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INTERNAL WORKING DRAFT

*for discussion*

## **Agro-Related Industrial Development in Africa**

**Structure, Performance and Recommended  
Strategy**

Prepared by the  
Industrial Sector Surveys Team

## I. INTRODUCTION

This paper is concerned to develop a viable industrial development strategy for agro related manufacturing branches.

It begins with a review of the pattern of inter sectoral development in Africa in the context of macroeconomic reform associated with the structural adjustment programmes. This section provides the background for assessing the performance of the agro related branches during the stabilisation period. Branch performance and prospects are discussed in greater detail in a subsequent section. The paper concludes with identifying the salient features of a viable industrial strategy for Africa.

## II. Stability, growth, sectoral balances and structural adjustment in Africa.

Is industrialization necessary? Development policy has been legitimated, de-legitimized and re-legitimated in several different contexts since its inception in the late 1940s. It emerged as a special case - a Keynesianism of the long run - centred on two crucial insights presented by Rosenstein-Rodan (1947) and Lewis (1953) - the need for a big push and the existence of a significant and growing labour surplus in the poor countries. Both of these theories exhibited a pro growth, pro industrialization bias and downgraded the importance of policies for macroeconomic stability and inter-sectoral balance. It was assumed that the pursuit of growth would not jeopardize macroeconomic stability and the emphasis on industrialization would not impact negatively on agricultural productivity. The industrial sector bias of development policy was reinforced by the export pessimism of the Singer-Prebisch model and its emphasis on the need to move out of primary commodity exports. These theories advocated the adoption of the import substitution industrialization (ISI) strategy throughout the developing world. The Latin American countries had in their view during the inter-war period used the ISI approach with considerable success.

But ISI proved ineffective outside East Asia (during the 1960s). This led to an extensive critique of the ISI strategy by Little (1969) and the NIESR scholars (1978). According to these studies inefficiencies associated with ISI created external imbalances and retarded agricultural productivity growth leading to domestic price structure distortions, maldistribution of income and social deprivation reflected in the increase of the absolute level of poverty, the growth of slums and the spread of malnutrition and disease. Many of the problems originated in the continued backwardness of the agricultural sector in the ISI regime countries and a dismantling of domestic price discrimination and tariff structures was seen as essential both for agricultural revitalization and the alleviation of poverty.

The 1980s was the decade of the counter revolution in modern economic theory and policy. A defining characteristic of the New Classical Economics was its mistrust of policy in general. The two key pre-suppositions of the New Classical School - market clearance and rational expectations - led to a fundamental reorientation in macroeconomics leading to a de-legitimization of policies seeking full employment and accelerated growth. It was asserted that if states stepped aside, price distortions would disappear fairly quickly. Full employment and the continued realization of the macroeconomy's productive potential would be a natural inevitable consequence of the pursuit of self interest by rational agents. Deepak Lall argued this case with respect to development policy in 1983 but the re-orientation of development policy had started

to take place half a decade earlier with the inception of policy based lending by the multilateral institutions and the adoption of the Second Amendment to the Articles of Agreement of the IMF in 1978, officially enhancing its policy surveillance role (Singer and Ansari, 1988).

The new development policy fetishized macroeconomic stability. It assumed growth to be a natural/axiomatic consequence of the achievement of stability. Stability was defined in terms of the elimination of imbalances in the fiscal and the current account deficits of individual developing countries. Internal and external balance would be reached by cutting government expenditure, drastic devaluation of the exchange rate, decontrol of domestic price structures and commodity distribution networks, elimination of tariffs and NTB, de-regulation of investment procedures and privatization.

While imbalances have been reduced in most countries which adopted this approach, this reduction has been purchased at the price of falling investment and decelerated growth. Moreover, imbalances keep reappearing: once an adjusting country, always an adjusting country. Even in the OECD countries growth during the past decade and a half has been significantly lower than during the Bretton Woods era (1948-71) and unemployment has been high. Income inequalities have widened and productivity growth has declined. In East and South East Asia, where significant progress has been made, the growth-stabilization dichotomy has never been posed in such stark terms as in the West and the rest of the developing world. In these countries growth of output and foreign exchange earnings has typically outpaced growth of fiscal deficits and external borrowing over the medium term and facilitated the type of structural change usually associated with modernization and development (Chenery, 1978).

Change in the structure of production (the World Bank calls it "sectoral adjustment") is seen to be a consequence of the pursuit of macroeconomic stability. The intercountry experience has been varied. In East Asia there has been an increase in the share of MVA in gross domestic product (GDP). In the developed world the manufacturing sector has contracted and the share of services has increased. In Africa too manufacturing contraction is widespread, although there has been an expansion of the subsistence economy in some years, but on the whole the relative weight of the agricultural sector in GDP has declined and (at least within the monetized documented economy) services have gained at the expense of both agriculture and industry. The service sector now accounts for about 48 per cent of SSA's GDP (up from 38 per cent in 1990). During this period agriculture's share has been reduced from 24 per cent to 20 per cent. The only region in the developing world with a higher service sector share in GDP in 1994 is Latin America (World Bank, 1996).

Has structural "adjustment" been beneficial to agricultural development in the developing world? The evidence is mixed. "Adjusting" countries have decontrolled prices and/or substantially raised the prices of processed crops and this has often resulted in improved inter-sectoral terms of trade for the agricultural sector. But there is no general evidence of an agricultural sector boom in the developing countries. In low and middle income countries agricultural growth declined from 3.1 per cent during 1980-90 to 1.9 per cent during 1990-94. Industrial value added grew at the rate of 3.9 per cent during 1980-90 and at 4.6 per cent during 1990-94. In SSA agriculture grew at the rate of only 0.7 per cent during 1990-94, services grew at more than twice this rate, i.e. 2.4 per cent during this period. Investment remained flat and although exports of cash crops have increased in volume terms, declining international terms of trade have meant that most of the productivity gains have been reaped by the international purchasers of developing country agricultural exports.

While the urban bias inherent in the ISI strategies of the 1950s to 1970s is undeniable, it now seems clear that a mere elimination of this bias is not sufficient to restore vitality to the agricultural sector. The relation between the agricultural and the industrial sector is a complex one. Agricultural sector commercialization - the transition from a subsistence to an exchange oriented production system - has usually been a prerequisite of sustainable industrialization (e.g. the United Kingdom in the 17th and 18th centuries, Germany in the 19th century). This transition is basically institutional - a spread of the enclosure system, consolidation of junker holdings, collectivization, abolition of serfdom, rationalization of holdings, etc. It is significant that the successful East Asian economies - China, Japan, Republic of Korea, Taiwan Province of China - had to implement large scale land reforms in the immediate post colonial period. It is this institutional change which provides the basis for a modernization of the agricultural sector and enhances the market incentive responsiveness of the peasant. Production for exchange generates an investible surplus which can be used

to increase total factor productivity within the sector and produce resources for industrialization. The labour surplus of an agrarian economy will dry up rapidly - in the sense that transfer of resources to industry will reduce aggregate production - unless the exploitation of this surplus contributes to an increase in agricultural productivity itself.

There is a close link between industrial sector growth and agricultural productivity enhancement. From the supply side it is evident that there are two major components of agricultural productivity growth. First and most important is the type of institutional restructuring that goes under the generic label of "land reform". There must be a deliberate policy intervention to create an agricultural production, ownership and distribution system which facilitates a reorientation of producer attitudes. Economic rationality - the quest for profit/utility maximization for its own sake - is not a natural human attribute. It has to be cultivated and nurtured by a specific modernizing agency. The developmental state takes upon itself the responsibility of restructuring agrarian production and exchange relationships with a view to engineering the desired form of attitudinal changes. Many African governments sought such institutional restructuring hoping that it would promote collectivist ethics based on authentic traditions of communal solidarity which would provide a basis for reinvigorated agriculture. These experiments have now largely been abandoned but the consolidation and expansion of the subsistence economy in some African countries show that institutional restructuring aimed at the creation of an incentive oriented agricultural system remains partial and incomplete. The mere withdrawal of the state from the agrarian system - the dismantling of marketing boards, lowering of subsidies, decontrol of prices and investment, etc. - is not sufficient for its modernization and commercialization. If adequate supply side responses to macro policy initiatives are to be generated, institution building within the agricultural sector remains an indispensable task. A central feature of this institution building must be the creation of space for non-farm rural activities capable of providing employment and adding value to agricultural productivity. Non-farm producing units typically play a catalytic role in the process of agricultural modernization and commercialization. Rural industry and new organizational forms (in particularly the town and village enterprises) have played a crucially important role in the agricultural revolution that China experienced during the 1980s.

The second major factor influencing supply side responses is the availability of agricultural inputs, both human and material. Without an increased availability of water, fertilizers, pesticides and agricultural machinery, agricultural productivity cannot be enhanced. Many manufactured products have to be introduced within the agricultural production system and their increased use involves a widespread dissemination of knowledge related to their deployment. Enhancing agricultural supply side response must involve the formation of skills and the assimilation of knowledge which can enhance effective utilization of agriculture's manufactured inputs, on the one hand, and the organization and development of the agricultural production and marketing systems on the other.

In most developing countries the manufacturing sector is also an important purchaser of agricultural products. In the early phases of industrialization in particular, almost all manufacturing takes the form of the processing of agricultural produce. Agro processing industries typically account for over 50 per cent of MVA of the least-developed countries (LDCs) (UNIDO Database). These industries include the food manufacturing, beverages, tobacco, leather, textiles, wearing apparel and rubber products branches. Their development is of importance to agriculture for two reasons: first, their growth stimulates the growth of agricultural income and, second, they permit an access to more profitable segments of export markets with higher income elasticities of demand and with greater scope for product diversification. Of course, the Little-NIESR critique (1970,1978) of post 1950 industrialization asserts, however, that these labour intensive agro processing industries functioned as parasites upon the agricultural sector because inter-sectoral terms of trade were so manipulated that agricultural producers were effectively denied any share in the gains from trade made by developing countries through exporting agro based manufactures.

While there is an important element of truth in this insight, it is not the case that an ISI strategy focused on agro industries necessarily impedes agricultural development. Both the Republic of Korea and Taiwan Province of China pursued such strategies but there is no evidence of agricultural stagnation there or in China (except in some of the crisis years of the cultural revolution). The evidence seems to show that, while these countries discriminated against agriculture during the ISI phase, the level of discrimination was somewhat lower in EPR terms than in countries such as India and Brazil (World Bank, 1994). Moreover, agricultural productivity was enhanced by a more efficient infrastructure, a more effective land reform

programme and higher investment in human capital - all factors partly offsetting the unfavourable terms of trade effects. The result was that, while agriculture's share of GDP, gross capital formation and employment continued to fall in these countries both in the ISI and EOI phases, agricultural productivity rose consistently along with an increase in the application of modern technologies to agriculture.

The scope for integrating agricultural and industrial production structures in developing countries is considerable. In most African countries the share of processed to total agricultural production is between 10 and 15 per cent. In developed countries this proportion is typically higher than 80 per cent. It is thus clear that there is no agriculture *versus* industry scenario that is of policy relevance. Agricultural and industrial development ought to be viewed as complimentary and strategic choices related to the appropriate balance in resource allocation between the two sectors which can optimize macroeconomic transformation given national economic priorities and objectives. This "appropriate balance" cannot be an unintended natural consequence of a single minded pursuit of macroeconomic stability through "getting prices right". The search for an appropriate inter-sectoral balance is an aspect of the search for a sustainable growth, both for the national economy and for its sectors.

The 1990s have seen a renewed theoretical interest in growth. The evidence from many poor countries has shown that macroeconomic adjustment does not guarantee the establishment of a higher growth trajectory for the economy, and in some cases has damaged the prospects for sustained long-term recovery.

Interest in economic growth has also been fuelled by the awareness that poverty remains the single most important challenge to the international community. One of the most important outcomes of the 1980s has been the clear evidence that countries which have grown fastest were also the most successful in reducing poverty and in achieving a more equitable division of income.

At the same time as economic growth has been moving to the top of the current policy agenda, there has been a renewed recognition of the importance of industrial development. The size and rate of growth of the manufacturing sector is the basis on which the service sector develops; manufacturing performance is a critical determinant of a nation's balance of payments performance; manufacturing investment is the key source of technological change and innovation. Hence, manufacturing industry remains central to a nation's economic development and provides the foundation for achieving adequate growth performance.

While empirical evidence has confirmed that higher investment is indeed associated with faster growth, the causal links between capital accumulation and growth are far from clear. Investment by itself is not enough. A variety of factors can "condition" the investment-growth relationship. The causality may run in the opposite direction: higher growth may encourage higher saving and investment, setting off a virtuous circle in which the anticipation of further growth encourages investment, investment supports growth, and increased income raises saving again (Barro, 1987, NBER, 1990).

The "new" growth theory concentrates on exploring the basic investment-growth relationship at a more disaggregated level where the various underlying linkages can be better understood. There have been several lines of investigation. The first has been to consider the composition of investment and the implications for growth. The separation of private investment into construction and equipment (machinery) components has shown that equipment investment contributes more to GDP growth and can be interpreted as confirmation of the continuing importance of manufacturing investment. A second line of research has been to consider the impact of public investment on growth. The evidence for developing countries shows that the accumulation of public capital has a positive effect on private investment (Lall, 1992; Taylor, 1992). The "crowding in" effect of public investment is most evident in the case of the low income developing countries where investment in ports, roads and telecommunications builds the basic infrastructure needed to the profitable operation of private investment projects and therefore has a maximum impact on growth.

A further line of investigation has been to challenge the simplistic notion that capital accumulation alone is sufficient to guarantee long-term growth. Sustained growth depends not only on the accumulation of physical capital, but also on two additional complementary inputs, notably, human capital and technological knowledge (Blanchard and Fisher, 1989). If the concept of capital is broadened to include human capital (that is, the knowledge and skills embodied in the workforce), and the investment made in expanding the stock of human capital is added to investment in physical capital, then the empirical evidence shows a much stronger

relationship between investment (physical and human), and economic growth. The close links between the accumulation of physical capital and technological change are stressed in the new growth theory. If productivity growth is related to the accumulation of physical (and human) capital, and is thereby "endogenized", then the increase in capital will at the same time contribute to technical progress. Recent empirical evidence has confirmed the close correlation between investment and technological progress, which together show a strong relation with economic growth (Krugman, 1994).

The recent literature on the sources of economic growth is only now beginning to discuss the role of government in fostering the policy environment and conditions within which the investment-growth relationship can be fully realized. By exploiting the vast data sets that are now available to researchers for many developing and developed countries, it has become possible to begin to identify the contribution of policy and related variables to economic growth. The currently fashionable "conditional convergence" thesis builds on ideas of Barro, and shows empirically that the original convergence hypothesis can be confirmed, provided that policy related factors are held constant (Woodford, 1994). In other words, it is the cross country differences in government policies that account for the lower capital productivity and growth performance of some countries.

Government policy affects the quality of physical investment, and a large effort at capital accumulation may have little effect on growth if it is investment in activities with low productivity. Public investment may be in low quality projects, as for example with many capital intensive industrial projects undertaken by the public sector in the 1970s. Also, the policy environment set by the government will affect the productivity of private investment. If policy related "distortions" are widespread, the economic value of private investment projects may be very low, irrespective of their sectoral location.

This suggests that the effectiveness with which resources are used is just as important as the volume of investment resources available. If poorer countries are wasteful in their use of resources, then the way to achieve growth is not simply to accumulate more resources, but also to use more effectively those that are already available.

Selective government intervention is needed for strategic, growth-inducing investment. Human capital is widely recognized as an important input for growth. Arguments relating to externalities and market failure point to the need for public sector investment to ensure optimal investment in human capital formation. In East Asia governments invested heavily in creating a well educated and skilled workforce which was a major factor in their remarkable growth performance (Lall, 1992). In the low income countries of Africa and South Asia, market failure is wide spread, and private sector activity is greatly underdeveloped. In these circumstances public sector intervention and investment is needed as a catalyst to stimulate investment and economic growth.

Given the relative unimportance of agriculture in the industrialized world -accounting typically for between 2 and 3 per cent of GDP - it is not surprising that the current literature has little to say on the maintenance of inter-sectoral balance. But clearly this is a key issue for growth / investment SSA countries where up to 70 per cent of the population continue to live in rural areas. If "appropriate" structural balance is not an unintended consequence of the achievement of macroeconomic stability, it must be engineered deliberately by government policy. Policy must focus on integrating agro industrial development and creating the type of sectoral linkages which increase structural complementarities.

But effective policies must be based on a realistic assessment of existing constraints and opportunities. We provide with a resouption of the structural development of agriculture and industry in SSA in the context of the impact of the structural adjustment programmes implemented by almost all SSA countries during 1980-96.

The past decade and a half has been described as the era of structural adjustment for SSA. During this period most African countries instituted structural and sectoral adjustment programmes sponsored by the Fund and the Bank. The overall contractionary impact of these programmes in their initial phase is beyond dispute. GDP per capita growth was negative; gross domestic capital formation remained stagnant and formal sector employment fell. The Fund and the Bank claimed that these setbacks were temporary and in

specific cases where programmes have been rigorously implemented recovery has begun (World Bank 1994). The key elements of a standard structural adjustment programme as implemented in SSA are:

- Reduction of fiscal deficits: This usually involves a sharp fall in government capital expenditure and a slower increase in government revenue through phased introduction of general sales and withholding taxes;
- Restraint on credit expansion especially to public sector enterprises and the phasing out of subsidized credit to small farmers, exporters, small enterprises, etc.;
- Phasing out of subsidies on food, electricity, gas, petroleum and fertilizers;
- Devaluation and an increase in government purchase prices of both cash and food crops;
- Dismantling of minimum wage legislation and trade union collective bargaining structures (especially at the shop floor level) with a view to achieving reduction in real wages and labour market flexibility.

The programmes aim to shift resources from non-tradeable to tradeable sectors. This has implications for the inter-sectoral distribution of resources. The impact of the de-control of commodity prices and of devaluation has been muted due to the pre-reform existence of well established and thriving black markets in foreign currencies and in the commodities the prices of which were subject to control. A significant proportion of consumers were already paying the prices that more or less became "official" after the institution of the reforms (Riddle 1993). Moreover, the impact of price restructuring depends on output price responsiveness and on the existence of a relatively high import elasticity of production and investment. To the extent that output's responsiveness to price changes and its import elasticity are low, the desired change in the pattern of sectoral resource allocation will be constrained. In these circumstances adjustment programmes are necessarily demand constraining and the current Bank/Fund concern to couple stability with growth is essentially an attempt to increase the price and import elasticity of production and investment in adjusting countries. It is interesting to note that this had led not to a questioning of the fundamental premises of the theoretical framework which underlies stabilization policies but to adding an institutional redesigning element to the conventional macro policy framework (World Bank, 1990). For example, virtually no attention is paid by the Fund and the Bank to the burgeoning post Keynesian literature questioning the validity of seeking adjustment through fiscal deficit reduction. In this perspective "meso" policy instruments - policy instruments designed to structure factor and product markets, economic infrastructural institutions (especially marketing boards and communication networks in SSA) and social infrastructural institutions - become important in their own right as compliments to traditional macroeconomic initiatives. Institution building especially at the sectoral level is becoming an increasingly important concern of the multilateral agencies but this concern is tagged on rather uncomfortably to an economic paradigm focused on individualism and on the presumption of "natural" spontaneous evolution of market society.

While institutional redesigning is being experimented with, the primary commitment to the belief in the efficacy of macro policy - especially monetary management - is not in question. All structural adjustment programmes continue to be premised on the assumption that the volume of output and the price level can be regulated through the control of high powered money and the structure of interest rates.

In typical SSA countries structural rigidities abound. The fragile production system has a low capacity to take advantage of free markets and policy liberalization. Farmers do not - some would argue cannot - respond to output price incentives without assured supply of production inputs. Devaluation does not lead to a significant expansion of exports in value terms for a large proportion of productivity gains are eroded by declining terms of trade which are currently about 30 to 35 per cent lower than their 1975 level (IMF, 1995). Formal sector savings do not increase when financial sector repression is reduced. Credit squeeze leads to output and investment contraction so much so that the existing capital stock is depleted as in many countries depreciation exceeds new investments. High interest rates encourage speculative rather than productive activities. The rural financial infrastructure is narrow and interest rate changes have little relevance to resource mobilization within agriculture. Devaluation does not correct external imbalances due to low demand and supply elasticities but contributes to a growth in inflation. Privatization is bogged down



due to the weak domestic capital markets and lack of interest of the TNCs. Moreover, privatized companies often charge inappropriate prices, thus the commercialization of water supply in a continent where about 50 per cent of the population lack access to potable water entails serious welfare costs.

As seen earlier, the implementation of structural adjustment has been accompanied by a decline in growth in both the agricultural and the industrial sector. Agriculture sector growth fell from 1.8 per cent in 1970-90 to 0.7 per cent in 1990-94. Industrial growth declined from 0.5 per cent to -0.2 per cent over the same period in SSA (World Bank, 1996). Food availability per capita also fell. It was estimated by the World Bank in 1989 that agriculture would have to expand by 4 per cent per annum between 1990 and 2000 to prevent a fall in food availability per capita (World Bank, 1989). Industrial growth, which was to be demand driven in response to growth in agriculture income, was targeted at 6 per cent. In the structural adjustment programmes, however, there seems to be no explicit strategy for stimulating industrial growth.

Manufacturing grew at about twice the rate of agriculture (3-6 per cent per annum against 1.7 per cent per annum) during the 1970s. During 1980-96 rates of growth of manufacturing and agriculture have declined and both have shrunk relative to services which now accounts for roughly half of SSA's GDP. SSA has been experiencing relative de-industrialization during the period of structural adjustment in Africa. SSA has also been experiencing deagrarianization.

The industrial sector's growth that took place in Africa is almost entirely resource based. All the relative successful cases share the same story. In Botswana it was diamonds, copper and nickel in Gabon, Nigeria and Cameroon. It was oil sugar was the mainstay of the economy in Mauritius until exports of textiles diversified the sources of growth. In contrast, East Asia was not rich in primary commodities.

Manufacturing growth in SSA has also been highly import dependent. Increase in capital accounted for about 58 per cent of GDP growth in SSA and total factor productivity (measuring national technical capability) accounted for a mere 6 per cent during 1970-91. During the same period in East Asia total factor productivity accounted for roughly 40 per cent and the capital factor for about 43 per cent of GDP growth (Lall, 1992). This means that a fall in capital imports ( a consequence of devaluation) has had a major negative impact on manufacturing output and investment growth in SSA.

Total factor productivity growth has been very low in SSA, especially during the adjustment period. There is an interdependence between the rate of capital formation and total factor productivity growth. This link has been shown to be provided by public investment expenditures. An IMF study to identify the impact of macroeconomic policy on growth disaggregated investment expenditures into physical capital formation by the private and public sectors, as well as human capital formation (1995). The latter was measured by secondary school enrolment. These were used as independent variables to explain the per capita GDP growth rates for Sub-Saharan African countries for the period 1986-93.

The contribution to growth by public investment (measured as a percentage of GDP) was more than twice that of private capital (1.15 compared to 0.46). This once again emphasizes the external dependence of the SSA manufacturing sector ( since much of public investment was ODA funded). Technological innovation and upgrading is comparatively rare in SSA manufacturing (since much of public investment was ODA-funded). As against this there is ample evidence of the impact of technological innovation in hybrid maize in Zimbabwe and in the agricultural sector as a whole in Nigeria (World Bank, 1994). There are, however, no clear overall trends in technological change within agriculture on a regional level (Pack, 1993).

The agricultural sector's decline is reflected in stagnant exports. In volume terms none of the major crop exports showed declines. Table 1. shows that prices fell significantly for tea, tobacco and cotton from 1970-80 and for coffee, cocoa, tea and maize for the 1980-93 period. Export values declined for 12 SSA countries for the 1980-93 period. This is because US dollar prices of coffee fell by 71 per cent, those of cocoa by 41 per cent and those of cotton by 28 per cent during 1980-93. Both prices and the value of exports have shown a degree of instability around the trend as well. The more important tropical export crops not only had a downward trend, they also had greater fluctuations around the trend relative to other commodities (8.9 per cent), and all foods and beverages (10.9 per cent).

**Table 1. Export volumes and prices in Sub-Saharan Africa, major primary exports, selected years**  
(Per cent)

Commodity	Average annual growth					Instability index <sup>a/</sup>
	Volume			Prices		
	1960-70	1970-79	1980-93	1970-80	1980-93	1980-93
Coffee	4.4	0.4	2.4	3.8	-10.5	16.4
Cocoa	0.8	-1.1	3.5	7.6	-9.8	8.7
Tea	9.3	5.0	5.9	-2.9	-2.9	17.4
Tobacco	-2.7	7.2	12.5	-1.4	0.5	6.0
Cotton	-	-	-	-2.7	0.3	14.4
Maize	-	-	-	-0.9	-2.0	11.7

The instability index is calculated as the annual percentage deviation from trend, i.e.

$$I = 100 \frac{\sum |x_i - \bar{x}_i|}{n \bar{x}_i}$$

with  $x_i$  as the value of export earnings at time  $i$ ,  $n$  the number of years covered, and  $\bar{x}_i$  the trend value obtained by regressing the log of the value of output on a constant and a time trend. While prices have recovered during 1994-95 instability persists.

Source: CRB, *Commodity Yearbook*.

The trend of nominal US dollar prices of agricultural primary commodities has meant that real prices (the unit price of exports deflated by the index of manufactured goods) declined during 1984 and 1993. However, the behaviour of SSA exports cannot be explained by the real price effect alone. Real domestic producer and export prices may not necessarily be correlated due to procurement policy. In addition, there may be production constraints due to domestic policies and other factors not related to the world market.

All SSA countries have chosen the gradual approach to economic reform and they are faced with the possibility of rationalizing an already small industrial sector, with a resultant loss of employment. Sequencing of the reform measures, of course, becomes crucial. There is enough anecdotal evidence to support the note of caution. The textile industries of South Africa and Zimbabwe have had to reduce output and employment due to competition in the domestic market from imports and second-hand goods. The sugar industry in Kenya is facing similar problems, though the causes are still unclear. The problem with gradual reform programmes is that the scaling back of operations is not uniform. As the exchange rate is allowed to fluctuate and subsidies removed export activities are the first to be curtailed, either because margins are low due to international competition, or because exports provide a better leverage on policy-makers in the struggle to prolong protection in the domestic market. There is pressure to rescue industries with a large workforce which had been established at great cost. The decision as to what industry to support or at what level of operations should be based on market criteria. The decisions are not always simple. The pressure is usually for government to provide first the wherewithal to update infrastructure acquired under distorted market conditions. Whole industries may try to justify their need for such special treatment. SSA countries need to formulate an industrial policy so as to respond to these requests. Such a strategy would have to be based on micro-level analysis and the realization that acquisition of technology is an evolutionary process and depends on the industry and national technical capabilities. Externalities are hard to quantify and account for. In the past SSA countries attached almost all the weight on the externalities and invested in projects to a level considered socially desirable even though market considerations dictated otherwise. Given the resource constraints and the need to avoid a state of "permanent infancy" the sectors of interest will have

to be limited to a number of firms and industries in each period of time and specific timetables and performance criteria have to be established.

One of the key concerns must be the promotion of linkages between agriculture and industry. The evidence is that linkages between these sectors in SSA are limited. The most important inter-sectoral linkages in SSA are undoubtedly embodied in the macro level linkage between the earning of foreign exchange by the export of agricultural commodities and the use of a major proportion of foreign exchange for the purchase of industrial capital goods. Other intermediate and employment linkages (detailed in Panchmukhi, 1976) are low. Backward-forward linkages are also mainly potential. It is in any case not possible to assess inter-sectoral linkages in SSA accurately because of the absence of sufficiently disaggregated input-output tables. Regression analysis undertaken by UNIDO (1991) for 32 African countries shows that during the 1980s annual growth of trade and services were the main stimulant of manufacturing growth and that the contribution of agricultural growth was relatively small. This is a surprising result given the preponderance of agricultural resource based branches in the industrial structure of most SSA countries. Inter-industry linkages are even weaker than inter-sectoral linkages in Africa. This underlines the import dependence of African industry.

Some evidence of significant linkages exists. Thus in Ethiopia meat canning, sugar, textiles and leather have strong backward linkages to agriculture. In Tanzania linkages with agriculture characterize the meat and dairy products, vegetables oils and fats, grain mill products, fruit and vegetable canning and bakery product branches. The food industries maintain forward linkages to the packaging industry which thus has indirect links with agriculture. In Liberia palm oil processing is linked with agriculture. The Tanzanian paper and packaging industry is closely linked to agriculture in both a forward and a backward sense. It utilizes locally grown softwoods and then sells packaging material to agricultural producers. In Tanzania the textile industry is also mainly based on locally grown cotton and sisal.

Agriculture's linkages with domestic fertilizer branches are underdeveloped as are linkages with the local engineering industries. Limited capacity for mixing and formulating imported fertilizers exists in Ethiopia, Mozambique, Nigeria, Kenya and some small countries. Agricultural handtools are produced in many African countries.

Promoting these linkages can be important to enhancing the sustainability of the SSA development process and for relieving the foreign exchange constraints that limit possibilities for growth and restructuring. Strengthening domestic inter-sectoral linkages is, of course, not an alternative to outward orientation. In the case of most countries exploiting comparative advantages requires efficient domestic sourcing of exports in terms of both raw material and labour. The pursuit of outward orientation is compatible with a strategy which seeks a high degree of integration between economic sectors within the national economy. Both the Republic of Korea and Taiwan Province of China illustrate how these twin objectives can be targeted coherently and simultaneously.

### III.1) GROWTH AND STRUCTURE

The period covered by this study has seen very slow growth of manufacturing output in Africa. By 1995 total manufacturing output was only 3.13% higher in real terms than in 1990, and this increase was mostly concentrated in the North ( Table 3.1 )

TABLE 3.1

INDEX OF GROSS OUTPUT IN 1995  
(1990 = 100) AGRO RELATED BRANCHES

	300	311	313	314	321	322	323	324	331	332	369
Africa	103.1	105.6	105.5	113.0	95.7	111.6	92.3	91.8	97.6	102.6	111.7
North	106.4	104.8	117.5	116.0	102.5	111.0	91.3	88.3	86.4	103.8	112.8
West	95.7	101.4	97.1	110.3	85.7	107.0	89.4	96.2	115.4	99.2	99.8

East	102.1	108.5	108.1	102.3	86.6	134.3	85.3	90.6	58.5	107.9	130.1
Central	94.2	90.2	92.2	88.2	58.4	50.5	68.7	85.4	75.9	82.5	149.2
South	101.8	118.8	104.9	113.2	85.0	72.3	136.1	89.6	100.8	100.1	106.1

Value of gross output has declined in four of the ten branches in Africa as a whole - textile, leather, footwear and wood products. These are the branches in which Africa has the highest comparative advantage as section III.4 shows. Moreover the decline in output has been most significant in the major African countries Nigeria, Cameroon, Kenya and Zambia. Table 3.2, shows that North Africa's performance is clearly superior to SSA - although both Egypt and Morocco have experienced a decline in gross industrial output during 1990-95. Within SSA the countries with the strongest growth performance are Uganda, Lesotho, Botswana, Seychelles, Ghana and Mauritius - each has had an annual rate of growth in excess of 5 per cent. If Kenya is omitted from the analysis there is a significant difference between the performance of East Africa and all the SSA region.

Most countries in Southern Africa are growing significantly although Zambia is decreasing in every sector but one. Central Africa is the region with the greatest regression.

**Table 3.2**

**Index of Output in 1995. (1990=100) : Agro Related Industries**

Within this general decay, the agro-related industries have increased their already important share of manufacturing value added (table 3.3). They represent 60% of value added and 70% of employment in manufacturing in 1995. This shows strong variations, and while the North African countries produce in these industries between 40% and 50% of their industrial value added, many Sub Saharan countries, especially small ones, have figures of 80% or more.

Food processing industries have the largest single share, and have an important presence in every country (lowest coefficient of variation). In Sub Saharan Africa (SSA) food processing and beverages represented over 30% of the MVA, and their share has grown in the past five years. The second largest sector, textiles, is decreasing in importance.

**TABLE 3.3**

**Share of each branch value added into total  
manufacturing value added. Regions.**

**TABLE 3.4**

**Share of each industry value added into  
total manufacturing value added by countries**



Tobacco manufacturing increases its share and is very important in some selected countries like Cape Verde (21%) and Central African Republic (20%). Also highly concentrated is wood manufacturing, obviously dependent on natural resources, very important in Cameroon, Gabon and Central African Republic.

Once again it is apparent that branches with good export prospects have a relatively low share of MVA - the confined share of the leather, footwear, wood, furniture and clothing branches in Africa MVA declined from 10.0 per cent in 1990 to 9.6 per cent in 1995. Leather, footwear and wood products have declined during the period and growth in furniture production has been very low.

The share of textile has remained vertically constant but this conceals large in the country difference. There have been sharp declines in Algeria, Sudan, Nigeria, Cameroon, Madagascar, Kenya, Zambia and Zimbabwe balanced by significant increases in Egypt, Morocco, Tunisia, Somalia, Tanzania and Botswana, see table 3.4.

Tobacco and other non-metallic minerals are the sectors growing faster, though the latter is growing strongly in some places and contracting in others. Wearing apparel is also increasing rapidly, but not so much in value added terms (Table 3.2), which may suggest predominance of assembling activities in this sector.

### ***III.2) PRODUCTIVITY EMPLOYMENT GROSS MARGINS AND INVESTMENT***

The employment share of the food manufacturing textile and clothing branches expanded during 1990-95. It rose from 45.77 per cent of total manufacturing employment in Africa in 1990 to 50.85 per cent in 1995 (Table 3.5)

**Table 3.5**

**Share of each branch employment into total  
manufacturing employment.Regions**

As we have seen food manufacturing and textile have been stagnant - the former growing at an annual average rate of less than 0.5 per cent per annum and the later recording negative output growth during 1990-95. On the other hand the rapidly growing branches - tobacco, wearing apparel and building materials exhibited diverse trend. Employment grew rapidly in the clothing branch and its share of total manufacturing employment in Africa rose from 8 to 11 per cent during 1990-95. Employment share of the tobacco sector declined there was no significant above average growth in building material. Employment growth thus rankness concentrated mainly in the declining industries in Africa.

**TABLE 3.6**

**Labour Productivity Indices of  
Agro Related Industries 1995**

	Africa	North West	Central	East	South		
300	93.4	101.0	92.1	93.7	87.3	80.6	
311-12	96.0	110.8	79.8	86.2	80.9	112.0	
313	101.3	166.5	75.5	103.4	86.8	84.9	
314	142.8	130.4	109.6	89.7	100.4		
321	98.1	153.2	73.6	79.5	84.2	77.2	
322	80.2	76.8	129.2	99.1	128.5	37.1	
323	87.5	79.1	94.1	64.7	68.3	112.9	
324	84.5	72.5	97.0	60.3	64.3	81.7	
331	94.3	92.1	117.3		49.0	67.6	84.6
332	87.9	75.5	130.2	79.0	77.8	81.1	
369	107.2	93.1	88.4	153.7	81.9	87.6	

1. Measured as change in value added over labour employed during 1990-95 in constant 1990 US \$  
Source UNIDO

Table 3.6 presents estimates of labour productivity indices for Africa and the four region for the agro related industries. While the overall picture is glossy there are indication of sustained productivity growth in the North in food manufacturing, beverages and textiles - there is a major decline in productivity in the wearing apparel sector of the North which is a come of service concern. In the West productivity has grown significantly in wearing apparel, furniture and wood product branches. Productivity has also grown in the clothing branch of the Eastern region and in the South food manufacturing and leather products have exhibited significant productivity growth. In general there are very wide variations in productivity growth across branches and across countries but it is probably reasonable to claim that branches of export interest have not in general experienced positive productivity growth and in general there has been a significant decline in terms of productivity as far as the major agro related industries are concerned. The only exception is tobacco - which has experienced significant productivity in the northern and western region and has declined only in Central Africa. But this has mainly been due to a stagnate of employment growth.

Table 3.7 present data on productivity growth on a country basis. Here countries with significant productivity growth during 1990-95 are as follows.

1. Food Manufacturing      Algeria, Morocco, Ghana, Senegal, Togo, Botswana and Zimbabwe.
2. Beverages                -      Algeria, Egypt, Tunisia, Benin, Ghana, Senegal, Togo, Seychelles, Uganda, Lesotho and Swaziland.
3. Tobacco                    -      Algeria, Egypt, Sudan, Tunisia, Cape Verd, Ghana, Mauritius, Seychelles.
4. Textiles                    -      Egypt, Tunisia, Benin, Uganda, Botswana, Lesotho.
5. Clothing                    -      Benin, Ghana, Senegal, Mauritius, Seychelles, Botswana and Lesotho.

6. **Leather** - **Egypt, Burkina Foso, Cote d'Ivoire, Ghana, Uganda, Botswana, Lesotho.**
7. **Footwear** - **Egypt, Cameroon, Ghana, Seychelles, CAR, Congo, Botswana, Lesotho.**
8. **Wood Product** - **Tunisia, Cameroon, Ghana, Botswana**
9. **Furniture** - **Benin, Cote d'Ivoire, Gambia, Ghana, Senegal, Mauritius, Rewanda, Lesotho, Tanzania.**
10. **Building material** - **Tunisia, Benin, Ghana, Morocco, Rawanda, Lesotho.**

**Table 3.7**

**Index of labour productivity in 1995 (1990=100)**

This list shows that productivity growth has remained concentrated in a relatively small number of countries - Egypt, Tunisia, Benin, Ghana, Senegal, Mauritius, Seychelles, Botswana, and Lesotho. The three SSA economies, generally regarded as having great promise - Kenya, Nigeria and Zimbabwe are conspicuous by their absence in the list. The performance of Cote d'Ivoire, Cameroon and Morocco is also disappointing. On the other hand the performance of Benin, Lesotho, Senegal and Seychelles has been good. Sectorally productivity growth has been concentrated in tobacco, beverages, wood products and non-metallic minerals. With the exception of wood products none of these are categories in which Africa is likely to have a comparative cost advantage in International market.

Table 3.8 presents employment elasticities for the agro related industries. In the manufacturing sector as a whole employment elasticities are high but employment elasticities for most agro related branches are lower than that for the

**TABLE 3.8**

**Employed Elasticities : Agro Related Industries 1990-95**

manufacturing sector as a whole. Exceptionally high employment elasticities are estimated for wearing apparel, wood products and furniture - highly labour intensive branches ( as shown in table 3.3 ). Employment elasticities are negative for the tobacco branch and for building material ( where employment has fallen despite output growth ) and low for beverages, the negative estimate for leather products reflects the fall in output. The low value of the employment elasticities co-efficient in this branch shows that employment has contracted by much less than output - hence leather products is a labour intensive branch. The relatively low employment elasticity estimate for footwear is also explained mainly by the decline in output growth in as many as four of the five African regions. In every region except Central Africa, output in the footwear branch contracted by more than employment. Overall the employment generating potential of the agro related branches in Africa remains to be fully developed.

Gross fixed capital formation estimates are available for only 18 countries. The extremely high growth estimates for countries such as Zambia and Tanzania reflect the very low level of gross investment in 1990. Nevertheless it is encouraging that gross investment has increased throughout Southern Africa. Three North African countries ( with the exception of Egypt ) record growth although Morocco is low. In the other regions the picture is gloomy particularly for Cameroon, Nigeria and Senegal.

Investment growth has been strongest in the food manufacturing branch - with gross fixed investment rising in 11 of the 18 countries - and in building materials where 10 countries recorded substantial investment growth. In the North African countries investment also grew in the leather products and footwear branches but there was a significant fall in both textiles and wearing apparel. Investment in these branches appears to have fallen in every region except Southern Africa. In Southern African countries investment in the leather and footwear branches has also increased. Investment in wood products and furniture has tended to decline in most countries.

The share of the agro related branches in gross fixed manufacturing capital formation has fallen from 58.3 per cent in 1990 to 54.6 per cent in 1995 with major declines in textile, wearing apparel, leather, footwear and wood product. Investment has remained stable in food manufacturing and has increased significantly in beverages and tobacco. Increases in investment in the building material branch has remained concentrated in North Africa.

Some aspects of the financial structure of the agro related branches for the entire sample of the 38 African countries are summarized in table 11.11. Gross margins have risen by all three measures although modestly. There is clear evidence of a decline in wages share of value added. (The (value added - wages)/wages ratio has risen by 7.5 per cent during 1990-95). This may reflect a substitution of capital for labour and or a fall in real wages. There is no indication of rising industrial cost and during the period the value added to gross output ratio increased marginally. Decline in productivity has thus not been caused by a increased costs of production on the basis of the aggregate evidence presented in table 3.11.

Beverage and tobacco are the most capital intensive branches and have the highest gross margin ratios. During 1990-95 gross margin rose significantly for these branches as well as for textile



**TABLE 3.9**

**Index of gross capital formation in 1995. (1990=100)**

**Table 3.10**

**Gross fixed capital formation.  
Shares of each branch into total manufacturing.**

Table 3.11

## Branch : Africa 1990-95

	Value added-wages		Value added-wages		Value added/output		
	1990	1995	1990	1995	1990	1995	
Total Manuf.	67.3	68.9	206.4	221.7	34.7	35.0	
Food	60.7	65.3	154.9	188.4	23.7	25.5	
Beverages	83.9	84.2	523.5	534.0	61.2	60.8	
Tobacco	79.5	84.7	390.1	556.2	50.2	41.4	
Textile	57.3	72.4	134.2	263.3	35.6	38.4	
Wearing App.	48.2	43.1	93.3	75.8	34.0	32.8	
Leather	64.1	61.8	178.8	162.2	39.6	38.7	
Footwear	59.2	55.4	147.2	124.3	42.1	37.8	
Wood		55.4	55.8	124.5	126.2	39.0	39.7
Furniture	60.4	60.5	153.8	153.1	39.5	39.5	
Bldg. Material	70.4	67.1	237.9	204.0	46.6	42.8	

Source UNIDO Data base

and food manufacturing. Gross margin ratios are lowest for clothing, wood products, footwear and furniture, gross margins declined for the leather products branch and for building materials. In these branches the share of wages in value added is relatively high reflecting their greater labour intensity.

In general there is no evidence of an overall improvement in the position of the agro related industries during the 1990-95 period. While their share in output and employment has increased, their share in investment has fallen. Growth in output and labour productivity has been low and the most labour intensive branches - clothing, footwear, leather products, wood products have not done well. This does not auger well for Africa's export prospects - a quarter to which we turn in the section III.4.

### III.3 AGRICULTURAL MACHINERY AND FERTILIZER

Data on these branches available at UNIDO is extremely scarce available upto only 1991. Agricultural machinery production and value added estimations exist for only four countries - Egypt, Nigeria, Senegal and Zambia with Egypt alone accounting for about 70 per cent of gross output. Of the branch fertilizer and pesticide data are available for only Egypt, Mauritius, Tunisia, Zambia and Zimbabwe. No figures are reported even for Morocco which is a large producer of phosphatic fertilizers. Estimates for Tunisia are also clearly not accurate. On the basis of this data no generalization on the structure and performance of these branches is possible.

### III.4 NET EXPORTS OF AGRO RELATED INDUSTRY

This section seeks to estimate Africa's competitive advantage in agro related industries. The approach followed in estimating revealed comparative advantage (RCA) indices and factor intensities is that developed by Forstner and Balance (1990) and first presented in UNIDO (1986). The major limitations of the approach as adopted in this paper are:

- a) RCA should ideally be calculated for products (ISIC six digit level). Data availability made this impossible and estimates presented are of three digit level only.
- b) Estimates presented relate to inter industry trade only. Intra industry trade flows are not accounted for.

- c) Since the RCA concept reflects the conceptual framework of the Heckscher - Ohlin model, trade patterns so identified fail to take account of factors such as scale economies, product differentiation and market concentration. The so called new theory of international trade - stresses the importance of these factors in determining trade pattern (Kingman 1983, Leumor 1984).

The Heckscher - Ohlin approach distinguishes between countries in terms of differences in relative factor abundance and predicts that countries will produce and export commodities the production of which intensively utilizes the relatively abundant factor. Using data from 38 African Table 3.12 summarizes the evidence on dynamic comparative advantage in Africa during the period 1975-1994. The RCA index is defined as

$$RCA_{ij} = (X_{ij} - M_{ij}) / (T_i) (T_{iw}/T_w)$$

Where RCA is the revealed comparative advantage index of sector i in the country j.

X = exports      M = imports  
. = total manufacturing exports  
W = World  
T = (X+M)/2

Net exports of a particular branch of a country are thus "normalised" both with respect to the value of the country's trade in manufactures and the weight of the branch in world trade in manufacture.

TABLE 3.12

**AGRO RELATED BRANCH RCA INDEX 1976 - 1994  
(PER CENT) AFRICA EXCEPT S. AFRICA**

	1970	1986	1994
Food Manufacturing (311-12)	37.1	13.7	-0.8
Beverages (313)	-22.7	-33.4	-49.5
Tobacco (314)	-61.8	-64.9	-72.4
Textiles (321)	-59.5	-55.3	-66.6
Wearing Apparel (322)	-20.6	25.0	72.1
Leather products (323)	-8.4	6.1	22.9
Footware (324)	-26.4	-11.2	5.3
Wood products (331)	-26.8	-32.8	-23.8
Furniture (332)	-36.7	-32.9	-23.0
Other Chemicals (352) (fertilizer proxy)	-81.5	-100.9	-88.9
Other non metallic (369) minerals	-167.5	-199.9	-98.4
Total manufacturing	-57.7	-45.1	-43.6

Source UNIDO Data base

The overall picture looks glomy. In 1976 the only agriculture related branch with a positive value of the revealed comparative advantage index was food manufacturing. Leather products and wearing apparel were marginal cases. By 1986 both leather products and wearing apparel had improved their RCA indices considerably but food manufacturing had declined - its RCA value falling from 37 per cent to 13.7 per cent. By 1994 the food manufacturing RCA value had turned negative. The international competitiveness of wearing apparel and leather products both improved significantly - RCA values tripling in each case. A small positive value for the footwear sector RCA value was also apparent in 1994. The position of textile and beverages continued to deteriorate but some encouragement can be taken from the fact that the RCA index for the entire manufacturing sector rise from - 57.7 per cent in 1976 to 43.6 per cent ( i.e. improved by about a quarter of its original value). African industry while still highly uncompetitive by international standard is less so now than it was in the 1970s. Lets be thankful for small merceis.

Moreover the aggregate picture as defected in table 3.12 conceals many variations. Table 3.13 presents a relatively desegregated picture. It is evident that :

- a) The branches in which most African countries have position comparative cost advantages are food manufacturing ( more than half the countries for which data was available had position RCA values in this branch ), leather products and footwear and wood products and furniture. By 1994 almost half the countries in the sample had positive RCA values for either the leather and footwear or the wood and furniture branch.
- b) International competitiveness in leather wood and furniture industries had increased during 1976 - 1994 - maximum RCA had risen for several countries and the number of countries with position RCA's had risen significantly in leather, footwear and wood products branches. Maximum RCA values had increased moderately for the food manufacturing branch but the number of countries with positive RCA values had fallen.
- c) The declining branches in terms of international competitiveness are beverages, tobacco and textiles. RCA values have fallen drastically in each industry and in beverages and tobacco there had also been a significant fall in the number of countries with positive RCA values. By 1994 only Algeria, Nambia, Tunisia and Zambia had positive RCA values and the value of RCA was less than ten per cent for the first three countries. The decline in tobacco was even sharper. In textile the number

of countries with positive RCA values had increased consistently throughout the period but there were in 1994 still only five African countries which had positive RCA values in this branch - Cote d'Ivoire, Egypt, Madagascar, Tanzania and Uganda - and except for Egypt - the RCA value is less than 15 per cent for every country in the group. The maximum RCA value had declined sharply in textile for 1976 - 1994.

- d) Maximum RCA values had risen sharply for wearing apparel specially during 1986 - 1990 but only seven countries - Egypt, Madagascar, Mauritius, Morocco, Namibia, Tunisia and Zambia had positive RCA values in this branch. The performance of the African countries in both clothing and footwear is on the whole disappointing. Very few countries have developed competitiveness and in the case of footwear maximum RCA values have actually fallen showing a decline in competitiveness during both 1976-80 and 1980-94.

Transition metrics are presented for the food manufacturing, leather and footwear, wood and furniture and textile and clothing industries. They try to estimate upward and downward movements of exporting countries over 1986 - 1994. Thus for example the food manufacturing matrix shows that Guinea - Bissau which had a negative RCA in 1986 moved up considerably and by 1994 the value of its RCA in food manufacturing exceeded 100 per cent. As against this equatorial terea moved down - it had an RCA of over 100 per cent in 1986 but this had become negative by 1994.

Upward movements include movements from lower to higher cells as well as significant improvement in RCA while remaining in the same cell in both years. For food manufacturing such positive movements total 11 out of 29 transitions recorded during 1986 - 94. Negative transitions totalled 12 - i.e 12 countries moved from a higher to a lower RCA value while remaining in the same category. The position of six countries remained broadly unchanged. We conclude that there is no tending towards a general upgrading of competitiveness by the majority of African countries in the food manufacturing branch during 1980 -1994.

In leather and footwear positive transition numbered 18 out of a total of 26 cases while negative transitions were 6. There is thus clear evidence that more than two thirds of the countries increased their international competitiveness in the leather and footwear branches during 1986 - 94. In wood and furniture positive

**TABLE 3.13**

**RANGE OF POSITION RCAs AFRICAN 1976 - 1990**

**TABLE 3.14**

**FOOD MANUFACTURING TRANSITION MATRIX 1986 - 1994**



transition heavily outnumber negative ones 15 as against 5. This once again indicates a general improvement of international competitiveness. In textiles and wearing apparel there are only 14 cases - but of these only four countries experienced a negative transition and ten moved up and / or significantly improved their RCA value while remaining in the same category. It is clear that the major gains were in the apparel rather than in the textile sub-sector and these are confined to a relating small number of countries.

It is thus evident that there are a number of branches in which many African countries have international comparative advantage ( RCAs > 100 per cent ) and in which their competitiveness over time is improving. The question is whether these are the "right" product groups in which to specialise in terms of their potential for growth particularly in terms of their income elasticity of demand.

Fostner and Ballance (1990) have classified product groups into three broad categories, ricardian H-O and product cycle goods. Manufacturer based essentially upon the processing of natural resources - agricultural or mineral - are disrobed, as "ricardian". Resource endorsement pattern change over time and the international competitiveness of ricardian goods is influenced by this change. Resource endorsements change by new dis coverers, changes in production technology, development of transparlation system and development of non resource based substitutes for ricardian goods. Resource richness is often a "area: (James 1996). in that resource rich countries fail to develops the exports of HO good having a relatively standard production technology intensive in the use of either labour ( physical or human ) or capital. Product cycle goods utilise rapidly evolving specific technologies that are not universally available.

**TABLE 3.15**

**Leather and Footware : Transition Matrix 1980-94**

**TABLE 3.16**

**Wood Products and Furniture Transition Matrix 1986-1994**

**TABLE 3.17**

**Textile and Wearing Apparel Transition Matrix 1980-1994**

These goods are intensive in the use of skilled labour. As specific technology standardise product cycle goods are transformed into H-O goods. This is the theoretical expectation the actual empirical observation of which is the exception rather than the rule.

Table 3.19 presents a classification of the products of the food manufacturing, textile and wearing apparel, leather and footwear and wood and furniture industries and agricultural input branches according to this classification. As expected the product of the food product industry are almost entirely resource based ( ricardian ). Non synthetic textile and clothing, leather and footwear and wood products are classified as H-O (labour intensive). Fertilizer and synthetic textile and clothing products are assigned to the H-O capital intensive category and agricultural machinery is defined as a product cycle good. These data are drawn from a large sample of developing and developed countries ( 46 ) and represent average aggregate technology use patterns. It may be argued that production function in specific product group areas may differ significantly in Africa relative to that in even other developing countries. In fact as shows the correlation of industry

**TABLE 3.18**

**Correlation of factor intensity ranking, 1975-94**

TABLE 3.19

## BROAD CLASSES OF AGRO RELATED GOODS OF INTEREST TO AFRICA

Class of goods	SITC code	Description of goods	
Resource-based	011	Meat, fresh, chilled or frozen	
	012	Meat, dried, salted or smoked, whether or not in airtight containers.	
	013	Meat in airtight containers, n.e.s., and meat preparations, whether are not in airtight containers.	
		022	Milk and cream.
		023	Butter.
		024	Cheese and curd.
		025	Eggs
		032	Fish, in airtight containers, n.e.s., and fish preparation whether or not in airtight containers ( including crustacea and molluscs ).
		047	Meal of flour of cereals, except meal and flour of wheat or of meslin.
		048	Cereal preparations and preparations of flour and starch of fruits and vegetables.
		052	Dried fruit ( including artificially dehydrated ).
		053	Fruit, preserved and fruit preparation.
		055	Vegetables, roots and tubers, preserved or prepared n.e.s., whether or not in airtight containers.
		061	Sugar and honey
		062	Sugar confectionery and other sugar preparations ( except chocolate confectionery )
		0713	Coffee extracts, essences, concentrates and similar preparations of coffee
		0722	Cocoa power, unsweetened
		0723	Cocoa butter and cocoa paste
		073	Chocolate and other food preparations containing cocoa or chocolate, n.e.s.
		074	Tea and mate
		081	Feeding-stuff for animals ( not including unmilled cereals ).
		091	Margarine and shortening
		099	Food preparations, n.e.s
		122	Tobacco manufactures
		2219	Flour and meal of oil-seeds, oil nuts and oil kernels, non-defatted ( excluding mustard flour )
		2312	Synthetic rubber and rubber substitute
		2313	Reclaimed rubber
		2314	Waste and scrap of unhardened rubber
		243	Wood, shaped or simply worked
		2626	Wool shoddy
		2627	Wool or other animal hair, carded or combed ( excluding tops )
		2628	Wool tops
		2629	Waste of wool and of other animal hair, n.e.s.
	263	Cotton	
	267	Waste materials from textile fabrics ( including rags )	
	411	Animal oils and fats	
	421	Fixed vegetable oils, soft	
	422	Other fixed vegetable oils	
	431	Animal and vegetable oils and fats, precessed, and waxes of animal of vegetable origin	
	633	Cork manufactures	
Labour-Intensive	611	Leather	
	612	Manufactures of leather or of artificial or reconstituted leather, n.e.s.	
	613	Fur skins, tanned or dressed (including dyed)	

	621	Materials of rubber	
	631	Veneers, plywood boards, "improved" or reconstituted wood and other wood, worked, n.e.s.	
	632	Wood manufactures n.e.s.	
	651	Textile yarn and thread less	
	6516	Yarn and thread of synthetic fibre	
	6517	Yarn and thread of regenerated (artificial) fibre	
	652	Cotton fabrics, woven (not including narrow or special fabrics), other than cotton fabrics	
	654	Tulle, lace, embroidery, ribbons, trimmings and other small wares	
	655	Special textile fabrics and related products	
	656	Made-up articles, wholly or chiefly of textile materials, n.e.s.	
	657	Floor coverings tapestries, etc.	
	662	Clay construction materials and refractory construction materials	
	666	Pottery	
	821	Furniture	
	831	Travel goods, hand bags and similar	articles
	841	Clothing (except fur clothing)	
	842	Fur clothing ( not including headgear ) and other articles made of furskins; artificial fur and articles thereof	
	851	Footwear	
Capital-intensive	111	Non-alcoholic beverages, n.e.s.	
	112	alcoholic beverages	
	551	Essential oils, perfume and flavour materials	
	561	Fertilizers and manufactured	
	6517	Yarn and thread of regenerated ( artificial ) fibre	
	892	Printed matter	
Product-cycle	266	Synthetic and regenerated ( artificial fibre )	
	531	Synthetic organic dyestuffs, natural indigo and color lakes	
	532	Dyeing tanning extracts, and synthetic tanning materials	
	6516	Yarn and thread of synthetic fibre	
	695	Tools for use in the hand or in machines	
	697	Household equipment of base metals	
	712	Agricultural machinery and implements	
	715	Metalworking machinery	
	717	Textile and leather machinery	
	735	Ships and boats	

rankings by factor intensity between Africa and developing countries is quite low (though position). This is specially true for SSA and labour intensive industries. The most obvious cause of this difference lies probably in the fact that the product mix of African exports in the branches is significantly different from that of the other developing countries (e.g. cocoa and coffee preparations do not account for so large a proportion of the export earnings for the developing country group as they do for several African countries). Most successful developing country exports have moved out of ricardian goods - which represent a declining share of developing countries net exports ( Forstner and Ballance 1990 p 55) - and into labour intensive H-O goods. In this sense successful developing country exports have "created" their comparative advantage structure in international markets. This has invariably involved an upgrading of production technology to international "best practice" norms in the relevant product groups. In this process developing countries normally experience a change in factor endorsements. The data presented by Forstner and Ballance, shows that over the period 1970 to 1985 the share of the newly industrialising economies defined by them to include Argentina, Brazil, Hong Kong, Mexico, Republic of Korea and Singapore in world physical capital rose from 3.68 per cent to 6.46 per cent while their share of skilled labour rose from 8.5 per cent to 10.9 per cent in this period. On the other hand the NIEs share of unskilled labour fall from 7.1 per cent to 5.7 per cent during this period (1990 78-79). Thus changes in factor endorsements are required if comparative advantages are to be exploited. Every country starts off with a relative abundance of natural resources and unskilled labour, it is investment in physical and human capital which determines its export success.

Table 3.20 presents estimates of the factor intensity of agro related industrial branches in relation to other industries for the African countries for 1994. Assuming unskilled labour to be the abundant factor in the African countries. (Measuring footnote factor abundance require data on net capital stock and number of professional workers which is not available for a sizeable number of countries in Africa. For Egypt where such data is available it is seen that in 1985 unskilled labour was much more abundant than any other factor (Forstner and Ballance 77-79) it is clear the Africa's export comparative advantage should be in:

- a) Furniture
- b) Leather
- c) Clothing
- d) Glass (recall that we included non metallic minerals among the category of agro related industries)
- e) Textile
- f) Footwear
- g) Wood products.

Food manufacturing ranks 13th out of 26 in the use of unskilled labour and also has a middling rank (14th and 15th) in terms of use of physical and human capital. This probably reflects a wide divergence of factor intensity pattern within the food manufacturing branch and there are likely to be at least some product groups within this branch which are labour intensive. Beverages and tobacco are unabigously capital intensive activate ranking second and fourth in terms of physical capital intensity. This is a strong argument against seeking export markets in these product groups although fruit juices need further investigation.

Table 3.20 broadly confirms the trends shown in table 3.13. Labour intensive branches have positive RCA values and these are the branches in which most African countries have improved their international competitive position during 1986-94 (as shown in the transition metrics). The maximum RCA value has gone up from 18.1 per cent in 1986 to 109.8 in 1994, furniture being the most labour intensive branch according to table 3.20. The maximum RCA value for leather products the second ranking labour intensive branch rose from 490 per cent to 585 per cent over this period. As against this maximum RCA value for both wearing apparel and textiles declined (though both remained over 100 per cent)

Moreover the number of countries with positive RCA values in 1994 were only five in the case of textiles and seven in the case of clothing. Clearly factor intensities are not the only determinants of RCA patterns. Ability to export also depends on the market structural and demand characteristics identified by the new trade theory.

There is a strong need to desegregate data within the food manufacturing branch to identify relatively labour intensive product groups. It must be emphasize that demand factors are as important as supply. It price and income elasticity of demand are low, market barriers are high reflecting strong industrial concentration,



product differentiation is pronounced comparative cost advantage can not be translated into rising export earnings. African countries should specialise in those product groups in which they have comparative cost advantage (in the sense that these products intensively use the factors that are relatively abundant in African countries) and in which elasticities are high, and product differentiation and industrial concentration is relatively low. Identifying such product groups require a major study which is beyond scope of this paper but the urgency of which is self evident.

Table 3.20

**Factor Intensities of Manufacturing Branch  
Africa 1994 Ranking**

Intensity in the use a				
	Physical Capital (b)	Human Capital (c)	Labour (d)	
Food products	14		15	13
Beverages	2	17		25
Tobacco	4		23	23
Textiles	22	22		5
Wearing Apparel	26	16		3
Leather products	24	26		2
Footware	19		24	6
Wood products	20		21	6
Furniture	25	25		1
Paper	11	7		17
Krinting	18		8	9
Industrial chess	5	3	22	
Over chemicals	12	11		14
Pct. ref	1	5		26
Rubbor	8	14		18
Plastic	15	19		11
Glass	23	20		4
Non Met. Min.	9		13	15
Iron and Steel	6		4	21
Non ferous Metal	3	1		24
Metal prod	17	10		12
Non elec. mach.	21	12		8
Electric Machinery	7	6		20
Transport	16	18		10
S - eq	13	2		19
Others	10	9		16

Note: a) Averages were taken over a sample of 44 African countries. Industries were ranked by factor intensity byfor each factor for each country. The group rank is grown by  $r = 1/n$   
Where i = industry, j = country, n = number of countries

- b) Physical capital intensity is given by nex wage value add per employes.
- c) Human capital intensity is measured by wage per employee.
- d) Labour intensity is measured by the reaprocal of total value added per employee.

Justification for these measures is given in Forstner and Ballance (1990 p.95 and note p.112).  
Source UNIDO.

Evidence reviewed in various parts of this section has been of a general nature and throughout we have seen wide vocations in country and branch experience. The next section details the pattern of development of the major agro related branches in Africa.

#### IV. Recommendations at Branch Level

##### IV.I Food Manufacturing

The following measures are recommended:

- (a) Highest priority ought to be accorded to expansion of the processing of coarse grain specially maize (but also millet and sorghum to increase its acceptability in urban markets as a substitute for imported crops.
- (b) Dis investment and retrenchment in the cocoa industry should be pursued and land under cocoa should be gradually shifted to food crops.
- (c) An expansion of the cane sugar milling capacity is not desirable but rehabilitation and rationalization of existing units - particularly by the phased introduction of more appropriate technology and regional co-operation - can be useful. There is also a strong need to make more effective use of by products (specially bagasse and molasses)
- (d) Another branch in great need of rehabilitation and rationalization is fruit and vegetable processing. This may have significant export and domestic demand potential but existing plants are in very bad shape. Key products that may be targeted are dates, citrus, pineapples, dehydrated vegetables and juices.
- (e) The oil seeds industry has potential and can make a significant contribution towards increasing nutritional levels. Medium scale enterprises using efficient technology should be promoted and simple cheap manual and power oil seed milling technology should be introduced at the village level.
- (f) Fish processing - specially pelagic species - should be encouraged. African countries share from open sea catches should be increased and landings should rise. Senegal and Namibia can serve as models for the development of the industrial fishing sub-sector. The EU should ensure elimination of over fishing and poaching. Environmental and sustainability consideration should be addressed.
- (g) The promotion of the riverine fishing industry is necessary for increasing nutritional content of diets. The basic concern here must be the improvement of boating technology.
- (h) The animal feed industry has linkages with several agro industries. It can be promoted by the effective utilization of a range of by product and crops (specially cassava). Medium scale operations in this sub-sector should be encouraged.
- (i) A key constraint on the development of all food processing industries is the unavailability of adequate packaging and canning material. A full scale programme for the rehabilitation and development of a locally sourced packaging industry should be urgently undertaken.

##### *IV.II*

##### *TEXTILES*

We set out to answer the question; should the textile and wearing apparel branches in African countries be export or domestic demand oriented? Our conclusion are as follows.

- a) Export prospects are very limited for the vast majority of African countries. On the other hand per capita consumption of textile and clothing in Africa is by far the lowest in the world.

There is thus a strong prima facie case for domestic demand orientation with large populations and raw material availability ( agricultural for natural fibre, chemicals and petrochemical for synthetics ). All the major African countries come into one or both of these categories. The development of an efficient domestic demand oriented textile and clothing branch thus is justified in these countries.

- b) In many of these countries textile and wearing apparel represent one of the largest manufacturing branches. But it is usually not efficient and has low levels of capacity utilisation. Policy must be concerned with rationalisation acquisition and merger, rehabilitation, balancing and modernisation. Privatisation may be a means for achieving these objectives. In Africa as in South Asia integrating the spinning and weaving sector has proved problematic. Rather than setting up large scale integrated units an attempt must be made to develop vertical and horizontal sub contracting links between the spinning mills and the weaving operations to maximum income and employment generation impact.
- c) Production for the local market must be mainly in the form of low and medium count yarn, grey fabric and coarse cloth. Given the low levels of income in Africa production must be price not quality driver. The impact of European / American "throw away" ( second hand clothes ) on the wearing and spinning sector is similar to the impact of food and on the production of coarse grain. Policy must aim at reducing the price of locally produced clothes below those of "throw aways".
- d) Expansion of synthetic fibre should not be accorded priority (except perhaps in a small group of countries, Algeria, Egypt, Nigeria, which produce a significant quantity of no cellulosic fibre.

In synthetic fibre manufacturing there is a need to employ large production capacities and continuous processes in order to achieve cost reductions. In the case of the synthetic fibre industry, as the production volume increases, the cost per unit decreases, with the benefit of the cost reduction being more pronounced at lower volume levels than at higher ones. Other factors also can contribute to the cost reduction. For instance, process integration from petrochemicals all the way to fibre spinning would have a favourable impact on costs. An additional factor is capacity utilization: a small plant operated at a higher utilization rate will have a cost advantage over a larger plant operated at a lower rate. Traditionally a synthetic fibre plant operating at 70-75 per cent capacity utilization would be considered operating at a break-even point.

Capacity utilisation in Africa however has been low. Some African countries have large capacities in nylon. Performance in these countries have been weak (UNIDO 1992-93 p.322-323). Reducing prices of synthetic fibre to affordable levels does not seem likely.

- e) A particularly weak aspect of the African textile and clothing sector is its almost total dependence on machinery imports. Textile machinery, equipment and design are widely available on a merchant basis rather than being contingent on the proprietary technology of an enterprise. But unlike the East Asian case even relatively advanced African countries such as Kenya, Nigeria and Zimbabwe fail to unpackage textile manufacturing technology. Imports of textile machinery - particularly of the more advanced rotors - have fallen as the foreign exchange constraint has become binding. Any attempt at modernising and balancing the textile and clothing branches must include measures both to increase technology imports and to enhance the capacity for local manufacture of textile machinery. Several Asian countries at relatively low levels of development are significant manufacturers of textile machinery.
- f) While the bulk of the textile and wearing apparel manufacturing activity should be domestic demand oriented, there is scope and need for creating export competitiveness in a selected number of products. The export strategies must be constructed in a manner that they synchronise with the sourcing strategies of major European and Asian retailer chains. It is the retailer groups who are now the principal market makers and investment flow facilitators

in the textile and clothing business. An alliance with key retail houses can pay rich dividends in the form of both export earnings and foreign capital inflow for many African countries.

- g) The export strategy must be product specific. Low cost African countries must seek to develop a capacity to market standardised products of the type exported by Bangladesh, Sri Lanka and Thailand. The magreb must learn to compete in highly styled and designed products that are produced by Turkey and East Europe. Some indication has been given of the type of product likely to be most lucrative ( cotton dresses, women's knit shirts, men's cotton non knit shirts, women's cotton non knit shirts, shirts, trousers, T shirts, blouses, women's overcoats women's suits, men's overcoats, industrial clothing, cotton sports wear, children wear, fabric printing and knitted fabrics ). But this is a tentative list and detailed research is required to identify potential of each product in major markets. Strategies of retailers and manufacturers and possibilities of liaising with and influencing these strategies. Such research is urgently necessary to develop a viable and coherent textile and clothing export policycc.
- h) A very important need is to increase the volume of locally produced fibre in manufacturing of OPT/CMT type operations. As argued above this make good economic sense for host countries, foreign manufacturers and retailers. OPT related legislation inhibits this development and lobbying must be under taken, in association with EU retailer and clothing manufacturers to modify this legislation. There is also a need to improve the quality of locally produced fabric. Investment by foreign firms should be encouraged for this purpose.
- i) There is also a significant opportunity for expanding the share of locally produced grey goods in export oriented production.
- j) While the EU market remains of primary important note must be taken of the opportunities in Asia ( both East and South ). Asian firms are also moving out of low count yarn and low value added fabric and clothing production creating space for lower cost producers. Moreover Asian - specially South Asia firms - can be attracted to East Africa ( given the presence of a large Indian community ) to export oriented and modern projects. This may also be true of some Latin American countries which have sought to develop trade and investment ties with Africa such as Brazil.
- k) Finally the American market remains almost totally unpenetrated. Many low cost Asian countries have had significant success in the USA as have some Latin American countries ( but that may be attributed to preferential treatment ). The presence of a large African community with strong cultural ties to the home continent provides a rare opportunity to African textile products. If properly targeted this community can help build the market niche necessary for African penetration for the US clothing and textile markets. This community can also serve as a rich source of technical know how and expertise for the modernisation of the industry.

#### *IV.III.III.*

#### *Condition.*

- a) The leather industry has significant unrealised potential in several African countries. Africa has byfar the lowest per capita shoe consumption level in the world and as (and if ) per capita income risen, the domestic market will grow rapidly. Africa can also gain from plentiful raw material and cheap labour to develop an export industry oriented mainly towards other developing countries and perhaps Southern Europe.
- b) National and international assistance should mainly be focussed on developing export potential and not on domestic market expansion because,.

1. Increasing domestic demand should be a relatively automatic consequence of macroeconomic growth and there is no reason why efficient domestic companies should not be able to compete with imports provided the accelerated devaluation which Africa has been expressing is arrested.
2. Increasing per capita shoe consumption is not necessitated by health considerations.
3. On the other hand policy support is crucial in enhancing export earning capacity quickly and given Africa's need to earn foreign exchange the leather sector potential comparative advantage in world markets should rapidly be developed.
4. This comparative advantage cannot be developed by a "hands off" policy which relies on liberalisation and the gradual working of the market.

c) Policy support should take the following forms.

- 1) Technical Assistance till UNIDO has in recent years run a highly successful technical assistance programme in Ethiopia, Kenya, Malawi, Somalia, Sudan, Tanzania, Zambia and Zimbabwe. The programme has succeeded in improvements in collection, reduction in wastes, upgrading of tannery technology, better effluent treatment and improvements in product quality. Results in Kenya, Ethiopia and Tanzania have been described as outstanding by international experts (Leather 1994).

The coverage of the programme is being extended and it should proceed to West African countries such as Nigeria and Senegal.

- 2) Technical assistance should be accompanied by financial restructuring. Publicly owned units are under funded but privatisation has been slow and recapitalisation remains necessary. UNIDO should provide assistance in the form of national financial restructuring plans. These plans should identify the unit that should be saved the mergers that are feasible and financial sources that can be tapped for this recapitalisation of a potentially viable plan.
- 3) Re-capitalisation can in most cases fruitfully involve foreign investors. An attempt must be made to interest Spanish companies in particular to establish subsidiaries and joint ventures in North and East Africa, such co-operation can be very useful leading to a gradual transfer of leather and shoe making technology and reduction in the import intensity of investment in this sector in African countries.
- 4) South African companies can also be important investment partners. South Africa has some of the more successful tanners in the region (e.g. Mossop which celebrated its 150th anniversary in 1996) and labour costs wastes are rising rapidly. It makes good economic sense to consider relocating to lower cost production sites for the manufacture of some products.
- 5) The key products that ought to be targeted are leather clothing, crocodile and ostrich leather, products, camel leather products ( specially lamps ), sports footwear, relatively low cost shoes targeted at lower income groups in Europe and Asia.
- 6) Support for a full scale leather restructuring programme.

would require the implementation of six steps:

- a) An evaluation of the sector's rated and actual performance on the basis of installed capacities;

- b) Identification of the main technical constraints on achieving increased performance of installed capacity;
- c) Specification of investments in additional equipment, technical services and other imported inputs;
- d) Assessment of the total foreign exchange and domestic currency investment required;
- e) Assessment of the economic benefits which may be achieved through revitalizing and balancing existing plants;
- f) Negotiation of financial resources for revitalizing the industrial capacities in question.

Use of ODA funds to finance a comprehensive leather sector restructuring and revitalisation programme of the type presented above is justified. Given the need to expand Africa's foreign earning bearing capacity it can be argued that public debt restructuring programmes should incorporate such sectoral programs as a means to enhancing the long term capacity to repay debt.

- g) Some African countries have time and again banned the exports of raw hides and wet blues to stimulate the local processing industry. The general preference for higher value addition is natural and justifiable. However a crucial constraint is water availability. Leather processing is highly water intensive. Recycling water through efficient effluent treatment is one possibility but this might lead to a significant escalation of costs. Given the relatively small number of tanneries and leather manufacturers it seems more effective to have a firm specific policy - specially because the informal enterprises usually escape these bans through smuggling. An incentive / punishment aptness should be evolved around annual targets for product upgrading by major tanneries and leather goods and footwear manufacturers. Subsidising input wastes associated with devaluation (over which the leather industry of course has no control) should be an essential element of this incentive system.
- h) Finally regional co-operation in the field of training, processing, design, management and marketing can be very beneficial. The efficient manufacture of tanning chemicals is feasible in only a few African countries Regional co-operation in the supply of tanning chemicals is thus required. Inter Africa trade in leather and leather products could more easily be integrated with production for national markets and its growth could be significantly stimulated by regional co-operation.

#### IV.4

#### *Agricultural Machinery*

Given the paucity of country and plant level data only relatively general recommendations can be made. The most important aspect that ought to be emphasized is that the availability of adequate levels and quality of agricultural machinery should be seen as a requirement of food security. Two types of equipment are essential: those which are necessary for the construction and maintenance of the irrigation system and those that are used for agricultural production ( construction equipment for the building of storage and transport capacities is discussed in the next section ). While availability does not necessitate local production it must necessitate the generation of capacity to finance the acquisition of the machinery that is required. Thus the prima face case for an expansion in domestic production is based on the fact that continuing devaluation of the local currency has made imports prohibitively expensive leading to a serious obsolescence of existing plants and transportation system.

The primary purpose of local production should be to serve existing effective demand of small holders and enable them to raise factor productivity. The initial step is to assess this effective demand for typically markets are missing particularly in communal areas and demand remains unsatisfied because suppliers are unaware of its existence. Moreover demand for agricultural

equipment is volatile and responding to it by committing long term funds is risky. The creation of effective and efficient markets in agricultural equipment thus requires measures for stabilising effective demand and thus contributing to its expansion. In East Asia the establishment of farmers co-operative for purchasing and distribution has been an important means for converting potential into effective demand for agricultural equipment among small holders. Agricultural financing systems where effective have enhanced the provision of long term credit to both consumers and producers of agricultural equipment and so have insurance facilities to safeguard producers against fluctuations in sales occasioned by external causes,

Taking account of the technological disparities in the agricultural machinery industry in African countries, it is recognized that national agricultural institutions are often in a better position than regional institutions to advise local authorities on the formulation of mechanization policies and to assess the needs of local farmers. These national institutions can also perform a useful role in the testing of both locally produced and imported agricultural equipment, as well as in the adaptation of imported technologies, the development of indigenous technologies, the dissemination of information, quality control and the promotion of safety standards.

The development of national data banks to monitor inventory, condition, application, manufacture and testing of agricultural machinery in the country as a whole and particularly in regions whose production is suitable for maintaining local security should also be a task for national institution. Given the small pool of technical know how locally available it might also be appropriate for national centers to play a more active role in procurement of agricultural equipment and technology from foreign suppliers who should be encouraged to relate sales to technical support including training, participation in setting up service and spare parts centers and repair and maintenance facilities. Indeed there is a need to establish national focal points for agricultural engineering and allied metal working branches which could stimulate and create local markets for the production of spare parts simple agricultural and drainage equipment and most important a wider and more regular provision of maintenance services. Such local institutions can also play an important role in enhancing local design capacities and as far as major ventures are concerned in facilitating the establishment of joint venture projects. It may be argued that one of the most effective uses of ODA funds can be the support of agricultural mechanisation of regions which are of critical importance in maintaining food security in African countries. The availability of ODA funds can stimulate the flow of private finance and the establishment of major projects for improving the irrigation and drainage systems and enhancing agricultural productivity to meet food security requirements in particularly vulnerable African countries. ODA funds can play a major role in enhancing co-operation between medium sized producers of agricultural equipment systems in the industrialised countries and African firms which can manufacture components of agricultural machinery and drainage equipment and develop a capacity to provide effective repair and maintenance services in the African country side. The establishment of a network of contacts between African firms and medium sized producers of agricultural equipment in the industrialised countries can be a legitimate and fruitful use of ODA funds.

It is important that agricultural technology should be developed taking account of African eco systems, land tenure patterns and the physical characteristics of production. Adapting agricultural mechanisation to local requirements requires that the provision of machinery be accompanied by the creation of a local capacity to unpackage it and adapt it to suit local conditions. Technology transferred should preferably be useable, simple and cheap. Wherever possible local sourcing should be increased so as to protect the agricultural production system from fluctuations in foreign exchange cost associated with accelerated depreciation in the value of national currencies. Similarly the development of financing systems is a necessary requirement for increasing the sustainability of agricultural production and mechanisation. The obtaining of finance on appropriate terms for agriculture related firms has become extremely difficult after the collapse of the development finance institutions (DFI) in Africa. Default on the part of borrowers leads to a drying up of working capital funds and to a deterioration of machinery as maintenance and replacement to offset depreciation becomes unfinanciable. The switch in so many African regions from mechanised to animal traction reflects these rising unfinanciable repair and maintenance costs. It also reflects inappropriateness of design. Products imported have remained incomprehensible to local users for in many countries



the agriculture machinery industry has stood still for several decades. Production has remained confined to very simple hand tools by village craftsmen and artisans and the capacity for "learning to learn" has not grown except in a handful of countries - Egypt, Kenya, Zimbabwe. Tractorisation and harvesting techniques have not been transferred to the most vulnerable food insecure African countries and the payments crises has seriously retarded the development of agricultural mechanisation in Zimbabwe and Nigeria. Even Egypt and Kenya have failed to keep pace with agricultural mechanisation improvements in countries such as China and the Republic of Korea.

If local capacity does not grow imported equipment becomes in operable after only a short period owing to the absence of spare parts and maintenance facilities. The abandonment of tractors and other agricultural mechanical equipment had assumed crisis proportion during the 1980s in some African countries. The short term solution is that all purchasing agreements include provision for supply of spare parts for a four year period. This can be converted into a long term solution if during this period the supplier enhances the spare parts producing and maintenance capacity of the purchaser ( through for example the establishment of a joint venture ). Again this can be an effective use of ODA funds.

Agricultural mechanisation policies should be based on forecasting the demand for different types of machinery and equipment and measures at the local level regarding: land use; transport; improvement of water management systems; extension services; improved animal-drawn equipment to replace tractorization; promotion of industrial joint ventures; manpower training; improvement of maintenance and the supply of spare parts; provision of finance and credit facilities to farmers and design of and research on equipment.

An important concern should be to integrate the activity of informal and formal sector establishments. Informal sector enterprise should be upgraded for example by provision of facilities for the joint purchase and use of equipment and casting and forging facilities. The development of prototype designs and provision of services for testing agricultural equipment can stimulate the upgrading of village blacksmith type operations and their gradual integration into the formal sector. Mobile demonstrations and exhibition workshops can play an important part in upgrading technology. This can be particularly useful in introducing watershed management, pumping and tillage techniques and various types of irrigation, including the construction of canals, reservoirs and wells. The urgent need to provide training in irrigation techniques along banks of rivers and creeks in Africa is emphasized.

It is suggested that consideration be given to promoting the production of the following type of equipment in Africa.

1. Low lift pumps for irrigation.
2. Simple diesel engines.
3. tillage equipment
4. Fertilizer spraying equipment.
5. Harvesting and threshing equipment.
6. Sowing equipment
7. Trailors
8. Tractor accessories
9. Animal traction equipment
10. Walking trackers

If the intention is to upgrade local production, investment per unit must be at a level which is capable of making a significant impact on agricultural productivity in a given unit. For example we may envisage projects with a capacity to manufacture 5000 to 7000 units of agricultural implements such as harvesters, ploughs, reapers and other tillage and cultivation related equipment on an annual basis. The typical total cost ( both fixed and working capital requirements for the first year ) in South Asia is currently between US \$ 160,000 to \$ 300,000 (1996 prices). Costs would be at least 20 per cent higher in most African countries since India and Pakistan can domestically source 90 per cent of the machinery and equipment needs of such a project at internationally competitive

prices. It is thus clear that increasing agricultural mechanisation to enhance food security involves a large financial effort. If enhancing food security is an important objective of aid policy serious consideration must be given to allocating a significant preparation of ODA funds for the establishment of agricultural mechanisation projects and projects for improving the effectiveness, expansion, and maintenance of irrigation systems in vulnerable areas.

#### IV.5

#### *Fertilizer*

- a) Increasing fertilizer use per hectare is necessary to ensure food security in Africa. The use of chemical fertilizers must increase for this purpose. Organic nutrients can be effective if they are combined with chemical fertilizers. The increased use of chemical - specially phosphatic fertilizers - is required not just because of the direct impact on agricultural productivity but because they enrich the soil.

One of the major problems of the African agriculture is permanent soil deterioration (erosion and depletion of nutrient content), attributable to many factors, among them reduced arable acreage, overworking of the available land and insufficient soil management. Losses are sizeable and contribute to reducing income available for purchasing fertilizers. For example, each year Zimbabwe loses 15.6 million tones of organic matter, 1.6 million tones of nitrogen and 240,000 tones of phosphorus due to top soil erosion. The use of fertilizer in sufficient quantities to replace these losses would cost some \$1,500 million per year. The estimated cost of the erosion is put at \$20-\$50 per cultivated hectare. Insufficient fertilizer use favours soil depletion, bringing about a reduction in yields and consequently in fertilizer purchases, and finally further soil deterioration.

- b) The major constraint on the growth of fertilizer use in Africa is lack of effective demand due principally to low farmers income but also to unavailability of complementary inputs - machinery, distribution materials, application informatus credit etc. ODA funds should be targeted for relieving these "supply side" (from the perspective of the fertilizer user) constraints where feasible.
- c) While Africa has the natural resources to sustain an expansion of phosphate fertilizes capacity, it lacks the required logistic and infrastructural support system to sustain this expansion. It is therefore not likely that large scale foreign investment - loan or equity - would be attracted to new projects in this area before these constraints are reduced and before effective demand rises significantly. New projects are therefore not advisable at this stage.
- d) In African countries there exist fertilizers plants operating at low rates of capacity utilisation. They represent very sizeable commitments of foreign and domestic resources and their continued under performance is a factor inhibiting Africa's ability to service her foreign debt ( sometimes incurred to finance these very plants). A comprehensive rehabilitation plan - involving increases in capacity utilisation, efficient use of raw materials and energy, modernisation of equipment, management restructuring etc - should be put in place for a selected number of such plants and ODA funds should be committed to such rehabilitation plans.
- e) Using ODA funds for this purpose can act as a catalytic agent for attracting foreign investment in the form of BOT deals, debt equity swaps, transfer of technology arrangements to the fertilizer plants that are potentially viable but have been rendered inefficient by poor management.
- f) The purpose of the commitment of ODA funds to the fertilizer sector is to increase food security. ODA funds should therefore be committed on the basis of a careful assessment of fertilizer needs of specific regions to counter soil degradation and increase food production. The sporadic provision of fertilizer aid cannot achieve this purpose. The provision and distribution of fertilizer aid must be systematically and institutionally related to increasing a region's capacity to acquire and apply fertilizer to the soil. Fertilizer aid should preferably be channelled through fertilizer producing ( specially formulation and mixing ) units.

- g) An appropriate use of ODA funds should be the organization of fertilizer purchasing credit schemes. Support may be provided for the establishment of credit co-operatives, financial association of intermediaries and regional co-ordination of fertilizer purchasing policies.
- h) Finally considerable research has been done on the viability of mini plants. These may be suitable for a large number of African countries and investment per unit is less than 20 per cent of a large project. Establishment of such plants may be encouraged in countries with modest natural resource and capital constraints.

**Tobey's essential argument is that private benefits of pursuing biological diversity are lower than social benefits and since biological diversity is a public good - "under produced" and subject to free rider type hazards - international co-operation is required to optimize expenditures. In Tobey's view the benefits of preserving biological diversification are higher for industrialized countries than for the countries which provide the natural habitat for a vast majority of the endangered plant and animal species. This is because the value of biodiversity preservation - and environmental protection in general - rises more than proportionally with increases in per capita income. Further, the value of genetic resources as an input in production of agricultural and pharmaceutical products is greater in industrialized countries than developing countries since the industrialized countries have a comparative advantage in their scientific and industrial capacity to convert wild species and genetic material for agricultural and medical use.**

**Tobey (1993, p. 1930-1938) therefore proposes the creation of an internationally funded and moritored biological diversity protection facility ( of the value of between \$3 to \$5 billion ) which would transfer funds on a recurrent basis to developing country members of the facility who showed good performance. SSA countries such as Zaire, Congo, Gabon, Cameroon, Madagascar, Nigeria and Cote d'Ivoire could be major beneficiaries of such a scheme.**

**All major aspects of environment management policy in SSA - water access, soil prevention, pollution control, biodiversity preservation - have industrial dimensions. The industrial sector must grow in a manner which enhances the sustainability of existing ecosystems, enhances agricultural productivity, reduces extensification and provides off-farm activities to a rapidly growing labour force in both rural and urban areas. Industrial policy making must therefore be synchronized with environmental management in SSA. Such integration can provide opportunities for co-operation between public and private sector organizations at the national, regional and international level.**

## **V. Elements of a viable industrial strategy**

### **V.I. Macroeconomic policy**

- (a) Recent developments in neoclassical equilibrium theory relegitimize government intervention on the supply side as markets are recognized as necessarily imperfect (Phelps, 1994). An interest rate policy which facilitates the achievement of potential equilibrium output and minimizes monopolistic price mark-up is advocated. Government purchase of labour-intensive goods is recognized as output enhancing. In this perspective it is not the level but the form and the structure of government intervention which is crucial in determining market outcomes. Public expenditures and interest rate policy should seek to "crowd in" private investment. This requires an increase in capacity utilization rates which increase not just investment but more importantly domestic savings.
- (b) Increasing capacity utilization has required an emphasis on export expansion while maintaining a stable exchange rate (in both nominal and real terms) in the East Asian case. Devaluation may have potential output contractionary effects by increasing import and debt servicing costs and exerting upward pressure on domestic interest rates. Devaluation, of course, makes no sense if the income and price elasticities of tradeable goods are not "right".

- (c) Achieving productive efficiency requires institutional restructuring for creating new models of accumulation. Pressures for enhancing productive efficiency come from the state not from the capital market and precede attempts at increasing the achievement of allocative efficiency. In the Republic of Korea the cheobols were strengthened before being exposed to international competition.
- (d) A redesigning of adjustment programmes is thus required to shift the focus from demand management to the relief of the supply side rigidities. An expansion in public investment in infrastructural, skill augmenting and marketing activities is a pre-requisite for enhancing supply responsiveness to macro policy initiatives in SSA. In SSA increasing public investment requires increasing ODA of a form which relieves long-term supply constraints, particularly weak infrastructure and weak skill capacities. Debt forgiveness schemes should be conceived with this aim in view. Without relieving supply side constraints - through sustainable increases in public investment - policy fine-tuning can have little effect. Measures to relieve supply constraints should therefore precede incentive restructuring.
- (e) Sustaining public expenditure is crucial because investment ratios have fallen throughout SSA and are often below the level required to offset annual depreciation of capital stock. The net effect of devaluation on private investment also appears to have been negative, especially in the low income SSA countries. Even in the middle income countries a weak association between output and private investment growth has been noted (Oshokoya, 1994) but the "crowding in" effect of public investment on private investment has been confirmed by several studies. Moderate inflation stimulates private investment in SSA suggesting that perhaps the rate of "safe" deficit financing is rising. Falling private investment rates, rapidly declining domestic saving and significant level of capital flight both attributable to political instability are often accompanied by a liberalization of the foreign exchange regime.
- (f) The overall policy stance of SSA must be expansionist with an emphasis on relieving supply side constraints especially with reference to infrastructural and human resource capacities. This requires a sub-sectoral increase in public investment in these area and the fiscal and monetary regime must focus on the need to enhance sustainability of rising levels of public investment. This also requires an increased flow of ODA targeted at the infrastructural and human capacity building sectors.

## **V.II. Governance**

- (a) Effective state intervention requires a strengthening of the state's capacity for policy conception, articulation and implementation. The "hard" state which has generally led successful development strategies has typically retained considerable autonomy. The survival of successful "hard" developmental states is predicated on their economic performance. Such a state must develop capacity to disorganize "rent seeking" economic groups through its own economic intervention at both micro and meso levels.
- (b) The development of state bureaucratic capacities is particularly crucial for:
  - (i) acquisition and diffusion of technology;
  - (ii) exploitation of economies of learning, scale and scope;
  - (iii) inter-sectoral integration (especially between agriculture and manufacturing and within the manufacturing sectors);
  - (iv) ability to reward and punish firms and enhance policy credibility.
- (c) State capacities to influence behaviour of private firms depends crucially upon the size of the market (if this is small the obtainment or withdrawal of state support will probably be inconsequential). In the early phase of development expanding the size of the domestic market depends most basically upon the growth of agricultural productivity and its linkages with manufacturing. Promoting inter-sectoral linkages is a means for overcoming size limitations and thus enhancing state capabilities.

- (d) State autonomy is weakened by the incorporation of open economies within the international economic system, especially if the incorporation is of a dependency enhancing nature. The 'hard' states of Asia did not become 'open economies' despite their 'outward orientation' and exercised policy selectivity in relation to trade, finance and technology imports from international markets.
- (e) This is one aspect of the need for state intervention to support production and not just commerce. This will, of course, not be a "natural" consequence of democratization nor are there any grounds for expecting a decline in clientelism or corruption as a consequence of democratization. There has, however, been a vigorous growth of social movement at the grass root level in rural areas. Potential thus exists for facilitating the type of 'town and village enterprises' which have played such a major role in China since 1979. But if these local initiatives are to bear fruit, the typical stabilization policy package has to be modified to facilitate the reduction of poverty, the enhancement of food security and the growth of rural non-farm employment.

### **V.III. Agricultural policy and food security**

- (a) If production is to be revitalized, agriculture is clearly a crucially important sector and a centrally important issue in this connection is that of food security. SSA contains 44 of the 88 food deficient countries in the world and its food deficit is rising. Food imports have risen and are displacing coarse grain in domestic markets, the growth of the latter is seen as demand constrained by some analysts (Jaeger, 1992). Food production is declining as marginal returns on food production are lower than those on other rural activities including off-farm employment.
- (b) Increased food production is required in view of SSA's foreign exchange constraint. Increased food production is more dependent on increased public expenditure than on higher producer prices or marketing related liberalization (Mosley and Weeks, 1993). But public expenditures has been oriented towards cash crops.
- (c) Food insecurity is linked most importantly to low income. Food aid can have only a temporary effect on this. What is required is a fundamental reorganization of the food production and distribution system. Increased food production is feasible as resources - especially water - are underdeveloped and underutilized. Only 7 per cent of the arable land is irrigated. Moreover, access to labour has become more of a problem than access to land (the emphasis on the negative impact of population growth seems misplaced). Commercialization of tenurial systems has sometimes reduced the food entitlements of the poorest segments of the population.
- (d) A cornerstone of food and agricultural policy in SSA must be the raising of the permanent income of the poor, both rural and urban. Higher incomes are often positively associated with diversification of income sources, especially the growth of non-farm income. Assuming that food markets exist, the food security of the poor can be increased through the generation of non-farm and cash crop related employment opportunities.
- (e) Reducing food insecurity requires a targeted policy. Sectoral agricultural growth does not usually directly increase the food entitlements of the poor. Food production has responded less to procurement price increases than cash crops, especially in the poorer SSA countries. As against this a wider availability of consumer durables has stimulated food crop production. Production -of both food and cash crops - has been seriously affected by increases in input prices due to devaluation and the reduction in subsidization. Marketing liberalization has sometimes been ineffective because it led to a substitution of the state by private monopsonists. A switch to more productive crops - such as hybrid maize - is hampered by lack of access to credit and uncertainties surrounding fertilizer supply. Uncertainties connected with the absence of insurance markets and frequently changing tenurial contracts increase risk aversion and reduce investment and production.
- (f) The crisis of the 1980s has seen a re-emergence of traditional institutions in rural areas. These have acquired strength through the organization of parallel markets. The lowering of discrimination

against smallholders has paid dividends in the form of increased smallholder productivity in many SSA countries and should therefore be an important objective of agricultural policy. This cannot be achieved solely or even primarily by relying on price reforms - for studies invariably show positive but low price elasticities for especially food crops in SSA (Battoe-Bonne and Ashong, 1995). Price increases have - for example, in Ghana - led to increases in marketing margins and speculative gains while the real wages of agricultural labour have fallen (Aldvemare and Shiverley, 1996). Peasants expand production more in response to an increase in the availability of consumer goods than to an increase in prices, especially in low-income SSA countries such as Angola. A strengthening of processing and marketing infrastructure also leads to a strong production increase. Production responses to technological changes are also significant, provided this is accompanied by improvements in input supply and associated extension services. Reducing the subsidization of inputs particularly fertilizer usually has a severe negative impact on smallholder production and willingness to adapt new technologies.

- (g) The willingness of peasant to switch to cash crop production and non-farm activities is affected by the usually large difference in the prices at which they can sell and buy grain. The larger these differences, the greater the necessity to devote time to food production. Policy must aim at reducing the price of grain in rural markets if agricultural income of smallholders is to be raised.
- (h) Off-farm employment has grown in response to the increase in permanent village settlements and decline in urban employment opportunities. But the growth of non-farm activities in SSA is a response to increased income insecurity and does not lead to production related specialization. The technological capacity of non-farm production units and the quality of their products remains extremely low.
- (i) A case may therefore be made for adopting an agriculture demand-led industrialization (ADLI) strategy for SSA (Adelman, 1990; Mair, 1990). This predicts a relatively high rural income elasticity of the demand for manufactured goods and small gains from exporting agricultural commodities in non-processed (or semi-processed) form. The adoption of ADLI in SSA is limited by the existence of low backward linkages between agriculture and other sectors, but these linkages can be increased by adaption of irrigation systems to SSA geological and climatic patterns. Moreover, there is evidence to show that consumption linkages are increasing as are linkages between rural producers of agricultural inputs (particularly handtools and maintenance services) in several SSA countries. Investment linkages between farm and non-farm production in small towns are also likely to assume importance. Policy to stimulate the development of small towns proximate to rural areas can be useful in strengthening marketing investment and consumption linkages between agriculture and small-scale industry.
- (j) Expansion of food processing activities is important, both for increasing inter-sectoral linkages and more importantly for augmenting food security. Urbanization in SSA has been accompanied by a major shift in food consumption patterns; imported rice and wheat are increasingly being substituted for locally produced coarse grains even by poor urban dwellers. Food imports now account for roughly 40 per cent of West Africa's trade deficit (Rearden, 1995) and have been growing at an annual average rate of 10 per cent. Prospects for domestic production of wheat and rice are not bright in most SSA countries. The increase in the production of coarse grain is thus demand-constrained. Processing of coarse grain into products which can substitute for rice and wheat and be acceptable to urban areas is thus necessary to increase production of these crops and thus enhance food security in the rural areas. Processing of coarse grain, especially maize, leading to a significant increase in their local consumption, can reduce the foreign exchange gap to a large extent. Expansion of coarse grain processing requires substantial public and private investment. It cannot be achieved by simply increasing the relative price of imported foods for the demand for these products is not price driven. Similarly, stimulating coarse grain processing requires not price incentives (the production of coarse grain is not price responsive), but relieving supply-side constraints. Lowering milling costs, through technological upgrading and re-equipment and the provision of credit seems particularly important. Moulding consumer preferences in urban areas is also crucial.

#### **V.IV. Industrial policy**

- (a) SSA's industrialization strategy must be focused on the problem of increasing agricultural productivity through providing inputs and "incentive" consumption goods and absorbing agricultural production and "surplus" labour.
- (b) While there has been some increase in capacity utilization rates in SSA, there is no evidence of an increase in total factor productivity (TPF) or of improvements in firm-level choice of technology (Pack, 1993). Supply constraints, especially lack of technical manpower, is a crucial constraint to the growth of productivity. The essential argument for expanding large-scale manufacturing investment in SSA is that this constitutes an indispensable means for transfer of technological and organization knowledge throughout the system. Firms which "learn" quickly and efficiently should be encouraged. Microeconomic and institutional redesign ("meso") policies have usually a greater effect on technological upgrading, diffusion and learning than do macro policies. In East Asia, for example, the critical factor in technological development was domestic assimilation of imported production engineering know-how and know-why.
- (c) Project rehabilitation, especially when combined with privatization initiatives, can be a means for technological diffusion and learning.
- (d) SSA must choose an industrial structure which allows it to minimize long-run domestic resource cost and specialize in accordance with its dynamic comparative advantages. This indicates preference for a domestic resource and unskilled labour-based industrialization strategy. But such a strategy is risky in that its success depends on sustaining efficiency gains across a broad range of input producing activities. It is therefore important that policy is product-specific and explicitly identifies and promotes product groups in which sustaining system-wide efficiency gains is easiest. It is important to stress that concentrating on low skill and resource based products should not blind policymakers to the need for rapid technology upgrading and diffusion in these areas, for labour-intensive industries are undergoing rapid technological development in the international markets. Technological upgrading and systemic diffusion remain imperative for SSA whatever the existing factor intensity of the product groups that have been chosen. Increasing factor productivity must remain a major policy concern. There is a strong case for subsidizing technical education in labour and resource intensive areas, such as textiles, leather, food manufacturing, etc. Subsidization for the upgrading of general technical and managerial skills is also important. Concentrating on product systems implies attempts at greater horizontal specialization - as in East Asia - and subsidization of activities which facilitate a quick diffusion of mechanical and chemical engineering skills throughout the system.
- (e) Technological upgrading in SSA large-scale manufacturing is crucially hindered by the low flow of technological information. Institutional mechanisms must be established to overcome this deficiency. Exposing firms to international competition is effective only after they have "learned how to learn" and developed an organizational capacity to respond to market challenges. Export-oriented joint ventures may prove very effective in this context. TNCs can also be a good source for flow of technological and marketing information provided they can be induced to make a long-term commitment to SSA industrial development.
- (f) If the "wrong" industrial structure was chosen by SSA countries during the 1960s and 1970s, this was partly due to the fact that aid was available mainly for those projects which would use as inputs donor-produced equipment and technical expertise. If industrial priorities are to change, a change in the structure of financial assistance is clearly required. SSA's increasing debt burden places this question in clear perspective. Aid should be provided not on consideration of short-term compliance with the demands of multilateral agencies but on the basis of a careful evaluation of increasing the sustainability of the production and financing systems that are being created in SSA. Increasing the capacity for self-sustenance of SSA industry should be a major objective of ODA policy. Aid is required for financing capital imports by export-oriented domestic resource-intensive activities seriously affected by rising domestic interest rates and accelerated depreciation. The domestic

entrepreneurial class is weak and needs support to take advantage of the expenditure and investment "switching" that stabilization policy seeks to promote. Without such support, large-scale privatization in SSA is not conceivable. It may be stressed that US aid played a vital role in financing land reform programmes, industrial imports and capital formation in both the Republic of Korea and Taiwan Province of China during the 1950s.

- (g) The resource-based and labour-intensive product systems that are being targeted must enjoy state support especially in the form of subsidized credit and subsidized technical training. These subsidies must be conditional and temporary, enabling the targeted firms to develop a capacity to generate sufficient foreign exchange earnings to compensate for a decline in the foreign exchange earnings of the primary sector (the output of which are being processed by the targeted firms); the burden of foreign exchange earning is thus deliberately shifted from the primary to the competitive tradeable sector. Since factor endowment and production capacities change over time, industrial policy must also shift its targets as the East Asian did, moving on from labour-intensive firms in the 1960s to capital and technology-intensive ones after 1973. Price reform is, of course, neither the sole, nor the most important, means for effective policy targeting as the East Asian case shows.
- (h) It is generally accepted that the micro and small-scale sector (MSE) requires state support. While MSEs have continued to grow in number in SSA, their average size has not increased and mortality rates are also high. Over time they fail to "graduate" into the ranks of medium-sized enterprises. They are very vulnerable to developments which reduce market segmentation. The SSA MSE is not an adjunct to the modern large-scale sector as the Piore-Sabel model form is; it does not provide specialized services to the former. SSA has a dualistic industrial structure with large firms enjoying economies of scale and MSEs surviving on minuscule start-up costs and production flexibility. The medium-sized firm is particularly disadvantaged.
- (i) Linkage networks - horizontal integration - are emerging among SSA MSEs. Information sharing and pooling of savings is increasing. Industrial policy may seek to strengthen such horizontal integration by facilitating development of subcontracting links between traders and clusters of MSEs. Promoting MSE "clustering" can be an effective means for MSE "graduation" through an increase in collective efficiency. In particular, the provision of "industrial parks" can facilitate MSE clustering. The provision of services - such as advice on production, marketing strategy and financial management expertise - is also important. The regular organization of trade fairs has also proved very effective. Sustaining MSE clustering over time can prove problematic since the influence of socio-cultural ties tends to decline.
- (j) MSE development may be promoted by focusing on vertical integration and concentrating the provision of support on crucial sub-sectoral "nodes" which are the vital links in the production and distribution chain linking a large number of geographically dispersed MSEs. Sometimes such "nodes" may be located in policy making institutions and enhancing their capability can have wide efficiency enhancing effects.
- (k) MSEs have been adversely affected by devaluation. MSE entrepreneurs in Senegal during 1994-95 felt that the devaluation of the CFA franc increased input prices much more than it affected sales revenue (Greenway, *et. al.*, 1995). MSE survival possibilities have, however, not worsened during the stabilization era. Empirical research shows that survival possibilities are higher for manufacturing firms (textile and wearing apparel in particular). Home-based MSEs have lower survival probabilities. The MSE sector has been attracting a larger number of educated and trained manpower. Unavailability of credit is the most important constraint on growth followed by lack of marketing outlets. Provision of these inputs can be useful as can the adoption of a "sectoral nodal" role by state marketing institutions in construction, metal working and food manufacturing.



## **V.V. Technology policy and capacity building**

- (a) High capital intensity is associated with low profits in a range of SSA countries (James, 1996). This "wrong" technological choice has been explained in classical "Batesian" terms - firms choosing growth maximizing strategies to ensure the political survival of managerial elites. What matters to management is the number, not the outcome, of projects. Moreover, during the 1960s and 1970s, maximizing foreign exchange flows towards "their" public enterprises became a key managerial objective and ODA flows were directed towards capital-intensive projects.
- (b) Due to the "wrong" technological choices of the past, the need for technological capacity building is high in SSA. Technology is firm-specific and its acquisition requires the institutionalization of learning at the firm level. Inter-firm technological capacities at the sub-sectoral level are highly differentiated. Thus industrial policy may provide support at the firm level for technology acquisition, appropriation and diffusion to suppliers and purchasers. Industrial policy must also have the capacity to reward quick learners and punish laggards. Incentives may be provided for technology capacity building by firms. Provisions of technological information and mechanisms for upgrading organizational skills in this area can pay rich dividends.
- (c) Of greater importance are policy measures aimed at increasing national technological capacity. Resources must be found to offset depletions in capital stock; ODA has a crucial role here. Human technical skill upgrading is also crucial as is the development of a technological infrastructure providing information, standards, research facilities, etc. Technological capacities will not grow spontaneously in response to the growth in competition, they require policy-induced changes in firms' behaviour patterns (including risk aversion, "learning to learn", etc. (Stiglitz, 1987).
- (d) Technological support programmes have to be selective, focused on sectors, activities and firms to exploit their superior growth potential, linkages and externalities. Protection need not be widespread or indiscriminate. Protection played a major role in upgrading firm level and national technological capacity of the East Asian countries. Technological upgrading should take the form of a public-private partnership; since 1960 the Republic of Korea has insisted - and ensured - that firms spend 5 to 6 per cent of their budgets on R and D. This is feasible in Botswana, Kenya, Mauritius, Nigeria and Zimbabwe. Research orientation of the major firms can be gradually built up by the state.
- (e) As noted earlier, TNCs can be efficient suppliers of technology. But the technology they supply is usually "packaged"; the subsidiary receives the results of innovation, not the innovation process. This "truncated" technology transfer stults the technology adaption capacity of the receiving firm. Policy must thus provide incentives for the transfer of unpackaged technology. Non-equity forms of technology transfer - licensing, build - operate - transfer arrangements, etc., may be more appropriate.
- (f) Resources and technical assistance may also be provided to assist in the development of a national technology policy. This has become essential because technological upgrading and the introduction of flexible manufacturing systems (FMS) in light industries is spreading widely and without explicit technological strategies to deal with this situation, countries such as Cameroon, Kenya, Nigeria and Zimbabwe will almost certainly lose their current comparative cost advantages in light manufacturing. Technological upgrading is in any case the natural route to industrial diversification.

## **V.VI. Trade policy**

- (a) The central feature of SSA's trade structure is its high concentration; 70 per cent of it is with the EU (although it represents only about 3 per cent of Europe's external trade). While trade policy reforms have been pursued with vigour, there is no conclusive evidence about their impact on growth, foreign exchange earnings or export diversification (Kirkpatrick and Weiss, 1995). They also

show that fall in the real exchange rate has not led to better export performance and has contributed towards a reduction in the MVA/GDP share. There are many theoretical ambiguities in measuring "outward orientation" and in assigning GDP growth to export growth. Nor is the use of world prices based on current trading status always an appropriate means for measuring protection and as guides for setting domestic prices (Byerlee and Morris, 1993). International market prices of grain are, of course, anything but competitive.

- (b) The difference between import-substituting (ISI) and export-oriented (EOI) industrialization strategies tends to be overdrawn. Liang (1992) argues that East Asian countries pursued "protectionist export-oriented" strategies which skilfully combined elements of protectionist and competition enhancing strategies in an unusually favourable international environment. Such a favourable environment is not available to SSA. GSP programmes have not stimulated exports while export earnings instability has been high; this had, however, led to compensatory financial flows and according to recent empirical work (Fosu, 1992) this has been less of a problem for SSA than for other LDCs.
- (c) Liberalization of trade has not been accompanied by reduction in renter interference and power. Frequently there has been a change in the form of state patronage and in its processes of mediation and new client groups have replaced old ones. Competition has increased. Association between lower protection and TPF are also weak (Malaga and Weiss, 1995). Lowering protection does reduce the foreign exchange constraints as funds associated with the stabilization policy package are made available and this allows an increase in capacity utilization level.
- (d) Governments of 44 SSA countries have agreed to a major tariff reduction as part of the Uruguay Round negotiations. Tariff reduction by SSA's trade partners are not of advantage to SSA except for a group of 8 mainly small countries - Cape Verde, Congo, Cameroon, Malawi, Mauritius, Reunion, the Seychelles and Zimbabwe - mainly small which may gain from NTB reductions. All SSA countries will have to face higher competition especially in European markets. A particularly seriously affected industry will be textiles which may face high post-Uruguay tariffs. There is a need to restructure the textile industry to make it internationally competitive before the phasing out of the MFA. There may be a phased withdrawal of TNC textile investment from SSA.
- (e) Trade policymakers face difficult choices. There is no guarantee that reducing protection will realize allocative and/or production efficiency related gains. Dynamic comparative advantages have to be built. Changes in international factor prices require flexible SSA trade structures. A central concern must be to relate export and domestic market performance; as Liang (1992) has shown EIO and ISI are not mutually exclusive policies. Selectivity has been the key to the export success of the East Asian countries. East Asian governments "picked winners", set production, investment and export targets of a relatively narrow range of products, provided incentives and punished non-compliance. Since resources are scarce, SSA should also exercise selectivity in choosing products, firms, sectors, technologies and institutions if international market niches are to be constructed and preserved. Such selectivity should support private sector initiatives and not seek to stifle it as was often the case during the 1960s and 1970s.

## **V.VII. Finance**

- (a) There has been a major fall in domestic saving and investment rates during 1980-95. SSA countries have sought to reverse this trend by financial liberalization. Continued financial inefficiency is reflected in the large spread between banks' deposit and lending rates due to large reserve requirements, high administrative costs and inability to find good borrowers. Government deficits have been reduced but accelerated depreciation has contributed towards inflation. Interest rate liberalization has led to an increase in deposit rates. The accumulating volume of uncollectible debt has led to the collapse of several financial institutions.

- (b) Financial liberalization necessarily reduce seigniorage revenue and since other tax sources are limited in SSA, public savings must fall. Financing development thus depends crucially on generating domestic private and foreign savings. In SSA there is an urgent need to restructure and rationalize the financial sector; this will not occur spontaneously in response to rising interest rates and the imposition of prudential regulations from above. The financial intermediation system is in a state of collapse throughout SSA. Capital flight has increased. Portfolio infection of the major institutions is now very high (almost 100 per cent in many cases), especially in the CFA zone where banks could borrow from the central monetary authorities which were highly liquid due to restriction on government lending. Banks are in a very weak position in West and Central Africa.
- (c) Financial sector restructuring in SSA must take the form of the promotion of a modified version of universal banking. The principle features of this restructuring must be:
1. Recapitalization of financial institutions must be linked to specific programmes of project rehabilitation through acquisition and mergers. This may be related to the privatization initiatives of the governments.
  2. The establishment of sector banks (textiles, chemicals, engineering, energy) to bring financiers and industrialists institutionally close to each other in line with the German model. Sector banks should aim at providing the full range of financial services tailor made to suit the needs of industrialists.
  3. Development of SSA capital markets and using capital and (less importantly) money market mechanisms to link European specialist banks and other financial institutions with SSA finance.
- (d) Scope also exists for a rapid development of micro enterprise credit schemes. The informal financial sector has probably benefitted from the collapse of the formal institutions. Establishing linkages between formal and informal financial institutions may be feasible; in some Asian countries there is such a division of labour with banks providing long-term finance and the informal sector providing working capital funds (Ghate, 1992).
- (e) The evidence from SSA seems to suggest that informal markets are highly monopolistic; rates of more than 5,000 per cent per annum are not uncommon (Bolnick, 1992). Linkages between formal and informal markets may be established as follows:
- (1) Informal sector lenders can be used as agents by the banks;
  - (2) Banks opening branches in rural marketing centres (this has proved effective in Malawi);
  - (3) Development of micro credit schemes including those in which savings and credit are linked;
  - (4) Relating lending programmes to government procurement, etc.
- (f) At present less than 5 per cent of SSA's rural population has access to formal micro-enterprise credit programmes and access to credit is the single most important constraint on MSE upgrading in many SSA countries. There is thus an urgent need to upgrade MSE credit programmes in SSA. They should have the following features:
- (1) Operations should be decentralized;
  - (2) Staff of each unit should be selected from local areas;
  - (3) Collateral requirements should be replaced by personal or community guarantees;
  - (4) Operational procedures should be simplified;

- (5) Loans should be for production purposes;
  - (6) Subsidization of credit should be avoided;
  - (7) Incentives for timely payments but strict monitoring to ensure a near 100 per cent recovery rate.
- (g) In both large-scale and the informal sector the key issue is to link financial rates of return to lenders to the marginal productivity of capital (i.e. rates of profit actually realized by investment). An important innovation in this respect, especially important for economies with undeveloped financial markets are the Islamic financing instruments of modaraba (funds management), musherika (profit sharing) and ijara (leasing). They establish a formal contracted relationship between financial charges and profit rates. The use of these instruments has attracted venture capital in several countries (Egypt, Sudan, Senegal) in SSA and Islamic banks have been relatively successful. Financial experiments along these lines may be established for SSA.
- (h) Careful redesigning of the financial system of SSA in association with SSA's existing and potential international financial partners can stimulate domestic savings and investments and can pave the way for increased foreign capital flows as SSA's absorption capacity expands.

#### **V.VIII. Foreign capital**

- (a) ODA is ten times as important to SSA as FDI. SSA's ODA/GNP ratio stands at over 12 per cent - higher than that of any other DC regional group. Debt/GNP ratios exceed 100 per cent for 26 African countries. The debt service ratio is very high despite the low interest rate charged on SSA debt.
- (b) The most urgent issue therefore is the settlement of debt. Some progress has been made in debt cancellation but what is needed is to relate debt servicing and restructuring (including debt cancellations) to growth in productivity and in foreign exchange earning capacity. Enhancing "ability to pay" should be built into debt restructuring programmes. Improving debt repayment capacity requires initiatives at the micro level. These could include:
- (1) Identifying projects which can increase foreign exchange earnings and/or foreign exchange savings over a short time period;
  - (2) Developing a financing framework for facilitating public and private, domestic and foreign co-operation for financing such projects;
  - (3) Developing an acquisition and merger programme to channel local funds towards such projects;
  - (4) Restructuring the privatization programme with this end in view.
- (c) Restructuring the on-going project rehabilitation and debt management programmes is key to increasing the flow of FDI. FDI remains crucially important because it provides an important technology transfer, marketing and information link mechanism. It should be directed to sectors where its productivity enhancing impact can be maximized.
- (d) Firm-level surveys show that British and German firms have been disinvesting in many SSA countries during 1989-94. Manufacturing investment has in practice been withdrawn from countries which have vigorously implemented stabilization policies (Bennell, 1995). Disinvestment has been growing since the early 1980s and involves some of the largest TNCs. Investment withdrawal by UK companies was greatest in the intermediate and capital goods industries. British investment is now concentrated in low value added branches using relatively obsolete technologies. Transfer of

technology has slowed down. Depreciation has reduced sterling values of production and profit remittances. Senior managers of British TNCs in SSAs have been reported to be unenthusiastic about the impact of stabilization policies (Bennell, 1995). Sales of British TNC affiliates have not been at unrealistic prices and South African firms and local Indian and European origin nationals have been willing to pay good prices.

- (e) Increasing FDI flows requires the establishment of political stability and macroeconomic growth. Measures to restore these and to link official and private flows, especially in debt restructuring packages which can enhance SSA's "capacity to pay" can be far more effective than tax concessions and other short-term incentives in attracting FDI to SSA.

#### **V.IX. Regional co-operation**

- (a) Regional integration within SSA has faltered during the crisis years of the 1980s. There are hopes that the commitment to establish the African Economic Community may revive the momentum.
- (b) A redefinition of the relationship with Europe is also possible given the possibility of European Monetary Union and the establishment of a single European currency. The likelihood of pegging all SSA currencies to the ECU does not seem very bright given the difficulties of the CFA zone. However, the possibility of harmonization of monetary policies would be enhanced if the South African Rand were assigned the role of the key regional currency. This can stimulate both inter-regional trade and investment especially by South African companies.
- (c) The June 1995 mid-term Lomé review showed that European commitment to SSA has not declined. This review shows a clear European preference for short-term financing and a downgrading of long-term, especially project assistance. There is, however, a new commitment to assist with private sector development and export promotion. These commitments can be utilized to fund regional industrial projects which can contribute to an increase in SSA's foreign exchange earnings.
- (d) The most important element of any attempt at regional integration is the establishment of inter-enterprise co-operation. The development of regionally focused private enterprises can provide a basis for collaborating with foreign firms for developing the regional market. Joint venturing - involving, for example, firms from East Asia - should be promoted as the key element of regional integration policy. This can expand opportunities for production of electronic components and niche products and expand international market access of SSA firms. Core industries for promoting regional joint venturing are agriculture-related branches, engineering and mineral processing industries. Concentration on inter-firm collaboration in key sectors can perhaps generate the type of momentum for policy harmonization that Europe experienced as a result of the success of the European Coal and Steel Community in the early 1950s.

#### **V.X. Environmental policy**

- (a) Environmental degradation takes three main forms in SSA: depletion of water resources, degradation of soil and deforestation. Access to water for rural and urban population is low. Support is required for expanding irrigation systems, especially utilizing flows for newly built dams through artificial flooding. System redesign and technological upgrading of water delivery networks is urgently required. Water is the single most important agricultural input and expansion of agricultural production and of agro-based industries depends crucially on its availability.
- (b) Another problem is deforestation which is currently taking place at the annual rate of 0.5 per cent of forested area in 27 SSA countries. Land degradation is a primary factor caused by agricultural extensification and increased use of marginal lands. Land degradation leads to an irreversible decline in land productivity. Preventing land degradation requires removing people from agriculture

and developing non-farm employment opportunities in town and country. In SSA this is easier than the type of tenurial restructuring required to eliminate discrimination against smallholders. Second, the supply of inputs which make an intensification of agricultural production is also crucial in preventing land degradation.

- (c) Several SSA countries have developed national environmental plans and assesment of conservation strategies. They are usually of a command and control (CAC) type and not based on assessmental socio-economic costs of different environmental strategies. Few incentives are employed to induce farmers to avoid extensification. The provision of inputs (e.g. fertilizer) and the sharing of environmental protection benefits (e.g. income from tourism) can lead to a reduction in deforestation.
- (d) While industrial pollution is low by international standards, there is growing waste production and emission in the mining sector. The use of pollution related taxation or the auctioning of tradeable protection rights should be considered. The impact of pollution on industrial activity needs to be evaluated. Enforcement costs of environmental protection measures are relatively low and firms have rarely responded by relocating to dirtier sites or countries.
- (e) There is a strong case for expanded international co-operation for limiting environmental depletion. This is especially so with respect to the protection of bio-diversity where the benefits to the industrialized countries are greater than those to SSA (Tobey, 1993). Tobey therefore argues for the creation of an international bio-diversity protection facility which would transfer funds on a recurrent basis to countries which have wildlife habitats in abundance.
- (f) All major aspects of environmental protection policy - water access, soil degradation prevention, pollution control, preservation of bio-diversity - have industrial dimensions. The industrial sector must grow in a manner which enhances the sustainability of existing ecosystems, increases agricultural productivity and provides off-farm employment. Industrial policy must be synchronized with environmental protection policy in SSA.

## **VI. Conclusions**

The conclusions of this paper are presented in the document "Agro Industrial Development in Africa: A Programme for UNIDO".

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