hard to predict in the abstract, and depends on the wealth, saving, and portfolio behavior of the different groups affected.

Public sector constraints

With the Union, the public sectors' budget constraints would be altered in detail from the pre-Union budget constraints. In general, for each region, the overall budget deficit (G_D) would be equal to the amount borrowed from the Union central bank (G_{bu}) plus the amount borrowed from commercial banks within the Union (G_{bc}) plus the amount borrowed from non-bank residents of the Union (G_{bn}) plus the amount borrowed from foreign residents (G_{bf}). All borrowing is calculated net of principal repayments, so that by borrowing we mean the change in debt owed to the various lenders, during the period; interest paid during the period is included in government expenditure. Government expenditure (G_E) of a region is, therefore, constrained in equilibrium, as always, to equal government tax and nontax revenue (G_R) plus borrowing. That is, for each region:

$$\begin{aligned} G_E &= G_R + G_{bu} + G_{bc} + G_{bn} + G_{bf} & (3) \\ &= G_R + G_B \end{aligned}$$

The flow equilibrium condition (3) states that, for each region, the net accumulation of arrears is zero. Where any of the governments of the regions (R1 and R2) started with arrears this condition will be modified to zero accumulation of new arrears and equation (3) will include a term for reduction of arrears during the period ($-G_{ra}$). That is, equation (3) becomes

$$\begin{aligned} G_E &= G_R + G_{bu} + G_{bc} + G_{bn} + G_{bf} - G_{ra} & (3a) \\ &= G_R + G_B - G_{ra} \end{aligned}$$

The fact of the Union would affect G_E of any region R_i ($i = 1, 2$), say $G_E(R_i)$, because G_R , G_{bu} , G_{bc} , G_{bn} , G_{bf} would be most likely affected. More precisely, for any region, the equilibrium G_E/Y (where Y is nominal gross domestic product) may be different between the pre-Union and Union equilibria. There are two reasons for this result. One is that there is, with the Union, free mobility of assets and of productive factors. The second reason is that there are equilibrium requirements for Union foreign assets, exchange rate of the kala, and aggregate monetary and credit expansion.

Given free mobility of labor, physical capital and financial assets, both regional governments have an incentive to reduce their tax rates in order to attract high quality labor, physical capital and financial assets away from the other region. With free competition between regions both will do so until the marginal gain from lowering tax rates becomes zero. That is, until $\partial G_R / \partial t_R = 0$ where ∂ is the (partial) derivative and t_R represents tax rate. In the equilibrium of the Union, and with competition between regions, G_R/Y will tend to be lower for the Union as a whole as compared with the weighted average of this ratio in the pre-Union situation.

Because of differences in the quality and/or quantity of their immobile factor L , the regions may differ with regard to their marginal efficiency of investment (MEI) schedules and/or their value of marginal product of labor (VMP_N) schedules. The region with the superior endowment of L will, with free mobility and competition between the two regions, end up with a higher G_R/Y ratio given G_B/Y . The superior L region will have a higher average tax rate.

Analogous analysis follows for domestic borrowing (i.e., $G_B - G_{bf}$). Given free mobility of financial assets and physical capital, competition between regions for borrowed funds will result in hardening of debt service terms to regions as the latter offer "better" terms to potential lenders as regards interest rates, commissions and loan maturities. Again, remembering that loans are net of principal repayments, the result will be lower G_B/Y for the Union's regions as a whole compared with the weighted average for the G_B/Y before the Union. Similarly, as in the case of taxation, the region with the superior L will be able to increase its G_B/Y , ceteris paribus, more easily than the other region. Over time, of course, one of the dynamic effects of the Union may be to increase national savings relative to income; such a consequence would tend to relax the constraints on government borrowing relative to GDP.

Apart from the distributional effects of differential ability to raise G_R/Y and G_B/Y under competition between regions, we have also argued that the weighted average G_R/Y and G_B/Y ratios decline in the Union equilibrium with competition. This implies that the weighted average G_F/Y declines with the formation of the Union, given G_{bf}/Y . Thus the sizes of governments, relative to the economy, may become less than socially optimal if they were optimal before the Union and if the optimal sizes of the governments are not altered by the formation of the Union. Over time, of course, to the extent that the Union results in increased supply of foreign funds to R_1 and R_2 , this effect will be neutralized somewhat by increased G_{bf} .

2. Monetary equilibrium

For the Union, monetary equilibrium will be said to exist when the actual stock of foreign assets of the banking system (NFA) is equal to the

desired stock (NFA^d). The flow equilibrium analogue of this stock equilibrium condition is that the actual change in the net foreign assets is equal to the desired change. It is possible to specify this desired change in net foreign assets as being functionally related to the difference between the actual and the desired stock at the beginning of the period. But for expositional convenience we shall not specify this relationship.

Given the system of exchange and trade restrictions of the Union, the money demand and asset behavior of decision-makers will tend to result in a relationship between the actual change in net foreign assets and the change in money stock. The flow monetary equilibrium of the Union can then be specified as:

$$\Delta NFA = NFA^d = a \cdot \Delta MO = a \cdot \Delta MO^d \quad (4)$$

where MO and MO^d are the actual and desired money stocks respectively, and Δ before a variable denotes an absolute change in the variable. In equation (4) the parameter "a" is determined by the economic behavior of decision-makers in the nonmonetary sectors, given the exchange and trade restriction system of the Union. Although the decision-makers in the nonmonetary sectors determine ΔMO^d , the authorities want a certain NFA^d; this implies a certain $\Delta NFA^d / \Delta MO^d$.

Let us define the domestic credit component of high-powered or base money (DCH) as that part of the currency (kala) issue of the Union's central bank that is not offset by holdings of net foreign assets of the bank. Then, in simple terms, we have the following process for the change in the money stock:

$$\begin{aligned} \Delta MO &= m(\Delta DCH + \Delta NFA) \\ &= m \left[\Delta DCH + \left(\frac{NFA^d}{DCH} \right) \cdot \Delta DCH \right] = m(1+\alpha) \Delta DCH \end{aligned} \quad (5)$$

Alternatively, we have in stock equilibrium:

$$MO = m(1+\alpha) DCH \quad (6)$$

where m is the money multiplier relating the (change in) base money to the (change in) the money stock. Although m is treated here as a constant we recognize that it is in reality a variable that will be influenced by factors including various interest rates. Apart from such market relative-price factors, the Union's central bank can also influence m through various credit control measures e.g., minimum reserve requirements.

The parameter α measures the desired (or rather equilibrium) ratio of net foreign assets of the central bank to the domestic credit component of base money. This parameter is a function of the parameter "a" of equation (4) and varies positively with the latter; that is $d\alpha/da > 0$. The Union's central bank can influence α by influencing the attractiveness of the kala and of domestic commodities and factors relative to foreign assets and goods. This it can do, for instance, by policy measures which alter the ratio PE_k defined as:

$$PE_k = \frac{e_{ki}}{P_f/P} \quad (7)$$

where e_k is the number of units of some numeraire currency per unit of the kala, P_f is some analytically relevant foreign price level and P is the Union's price level. For the purpose of equation (7), e_k is measured in index number form, viz., e_{ki} .

The money demand equation can be specified in many ways. For our purpose it is useful to express it in the following stock equilibrium form:

$$MO^d = kPy \quad (8)$$

where y is the real output of the Union (i.e., the Union real GDP) and K is a parameter that measures the desired ratio of money to income by the economic agents in the Union. Again it is convenient to treat this parameter as a constant here while recognizing that empirically it may not be. Using equations (6), and (8), and noting that the stock equilibrium condition $NFA^d = NFA$ implies $MO = MO^d$, we have, in stock equilibrium,

$$DCH = \left(\frac{kP}{m(1+\alpha)} \right) \cdot y \quad (9)$$

Hence

$$\frac{DCH}{y} = \left(\frac{kP}{m(1+\alpha)} \right) \quad (10)$$

or

$$\frac{DCH}{Py} = \left(\frac{k}{m(1+\alpha)} \right) \quad (11)$$

The equations (9)-(11) give the domestic credit of the Union's central bank that is consistent with the real GDP, Union price level

(target?), and portfolio behavior of economic agents of the Union. The flow equilibrium analogue of the above system is obvious.

One of the benefits that is expected to result from monetary union is the increase in the usefulness of money both as a medium of exchange and as a store of value. This will tend to increase k ; that is, k of the Union as a whole will tend to be greater than the weighted average of the k s of the regions before the Union. As can be seen from equation (11), given m and α , the Union can take the monetization gain in the form of lower price level, or in seigniorage to the central bank from printing k (i.e., greater DCH), or some combination of the two. That is, given m and α , the Union can have a lower P than on average, would have been in the regions, and/or the Union can have a greater DCH relative to P_y than on average in the pre-Union; this, of course, would be a once-for-all gain from forming the Union.

III. Policy Coordination

With the creation of economic and monetary union the regions will have to coordinate a number of macroeconomic policies. Such coordination will be necessary for three basic reasons. First, competition among regions may lead to suboptimal results for a number of variables. Second, many questions of monetary and fiscal management involve policy instruments and measures applied at the Union level. Third, because of regionalism, xenophobia or inertia, mobility of factors may not be sufficiently responsive to relative prices and rentals; i.e., there may be nonpecuniary obstacles or hindrances to factor mobility. A complete analysis of all the relevant issues involved in these three broad areas will not be made in this paper but a flavor of the main issues will be given.

1. Forestalling suboptimal equilibria

We have already seen that with free factor mobility and with competition among regional governments, the ratio G_E/Y may be lower than is socially optimal and domestic public debt servicing terms may be more onerous with respect to both the rate of interest and the maturity of loan instruments.

An important reason for the possible suboptimal sizes of governments (G_E/Y) is, as we have seen, possibly suboptimal G_R/Y . Regions may, therefore, have to agree on tax rates on income as well as on commodities. Obviously the simplest approach is to have uniform tax rates (income and excise) throughout the Union. Where there are no nonprice hindrances to mobility of factors this would seem to be an optimal approach to the problem. The issue of nonprice obstacles to mobility shall be discussed later.

It has already been argued that open competition would, on average, tend to drive up the cost of domestically-generated funds to the regional governments. These governments may, therefore, find it to their advantage

to coordinate the terms offered on securities. If, for instance, identical terms are offered, then, given the wealth of the economic agents and the fraction of it they want in the form of government securities, the shares of the market would tend to depend on the regions' relative creditworthiness in the estimation of savers. If governments meet their debt service payments regularly and on time, such creditworthiness would tend to vary strictly with objective economic criteria, e.g., the likely evolution of government revenue and of expenditures other than for debt service. In such a situation the shares of the securities market obtained by the regions would be efficient. It would seem, therefore, that in addition to coordination to set similar terms on their security issues, the governments must meet their debt service payments regularly and on time.

If the aggregate saving function is highly interest-inelastic, substantial increases in the supply of new government securities, given coordination on interest rate terms, could have sizable effects on interest rate levels in the Union, crowding out a significant fraction of private investment. In addition to coordinating the debt service terms for their securities, the governments may, in addition, find it advantageous to coordinate the volume of such issues. This would be done with a view to ensuring either some target general level of interest rates or (what amounts to the same thing) that no more than a certain share of aggregate savings be absorbed by new government securities. Although the distribution of shares between the governments would become somewhat more difficult, objective criteria could be brought to bear on the issue. By way of example, one useful criterion would be the relative size of government revenue over some time period.

Coordination may be found useful with regard not only to domestic but also to external borrowing and debt. Before the formation of the Union, the regional governments in servicing their debt had both a transfer or exchange rate problem and a taxation problem. But with the Union the transfer or exchange rate problem becomes a joint (i.e., Union) problem and each region has only a taxation problem. If monetary, credit and exchange rate policies at the Union level are appropriate, then if regional governments can finance, through their budgets, the domestic currency equivalent of the debt service, the central bank of the Union will have the foreign exchange available to make the transfer.

If because of budgetary problems a regional government accumulates arrears on its foreign debt service, this would put downward pressure on the exchange rate of the Union currency; the fact of the arrears accumulation means that the ratio of absorption (domestic expenditure) to income (output) is too high for the Union as a whole given the portion of their savings which foreigners want to lend to the Union. The depreciation of the exchange rate for the *kala* induces a decline in absorption relative to income and in real interest rates. The region whose government is not

in arrears is forced to adjust, in the form of increased saving, helping to finance the "excess" consumption or investment of the region in arrears. In other words, the government in arrears is able to raise additional funds domestically by borrowing from the nonbank public to pay off its arrears.

Coordination of foreign borrowing and debt would then be guided by the rule that there should be no accumulation of arrears on foreign debt. As a consequence, not only will it be useful, as in the case of domestic debt, to coordinate the terms (interest and principal repayment) on foreign borrowing but direct or indirect limits on the magnitude of such borrowing may be necessary as well. There are a number of objective criteria which can be utilized in the process of limiting foreign borrowing. In this author's view, an interesting control variable is the ratio of government borrowing abroad to the region's GDP over some period, say three to five years. This could involve setting sublimits for the ratio of government deficits (G_D) to the region's overall GDP since for each region:

$$\frac{G_{bf}}{GDP} = \left(\frac{G_D}{GDP} \right) \cdot \left(\frac{G_{bf}}{G_D} \right) \quad (12)$$

It must be made clear that the G_{bf}/GDP ratio need not be identical for the regions. It would seem reasonable to propose that the ratio set for each region depend on, inter alia, the terms on foreign borrowing, the ratio of government revenue to GDP expected during the period, as well as the ratio of debt service already due (DS) to government revenue. That is,

$$\left(\frac{G_{bf}}{GDP} \right)^d = \frac{G_{bf}}{GDP} \left[\left(\frac{G_R}{GDP} \cdot \frac{DS}{G_R} \right), r_{df} \right] \quad (13)$$

where the desired or agreed G_{bf}/GDP for a region is considered a function of the DS/GDP ratio anticipated on old debt and of the effective interest rate (r_{df}) on future debt.

2. Union-level policy instruments and measures

There will be macroeconomic decisions that will be taken and implemented by institutions and bodies operating at the level of the Union. We shall discuss these under a) decisions of a medium- and long-term nature and b) short-term macroeconomic management.

a. Decisions of a medium- and long-term nature

Such decisions will basically relate to the following: (1) the common external tariff, (2) exchange regime and restrictions, (3) foreign

asset management and (4) the distribution of seigniorage from printing the kala, the Union currency.

Regarding the common external tariff two types of questions will be important, viz., the level of the tariff and the distribution of revenues from it. Deciding on the level of the tariff will involve the same considerations as for the regions before the Union and will utilize aspects of the theory of effective protection, infant industry considerations and industrial development policy, which, in any case, are outside the immediate focus of this paper. The distribution of the tariff revenue will have budgetary implications for the members of the Union and it would seem desirable that objective criteria or rules be brought to bear on the question. One obvious approach would be to have a common customs agency collect the tariff revenue; a criterion could then be to link shares in the tariff revenue directly with shares in imports of the Union as a whole. A rigid relationship between shares in Union imports and shares in Union tariff revenue could of course be modified to incorporate various political elements which cannot be fruitfully discussed in this paper.

The issues related to the exchange regime and restrictions will be, for the Union as a whole, similar to those for the regions before the Union. In the area of exchange rate there will be the question of choosing between fixed but adjustable peg, independent floating, and crawling peg. If a fixed rate is chosen, there is the question whether to peg to a single currency or to a basket. If independent floating is chosen, the nature of intervention policy must be decided. If a crawling peg is preferred, the indicators for exchange rate changes and the magnitude and frequency of the crawl become important issues. For the most part the fact of the Union does not alter the nature of the debates in any significant degree. ^{1/} But it does appear that since, with the Union, the currency area is now larger, relative to the world economy, the case for independent floating is enhanced relative to that for fixed but adjustable peg or for crawling peg. This, of course, by no means establishes a case for independent floating.

As regards exchange restrictions, again no new issues emerge. The questions relate to what, if any, restrictions should be maintained on current payments and transfers, and what, if any, on capital transfers. But it is the view of this author that a case can be made for a freer exchange system with the Union than would have prevailed, on average, in the regions before the Union. Since a reason for forming the Union is to increase the size of the market, thereby attracting foreign investment and encouraging industrialization, the freer the exchange system the more

^{1/} For an understanding of the issues see Artus and Young, Dornbusch, Johnson, Kreuger, and Williamson (1981, 1982).

likely it is that this general aim will be realized. In addition, restrictions always create frictions among groups with divergent interests, given differential gains and losses. In a Union such friction may become interregional, jeopardizing the long-term arrangement. The greater the freedom of international payments and transfers, the less likely and/or less intense should be such interregional frictions.

The management of the foreign assets of the banking system will be the responsibility of the central bank of the Union. In the context of a less developed country, such as in West Africa, one would expect that surrender requirements for earners of foreign exchange would be in operation, so that the management of the (liquid) foreign assets of the system can be centralized within the banking system in general and the central monetary authority in particular. An important aspect of this management would be the content of the portfolio. It would seem advisable that the central bank of the Union be allowed to manage this portfolio on strict economic grounds alone.

One of the gains in forming the union would be the economies of scale from pooling the foreign reserves of the previously independent regional central banks. From the viewpoint of economic policy the economies obtained from pooling reserves enable the monetary authorities to maintain a higher ratio of domestic credit component of high-powered money (DCH) to their net foreign assets and/or to support a higher exchange rate (e_k) for the Union currency. Precisely in which form the gains are captured would depend not only on the asset preferences of the private sector and of regional governments but also on the overall policy objectives of the Union monetary authorities.

The seigniorage from printing the union currency will now accrue to the central bank of the Union. Some rule(s) must be established for distributing the seigniorage among the regions. Basically this boils down to the question of how the profits from the central bank's operation shall be distributed between the regional governments, after deducting that portion which it is agreed the central bank can retain. A logical starting point would be to distribute such seigniorage according to relative regional GDP, under the assumption that the ratios of currency to GDP tend on average to be the same in the regions. But, political considerations may lead to a decision to make the share of the smaller region (in our case of two regions) greater than what would accrue to it purely on the GDP criterion.

b. Short-term macroeconomic management

Short-term macroeconomic management of the economy will have to engage the energies of the central bank of the Union with the assistance and/or guidance of some Union economic management body. Let us see

briefly the nature of the problem in its skeleton form. Consider the following simple framework:

$$m = m_0 + m_1 (r_{cb}) \quad (14)$$

$$\frac{DCH}{P \cdot \bar{y}} = \frac{k}{m \cdot (1+\alpha)} \quad (15)$$

$$N^d = N \left(\bar{y}, \frac{P}{W} \right) \quad (16)$$

$$NFA^d = NFA (DCH, e_k) \quad (17)$$

In equation (14) the money multiplier is considered a linear function of r_{cb} which represents the minimum reserve requirement of the central bank and/or interest rates on central bank rediscounting. The parameter m_0 takes account of other influences on m . Equation (15) is equation (11) repeated for convenience. Equation (16) states that the actual employment N is equal to the desired employment N^d ; in that equation, y is real output (real GDP), and W is the nominal wage level. Equation (17) gives the equilibrium condition that the desired level of NFA must equal the actual level. Although the system has been specified in level form, it is often better to think of the variables as operating in rate of change or logarithmic form.

In the above system, y and W are considered exogenous to the monetary sector, while both k and α are treated as constants. The targets of short-term macroeconomic management relate to the level of employment and the net foreign assets of the banking system, or to the rates of change of these variables. Short-term equilibrium therefore occurs when the actual levels (or rates of change) of these variables are equal to their desired levels (or rates of change). The monetary policy variables are r_{cb} , and DCH.

The solution of the system (14)-(17) is obvious. For any given r_{cb} , equation (14) determines m while equations (15) and (16) together determine P and DCH such that $N = N^d$. Finally, equation (17) determines e_k such that $NFA = NFA^d$. All of this assumes given wealth, saving and investment behavior of the private sector as well as the net capital inflows from abroad and the resource endowment of the Union.

Policy coordination at the highest level will be required in the fixing of the desired levels of employment and net foreign assets. Given these objectives, the central bank uses its reserve requirement (and/or rediscount rate) together with its policies for ensuring a certain DCH, including lending policy to the governments of the regions, to ensure that the desired N and NFA are attained. The regional governments themselves

will be instrumental in this process, because they will have some influence over y through their investment and other real sector policies. If the Union authorities find it difficult to fix N , they may instead decide to fix P ; in that case the desired P will be a final objective of the authorities and N will be determined endogenously. Whatever the case, the decisions involved are quite complex but manageable.

3. Imperfect mobility and limited flexibility of factor prices

When factors of production take into account nonpecuniary costs and benefits in determining their mobility, the equalization of factor rentals and prices will not occur even after adjustments for transactions, information and transport costs. Economic policy for economic integration cannot ignore such nonpecuniary factors hindering mobility. These factors include inertia, xenophobia and regionalism and could be particularly important in the case of labor. Alternatively, factor prices and rentals may be fairly sticky, particularly in a downward direction. Again, (net) factor price equalization is precluded.

When there is both imperfect mobility of factors and low flexibility in their prices and rentals, special problems of depressed areas and unequal gains accruing to different sets of people can ensue, raising important monetary and fiscal questions. We shall not dwell at length on these issues but only highlight their nature.

In terms of detail, once it is decided to address the adverse consequences of the above rigidities, there are a large number of policies that could be introduced and implemented. Analytically, such policies can be grouped into three sets. First are additional incentives to the relatively immobile factors to move. These would include subsidization of moving expenses, as well as settlement allowances. Second are additional incentives to reduce the net outflow of mobile factors from areas or region(s) with relatively immobile factors; these would include, for instance, tax and subsidy schemes designed to encourage the inward flow of mobile factors and discourage the outward flow. Thirdly, there are supplements to the (relatively low) incomes of the relatively immobile factors. Such supplements would include lump-sum income subsidies in the form of general purchasing power, and the provision of various services at highly subsidized rates.

In terms of the focus of this paper, the point is that these taxes, subsidies and incentive schemes will have direct budgetary effects and/or involve (directly or indirectly) credit creation through the banking system. Nevertheless, the required monetary and payments analysis easily follows from the previous discussion in this paper.

IV. Concluding Remarks

A number of special issues and problems of a macroeconomic nature arise in economic integration.

First, there are the issues related to the conversion of regional currencies into the common currency (e.g., assets to be given in return for the union currency, the exchange rates between the local currencies and the Union currency, and whether and to what extent any Union currency should be loaned out to regional monetary agencies to help support exchange rates during the transition).

Second, from the point of view of economic welfare it has been argued that, even leaving aside the dynamic effects, the Union will raise the real GDP of the citizens by the altered reallocation of resources. In addition, by increasing the real demand for money and reducing foreign reserve "need", the Union is given the opportunity to attain a lower price level, and/or higher base money relative to GDP and to net foreign assets, than was possible in the regions before the Union. A significant redistribution of wealth may also occur with the Union, but its monetary effects are hard to predict in abstract.

Third, the Union cannot help being caught up in various issues connected with the "optimal" sizes of governments, and the coordination of tax rates and debt policies of the regional governments.

Fourth, overall objectives for employment or the price level as well as for net foreign asset holdings of the banking system must be set by some economic coordinating body, and the central bank of the Union will then have to be able to use its instruments to help assure the targets that are set. Instruments of the central bank considered were the level of the domestic credit component of high-powered money, minimum bank reserve requirements, and rediscounting.

Fifth, it was argued that coordination of policies and measures of a medium- and long-term nature would also have to occur in the areas of common external tariff, exchange regime and payments restrictions, the management of the portfolio of foreign assets and the distribution of seigniorage from printing the Union currency.

Finally, mention was made of the nature of tax, subsidy and incentive schemes that may have to be instituted when factor price equalization is precluded by nonprice hindrances to factor mobility and/or by factor price rigidity. Such schemes will indeed have monetary and fiscal implications that must be incorporated into the general monetary analysis.

References

- African Department Study Group, "Financial Arrangements of Countries Using the CFA Franc," Staff Papers, International Monetary Fund (Washington), Vol. 16 (1969), No. 2, pp. 289-387.
- Artus, Jacques R. and John H. Young, "Fixed and Flexible Exchange Rates: A Renewal of the Debate," Staff Papers, International Monetary Fund (Washington), Vol. 26 (1979), No. 4, pp. 654-696.
- Bhatia, Ratttan J., "Factors Influencing Changes in Money Supply in BCEAO Countries," Staff Papers, International Monetary Fund (Washington), Vol. 18 (1971) No. 2, pp. 389-396.
- Dornbusch, Rudiger, "Exchange Rate Economics: Where Do We Stand?" in Bhandari, Jagdeep S. and Bluford H. Putnam (eds.), Economic Interdependence and Flexible Exchange Rates, M.I.T. Press 1983, pp. 45-83.
- ECOWAS, Treaty of the Economic Community of West African States, 1975.
- Ishiyama, Yoshide, "The Theory of Optimum Currency Areas: A Survey," Staff Papers, International Monetary Fund (Washington), Vol. 22 (1975), No. 2, pp. 344-83.
- Johnson, Omotunde E.G., "The Exchange Rate as an Instrument of Policy in a Developing Country," Staff Papers, International Monetary Fund (Washington), Vol 23 (1976), No. 2, pp. 334-48.
- Krueger, Anne O., Exchange-Rate Determination, Cambridge University Press, 1983.
- Mundell, Robert A., "A Theory of Optimum Currency Areas," American Economic Review, Vol. 51 (1961), No. 4, pp. 657-65.
- _____, "Uncommon Arguments for Common Currencies," in Johnson, H.G. and A.K. Swoboda (eds.), The Economics of Common Currencies, (Harvard University Press 1973), pp. 114-132.
- Nana-Sinkam, Samuel C., Monetary Integration and Theory of Optimum Currency Areas in Africa, The Hague: Mouton Publishers (1978).
- Nowzad, Bahram, "Economic Integration in Central and West Africa," Staff Papers, International Monetary Fund (Washington), Vol. 16 (1969), No. 1, pp. 103-132.

Renninger, J.P., Multinational Cooperation for Development in West Africa, (Pergamon Press 1978).

Tower, Edward and Thomas D. Willett, The Theory of Optimum Currency Areas and Exchange-Rate Flexibility, Special Papers in International Economics No. 11, May 1976, Princeton.

Williamson, John (ed.), Exchange Rate Rules: The Theory, Performance and Prospects of the Crawling Peg, (New York: St. Martin's Press 1981).

_____, "A Survey of the Literature on the Optimal Peg," Journal of Development Economics, Vol. 11 (1982), No. 1, pp. 39-61.