Diversification in Africa in a macroeconomic perspective

Galy, Michel

International Monetary Fund, Washington D.C., USA

13 February 1995

Diversification in Africa in a Macroeconomic Perspective

February 13, 1995

Contribution to the UN Inter-Agency Workshop on policies Conducive to the Diversification of African Economies

M. Galy [1]

1. Introduction

The most conspicuous feature of the African economies over the past decade has been their disappointing performance in terms of economic growth and per capita income, as compared with other developing countries in Asia or South and Central America (Table 1). The lack of economic diversification is said to have been in part responsible for these poor results.

There is *a* consensus that the inward-looking strategy and interventionist policies adopted by most African countries are at the root of their present difficulties. Comparison with the East Asian newly industrialized countries (NICs) suggests that strategies favoring an outward-looking, market-oriented, and open economy are more conducive to sustainable economic development than the inward-oriented policies pursued in most African countries. The accompanying progress of NICs toward macroeconomic stability (Table 2a) has also enhanced their economic growth. For example, the implementation of widespread structural reforms, combined with the pursuit of internal and external equilibrium, produced an average annual growth rate in

1/ Mr. Michel Galy is the International Monetary Fund Representative in Cameroon.

NICs that was 5 percentage points higher than that in African countries over the period 1985-93. Many other countries have adopted similar policies and achieved substantial economic growth despite the recent slump in industrial countries. For instance, among 126 developing countries, the 42 best performers were able to increase their average annual GDP growth from 5.8 percent over 1971-83 to 7.4 percent over 1984-93. In the meantime, the growth of the 42 poorest performers declined from 4 percent to 1.4 percent over similar periods (Table 3).

Although the above explanations for economic success are straightforward, there is also evidence of a positive link between economic growth and diversification, as suggested in the new growth theory initiated by Romer (1986), and therefore between outward-looking, market-oriented policies and diversification. Viewed from this general perspective, economic diversification and its contribution to development in Africa can best be analyzed as a consequence of trade liberalization implemented within the framework of structural reforms and sound macroeconomic policies. In such a context, productive factors would be endogenously allocated to diversified production according to the neoclassical Hecksher-Ohlin-Samuelson (HOS) paradigm of comparative advantage. This would maximize the gains from international trade not only for African economies but also for the world community as a whole. To date, many African countries have been reluctant to follow such a course, as they are not wholly convinced that policies relying on the effectiveness of

the comparative advantage model can foster sustainable economic growth in developing countries. On the contrary, they often assume that the law of comparative advantage can push them even more toward the production and export of primary products, thereby enhancing economic instability and contraction, which are related to persistently declining terms of trade, and unstable export markets. Their concerns have been heightened by the fact that an essential part of government revenue in most African countries stems from international trade, which provides for an additional structural weakness in fiscal policy. African countries believe, therefore, that some kind of interventionist policies must be implemented to move their predominantly agricultural economies to the industrialized stage.

Given these divergent views, this paper has been prepared for the Inter-Agency Workshop in order to examine the interaction between diversification, economic growth, and macroeconomic and structural policies, and to estimate the extent to which the lack of diversification has impinged on growth in Africa over the past decade.

Section 2 reviews the articulation of economic diversification, international trade and growth within the context of the HOS paradigm and the endogenous growth theory. Section 3 compares the degree of trade specialization between African countries and other countries and its possible impact on economic growth, in particular owing to the decline in the terms of trade over the past decade. Section 4 presents empirical evidence concerning the link between

diversification and economic growth. Section 5 concludes that diversification can affect long-term growth, but that it should stem from an endogenous process that depends on structural and macroeconomic policies rather than from interventionist policies.

2. Economic diversification, international trade and growth

To contain the adverse effects of the concentration of production in a few primary commodities on the terms of trade and growth, African governments relying on the development theory submit that new productive capacities should be oriented toward manufacturing industries, even if this orientation is not consistent with the comparative advantage principle. This argument constitutes the basis for the proposal in favor of diversification, be it horizontal or vertical. This section reviews this issue in the light of the HOS paradigm and the new theory of economic growth.

The development theory places itself in a dynamic perspective and focuses on the gains that a developing country can expect from the stimulus of international trade through the development of diversified exports, import of advanced industrial products and technical assistance. The development theory, which is not an equilibrium approach, states that factor prices are not necessarily consistent with marginal costs in developing countries, and that the simultaneous development of related industrial sectors provides synergy and external economies owing to the vertical or horizontal interdependence among these sectors.

The HOS comparative advantage paradigm conflicts with the development theory on various aspects. The comparative advantage principle, assuming similar consumption preferences and same technology in all countries, states that domestic production and trade of a given commodity stem from the comparison of the international price of the commodity with its domestic opportunity cost. At the equilibrium, and assuming perfect competition, the opportunity cost reflects marginal costs of the factors of production and is equal to the commodity market price. Under these assumptions, comparison between the international and domestic prices of labor, capital and natural resources can be used to determine where lies the comparative advantage of a given country. The main conclusion of the HOS model is that a country will benefit from international trade by producing commodities requiring an intensive use of its relatively abundant and therefore cheapest factor of production. Hence, developing countries should specialize in labor intensive production and export primary products. Under the HOS paradigm, a developing country's attempt to diversify into the production of new goods requiring a more intensive use of scarce domestic resources --i.e. capital-- than justified by the efficient diversification frontier, will entail a lower relative return on abundant resources --i.e. primary products and labor--, which is called for to insure their full employment, and therefore a lower level of economic welfare and output (Derosa, 1992).

By contrast to the HOS paradigm, the new growth theory by assuming an endogenous technological progress gives support to some

aspects of the development theory. Basically the new growth theory initiated by Romer (1986) assumes that the explanatory variables of economic growth are influenced by past cumulative investment experience as in Arrow's learning-by-doing theory (1962) and rejects therefore implicitly the HOS assumption of identical technology among countries. Romer and his followers, concerned by the apparent lack of convergence in per capita income between developing and industrialized countries, have stressed the direct or indirect influence of various endogenous factors on the apparent productivity of labor and capital. Their analyses have led to the development of various innovation-based theories of economic growth, highlighting the role of human capital, technology, international trade, and macroeconomic policies in achieving sustainable economic growth. Within this framework, increased economic diversification in developing countries can affect productive factors, boost technical progress, and enhance economic growth for at least four reasons: (i) because it can limit the variability and decline in the terms of trade, economic diversification can boost investment and related growth opportunities offered by international trade; (ii) because product innovation and differentiation tend to expand the knowledge base in the economy, diversification can enhance the quality and productivity of human capital; (iii) because profit-seeking entrepreneurs in a context of monopolistic competition have an incentive to produce new goods, since they are likely to be highly profitable in the initial stage, diversification tends to provide for a higher rate of capital

accumulation; (iv) because a diversified economy has a greater flexibility than a highly specialized economy, diversification allows the economy to shift at a lower cost to sudden and drastic changes in trade conditions, related, for instance, to a substantial adjustment in the exchange rate.

3. Empirical evidence on trade specialization and terms of trade

It is claimed that the adverse specialization of trade in Africa and its lack of diversification makes African economies highly vulnerable to the deterioration and variability in their terms of trade. This section provides some evidence on this issue, indicating in particular that other developing countries have often undergone the same deterioration in their terms of trade as African countries but have fared much better in terms of growth than African economies.

Exports of African countries 1/ are concentrated in agricultural and mineral products priced in international markets in U.S. dollars or pounds sterling. Agricultural exports account for 40 percent of total merchandise exports and are concentrated in a limited number of cash crops (cocoa, coffee, tea, sugar, cotton, and tobacco). In contrast, the share of agriculture in total exports of developed countries is less than 10 percent, and a single product rarely represents more than 15 percent of the total. Imports of African countries are made up of diversified industrial products whose prices are denominated in the main currencies of industrial countries. Like

---

1/ As defined in the IMF World Economic Outlook.

other developing countries, African countries have been confronted over the past decade by a systematic deterioration and instability of their terms of trade (Table 2b), which seems to be related to certain structural and cyclical factors. The structural component of the decline and instability can be accounted for by three factors. First, the sensitivity of the demand for primary commodities to activity is lower in the long run than that for manufactured goods. Therefore, with the secular increase in world income, the demand for manufactured goods expands faster than the demand for primary commodities, leading to a persistent decline of their relative price in terms of manufactured goods. Second, as claimed by Raoul Prebisch (1950), primary commodities generally have a strong degree of substitutability in the long term. This has been enhanced by the technological innovations that have resulted in the development of synthetic products. Market structures have therefore tended to be more competitive for primary commodities than for manufactured goods, enhancing the deterioration of the relative price of commodities. Third, it is claimed that the U.S. dollar-denominated price of primary commodities is highly unstable, confronting African countries with large swings in their export earnings and in national income. This is a reflection of the generally inelastic character of demand for primary commodities in the short term so that any sudden change in supply--resulting from discoveries of natural resources, climatic vagaries or technological improvement--entails a disproportionate adjustment in prices. Besides, the large fluctuations of the U.S.

downward correction of the U.S. dollar in 1985, accentuated their deterioration. 1/

In spite of these structural and cyclical factors, empirical studies provide a limited support for the proposal that export earnings have declined more or been more unstable in African countries than in other, more successful, developing countries or even in some industrial countries over the past twenty years. As shown in Table 2b, the terms of trade in African countries actually improved by 2.0 percent a year over the period 1976-85, but then declined by 3.3 percent annually over the period 1986-93. During the latter period, the terms of trade deteriorated even more in the Western Hemisphere, and Middle Eastern and European developing countries. This did not prevent GDP per capita in these regions from growing by some 1.4 and 2.0 percentage points a year, respectively, faster than in sub-Saharan Africa (Table 1). It is true, however, that in the case of newly industrialized countries, the deterioration in the terms of trade may actually have contributed to an improvement in competitiveness and brought about higher economic growth, owing to the structural characteristics of their economies.

By the same token, the assertion concerning the high instability of export prices in Africa should be considered with caution. While

---

1/ This would be the case, in particular, for members of the franc zone, as their exports are mainly denominated in US dollars while their imports are denominated in european currencies.

there is evidence of such instability in the short term, 1/ in the long run it does not seem to have been higher than that of the U.S. dollar-denominated export prices in other regions of the world. In fact, sub-Saharan Africa actually experienced the lowest export price variability, along with Asian developing countries, over the period 1960-93 (Table 4, and Charts 1 and 2).

4. Empirical evidence concerning diversification and growth

The adverse trade specialization of Africa might have contributed to a more significant deterioration in its terms of trade than in other regions over the past decade. How this may have impinged on its economic development is estimated by simulating an increase in the terms of trade by 10 percent, using a macroeconomic model presenting the main structural characteristics of an economy such as that of Cameroon. The results presented in Table 5 and Chart 3 indicate that GDP would increase by about 0.9 percent a year on average over the five-year period following the terms of trade impact. On the demand side, the main factors responsible for this improvement would be a sustainable increase in investment and consumption; by contrast, the initial gain in export volume would tend to vanish after three years. Applying this rough estimate to the terms of trade contraction recorded by sub-Saharan Africa over the period 1986-93 suggests that

---

1/ Farmers can also to some extent protect themselves against the consequence of short-term price fluctuations by securing their export earnings through transactions in the commodities and foreign exchange in future and forward markets. It is true, however, that this ability was often limited in Africa by foreign exchange controls.

the loss in economic growth during that period was close to 0.4 percentage point of GDP a year, or about 20 percent of average GDP growth over the period. This implies that the terms of trade impact has not been so overwhelmingly important in the performance of developing countries in general, and in African countries in particular, over the past decade.

The relative impact of trade diversification on economic growth can also be approached by estimating a reduced form equation of the production function along the lines of the endogenous growth theory. While there has been no specific attempt to introduce an explicit indicator of diversification in such an equation, its impact on growth can be discerned in the tests carried out by Dervis and Petri (1987), Levine and Renelt (1992), Easterly (1992) and Easterly and others (1993) concerning three central variables that are likely to be affected by product diversification--i.e., investment, export performance, and the terms of trade. Dervis and Petri (1987) estimate the impact of investment, current account deficit, government spending and exports on the economic performance of 20 middle income developing countries. They conclude that the best performers tend to invest and export more than the average, two factors that are likely to be enhanced by product diversification. This result is also strongly supported in the case of the investment variable by the regression estimated in Levine and Renelt (1992) for a sample including 101 countries. Using a similar approach, Easterly (1992) and Easterly and others (1993) test the impact of a wider range of policy instruments

and macroeconomic indicators, including investment and the terms of trade. Estimates for these two variables indicate that an improvement in investment and in the terms of trade equivalent to 1 percentage point of GDP a year would increase the rate of growth of GDP per capita by 0.2 percentage point and 0.8 percentage point, respectively.

5. Conclusion

This paper provides some indirect evidence that the lack of diversification has impinged on economic growth in African countries over the past decade. To a large extent, this lack of diversification reflects actually the absence of a competitive environment and inadequate structural policies. Sound macroeconomic policies and structural reforms that foster capital and labor mobility and trade liberalization constitute therefore a prerequisite to enhance endogenous economic growth. These policies should lay the ground for a self-sustaining diversification process in Africa. In such a context, there would be no need to implement specific development, industrial, or credit policies with a view to promoting diversification in certain sectors. There is no clear justification, in particular, for systematic interventionist policies that aim at shifting productive capacity toward manufacturing industries, irrespective of what is suggested by the comparative advantage principle.

Bibliography

Arrow K. J., "The Economic Implications of Learning by Doing", Review of Economic Studies, 29:pp 155-173, 1962.

Derosa D. A., "Increasing Export Diversification in Commodity Exporting Countries, a Theoretical Analysis", IMF Staff Papers, Vol 39, No. 3, September 1992.

Dervis K., Petri P., "The Macroeconomics of Successful Development: What are the Lessons?" in S. Fisher, editor, NBER Macroeconomics Annual, pp. 211-55; Cambridge, Mass.: MIT Press, 1987.

Easterly W., "Projection of Growth Rates" Outreach 5, Department of Research and Development Policies, World Bank, 1992.

Easterly W., Kremer M., Pritchett L., Summers L. H., "Good Policy or Good Luck: Country Growth Performance and Temporary Shocks", Journal of Monetary Economics, 32(3), 1993.

Heckscher E., "The Effects of Foreign Trade on the Distribution of Income", 1919, reprinted in Readings in the Theory of International Trade, Philadelphia, Blakistan, 1949.

Levine R., Renelt D., "Cross-Country Studies of Growth and Policies: Methodological, Conceptual and Statistical Problems", Mimeo, Washington, D.C., World Bank, 1990.

Ohlin B., "Interregional and International Trade", Cambridge, Harvard University Press, 1987.

Prebisch R., "The Economic Development of Latin America and its Principal Problems", United Nations of Economic Affairs, New York, 1950.

Romer P. M., "Increasing Returns and Long Run Growth", Journal of Political Economy, 94:pp 1002-1037, October 1986.

Table 1. GDP and GDP per capita in Developing Countries

(Annual percentage change, unless otherwise noted)

Region	GDP Per Capita (U.S.)	Population		Real GDP		Real GDP Per Capita	
	1993	1976/85	1985/93	1976/85	1985/93	1976/85	1985/93
Africa	620.0	2.9	2.9	2.4	2.2	-0.5	-0.7
Sub-Saharan Africa	310.0	2.9	2.9	2.6	2.0	-0.3	-0.9
Middle East and Europe	2,880.0	3.0	2.7	3.5	3.7	0.5	1.0
Western Hemisphere	3,080.0	2.3	2.1	3.3	2.6	1.0	0.5
Asia	710.0	1.9	1.8	6.4	7.3	4.5	5.5

Source: IMF World Economic Outlook, May 1994.

Table 2a. Developing Countries: Selected Macroeconomic Indicators

(Annual percentage change, unless otherwise noted)

	Fiscal Balance (% GDP)		Current Account (% GDP)		Investment (% GDP)		Inflation CPI		Broad Money		External Debt (% GDP)	
	1976/85	1985/93	1976/85	1985/93	1977/86	1987/93	1976/85	1985/93	1976/85	1985/93	1976/85	1985/93
Region												
Africa	−4.6	−5.6	−3.2	−1.8	26.4	20.9	16.7	24.1	19.6	22.2	32.3	57.8
Sub−saharan Africa	−6.6	−7.3	−5.1	−5.6	−−	−−	23.7	38.1	24.9	35.1	38.6	80.4
Middle East and Europe	−4.8	−10.8	4.7	−2.5	24.5	21.8	20.1	23.4	27.7	20.8	21.9	31.6
Western Hemisphere	−4.3	−3.3	−2.8	−1.7	23.0	20.7	70.5	219.0	86.9	260.6	35.9	45.4
Asia	−3.2	−3.2	−1.1	0.0	27.6	30.7	7.5	9.2	21.0	22.6	18.0	24.3

Source: Staff estimates.

Table 2b. Developing Countries: Selected Macroeconomic Indicators

(Annual percentage change, unless otherwise noted)

	International Trade Balance													
	VALUE				VOLUME						Trade Diversification			
	EXPORT		IMPORT		EXPORT		IMPORT		Terms of Trade		Horizontal		Vertical	
	1976/85	1985/93	1976/85	1985/93	1976/85	1985/93	1976/85	1985/93	1976/85	1985/93	1976/85	1985/93	1976/85	1985/
Region														
Africa	7.7	1.9	4.9	2.5	1.3	3.1	0.6	0.0	2.0	−3.3				
Sub−saharan Africa	6.5	1.3	4.8	3.6	1.5	2.3	−0.3	−0.3	1.0	−4.1				
Middle East and Europe	4.5	3.3	8.4	3.0	−5.5	6.5	3.9	−0.3	5.6	−5.1				
Western Hemisphere	10.8	4.1	5.4	10.4	5.2	5.2	0.0	8.0	0.6	−3.6				
Asia	14.8	13.7	13.9	13.9	9.3	10.8	8.6	10.9	0.3	−0.4				
Major industrial countries	8.8	8.5	10.1	7.4	5.1	4.6	5.8	5.4	−0.4	2.1				

Source: Staff estimates.

Table 3. Developing Countries: Growth and Other Indicators of Economic Performance

(Annual Percent Change, unless otherwise noted)

	1971-83	1984-93
126 developing countries[1]		
GDP growth	5.1	5.1
Consumer prices	20.2	43.5
Consumer prices (median)	10.9	8.8
Consumer price variability[2]	0.7	0.8
Fiscal deficit (percent of GDP)	-3.8	-4.3
Investment (percent of GDP)	25.4	25.6
Savings (percent of GDP)	24.1	24.3
Export volume	2.2	7.6
Terms of trade	3.1	-1.1
External debt (percent of GDP)	23.3	39.6
Real effective exchange rate[3]	0.1	-3.1
Total factor productivity	0.9	1.7
42 high-growth countries[4]		
GDP growth	5.8	7.4
Consumer prices	12.0	11.5
Consumer prices (median)	10.6	6.7
Consumer price variability[2]	0.8	0.5
Fiscal deficit (percent of GDP)	-2.8	-3.2
Investment (percent of GDP)	25.8	30.1
Savings (percent of GDP)	24.5	29.3
Export volume	8.6	10.4
Terms of trade	0.4	0.1
External debt (percent of GDP)	19.2	29.4
Real effective exchange rate[3]	-1.0	-5.9
Total factor productivity	1.9	3.4
42 low-growth countries[5]		
GDP growth	4.0	1.4
Consumer prices	26.4	53.5
Consumer prices (median)	10.8	10.7
Consumer price variability[2]	0.7	0.8
Fiscal deficit (percent of GDP)	-4.1	-5.3
Investment (percent of GDP)	26.3	20.9
Savings (percent of GDP)	24.1	18.8
Export volume	-0.5	3.4
Terms of trade	4.7	-3.0
External debt (percent of GDP)	26.9	51.2
Real effective exchange rate[3]	-1.9	1.6
Total factor productivity	0.2	-1.1

Source: IMF World Economic Outlook, May 1994.

1/ The data comprise 126 developing countries, except the figures for total factor productivity, are based on the 84 countries for which data were available. For total factor productivity, the figures in the second column refer to 1984-91.

2/ Equal to the absolute value of the ratio of the standard deviation of price inflation to its mean over the specified period.

3/ Because of data limitations, figures in the first column refer to 1981-83.

4/ The 42 (of 126) countries with the highest GDP growth in 1984-93.

5/ The 42 (of 126) countries with the lowest GDP growth in 1984-93.

Table 4. Variability of Export Prices, 1960-93 1/

(In percent change per year)

Africa	16.3
Sub-saharan Africa	10.4
Middle East and Europe	29.2
Western Hemisphere	12.9
Asia	10.0

Source: Staff estimates.

1/ Variability is measured as the standard error of a naive autoregressive model linking the logarithm of export prices to its lagged values.

Table 5. Impact of a 10 Percent Increase in Export Prices on Macroeconomic Aggregates Expressed in Volume and on Domestic Prices

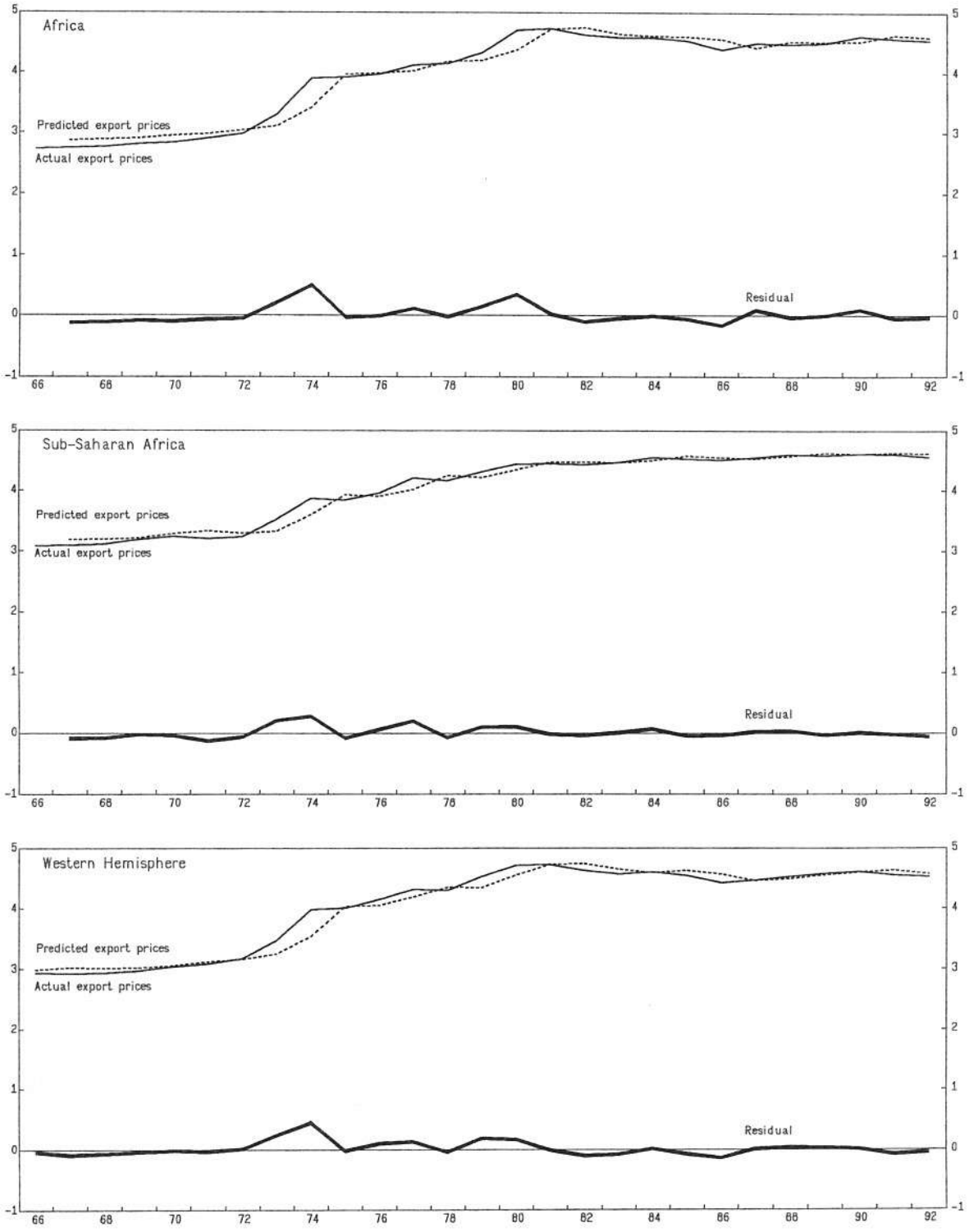
(In percent change)

	GDP	Consumption	Investment	Export	Import	Prices
1993-Q3	0.3	-0.0	2.3	0.1	-0.1	0.2
1994-Q1	-0.3	-0.2	0.3	-0.0	-0.3	1.6
Q2	0.2	-0.1	0.8	0.4	-0.3	1.1
Q3	0.3	0.0	0.7	0.8	-0.3	0.5
Q4	0.2	0.0	0.3	0.7	-0.2	0.4
1995-Q1	0.2	0.1	0.2	0.6	-0.2	0.4
Q2	0.2	0.1	0.3	0.6	-0.1	0.3
Q3	0.2	0.1	0.4	0.5	-0.1	0.3
Q4	0.2	0.1	0.5	0.4	-0.1	0.3
1996-Q1	0.3	0.2	0.6	0.4	-0.0	0.3
Q2	0.3	0.2	0.7	0.3	0.0	0.3
Q3	0.3	0.2	0.8	0.3	0.1	0.3
Q4	0.3	0.3	0.8	0.3	0.1	0.3
1997-Q1	0.4	0.3	0.9	0.3	0.1	0.3
Q2	0.4	0.4	1.0	0.3	0.2	0.3

Source: Staff estimates.

CHART 1

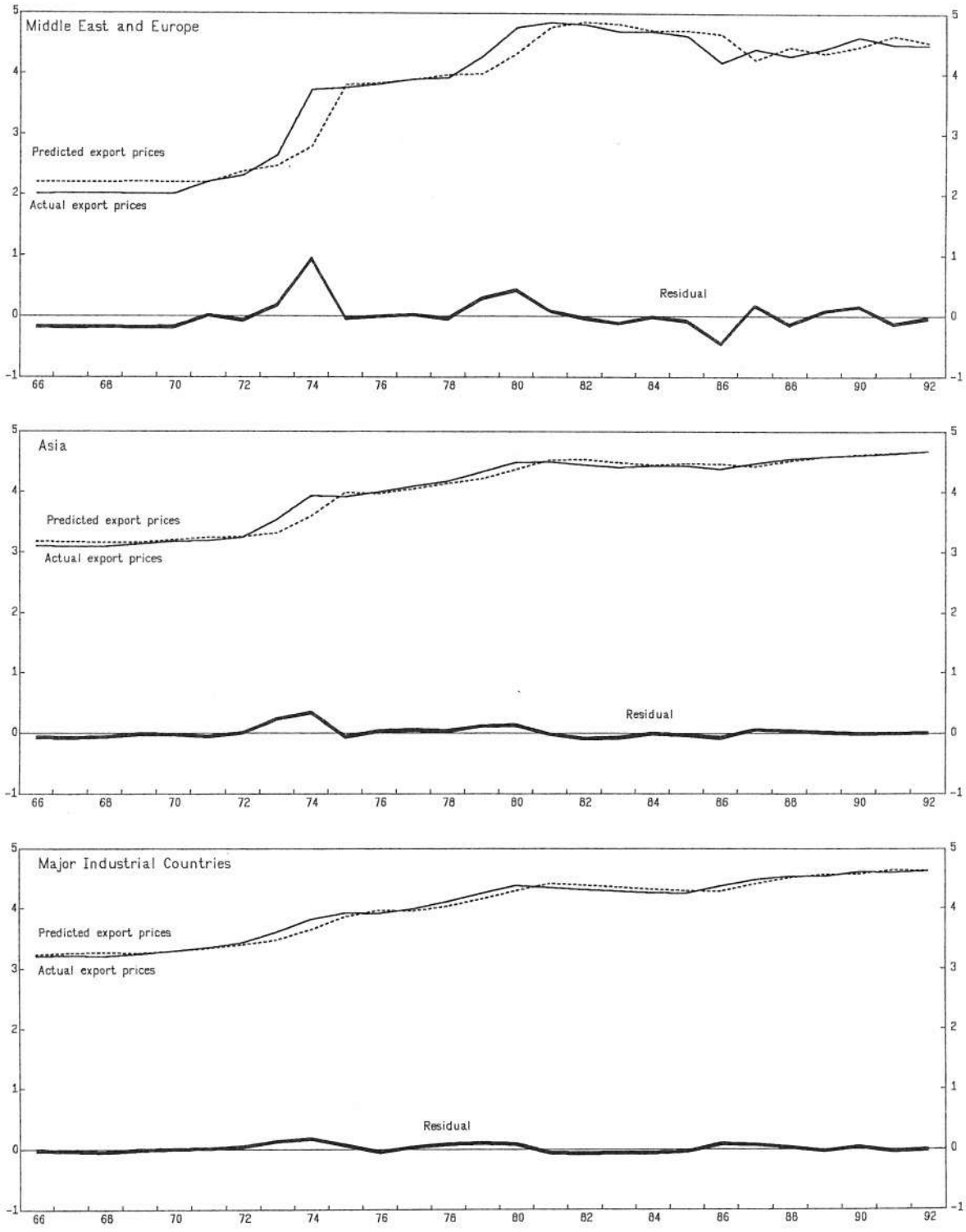
DIVERSIFICATION IN AFRICA
TEST OF VARIABILITY OF EXPORT PRICES, 1966-93
(Logarithmic scale)



Sources: IMF, World Economic Outlook Data Bank

CHART 2

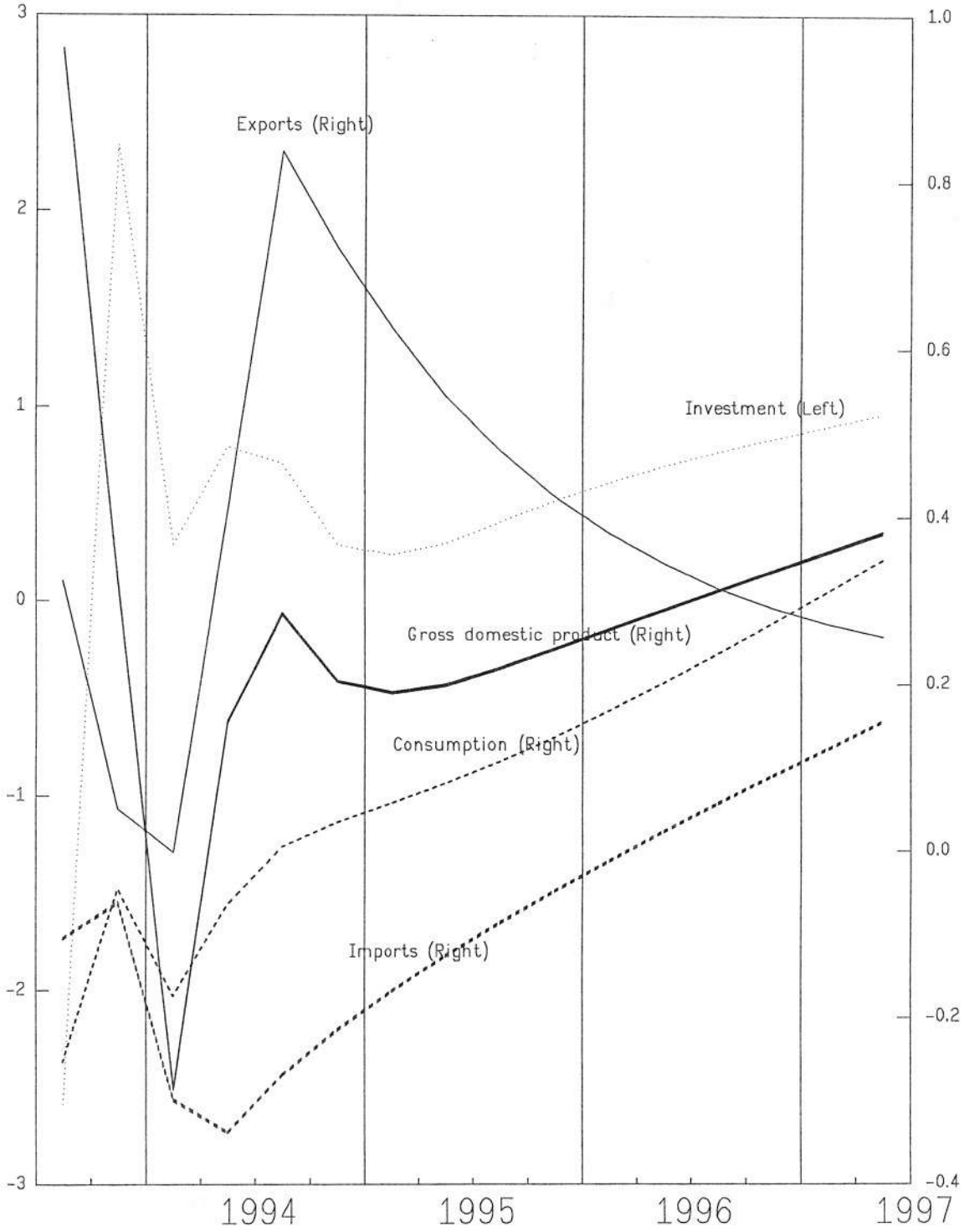
DIVERSIFICATION IN AFRICA
TEST OF VARIABILITY OF EXPORT PRICES, 1960-93
(Logarithmic scale)



Sources: IMF, World Economic Outlook Data Bank

CHART 3

CAMEROON
Impact of 10 Percent Increase in Export
Prices on Macroeconomic Aggregates
(Percent Change in Volume)



1/ Sources: Staff estimates