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The State of Rural Poverty, Income Distribution and Rural Development in SSA

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Introduction

In the first section of this paper a detailed rural profile of sub-Saharan Africa (SSA) is derived on the basis of a new and highly disaggregated data set based on a large number of recent country household surveys. The profile that results from the data analysis is quite bleak and reveals the significantly greater poverty, income inequality and agricultural stagnation in SSA as compared with Asia and other parts of the developing world. The discouraging rural socioeconomic profile that is painted in Section 1 raises two fundamental issues: (1) why did the rural sector in SSA evolve so differently than in other regions and particularly Asia; and, (2) what are the main factors that contributed to or caused the particular rural development path followed by SSA in recent times?

Consequently, in Section 2 we explore the major factors that appear to have influenced the African rural sector development path. These factors are grouped together under the heading of physical, technological and legal environment and further subdivided into access to land, quantity and quality of infrastructure, extent of market integration for agricultural products, relative size of the marketable surplus, agro-climatic diversity and technological constraints, and land tenure and titling.

Section 3 is devoted to an analysis of policies, institutions, and cultural and community norms affecting agriculture and the rural sector. Clearly policies at the macroeconomic and sectoral levels have tended to discriminate heavily against agriculture either directly or indirectly. In particular, the very divergent treatment of the agricultural surplus over time in SSA as compared with Asia is brought to the fore. Next, examples of inappropriate institutions within the context of SSA that contributed to agricultural stagnation are given and finally, the contrast between the typical cultural and community norms prevailing in SSA and Asia is drawn.

The final section of the paper deals with some conclusions and policy recommendations.

1. The rural sector in SSA: A profile

1.1 Social and consumption indicators

The following profile of the rural sector in SSA is based on the most recent household data set available for a sample of 16 SSA countries (see Annex Table A1 for the countries involved and World Bank, 1997, for further details). The total population of the sample is 278 million for 1993, representing about 47% of the total population of SSA. The rural population in the sample is found to be 191 million, representing 69% of the total population.

The World Bank (1997) provides information on five sets of indicators summarizing returns from household surveys: demographic (population below 15 years, number of households and average household size), education and literacy (net primary enrolment, net secondary enrolment and literacy rate), head of household (male headed households, female headed households,

educational level of head and sector of employment of head), household expenditure (per capita expenditure, poverty line and food share in total expenditure) and household amenities (type of fuel for cooking, access to safe sanitation and access to water). Table 1 summarizes the most important characteristics of rural SSA, while Annex Table A1 provides some of the country details.

Table 1: Major characteristics of rural SSA in the 1990s

Indicator	Mean	Standard deviation
Average household size (no.)	5.46	1.83
Population below 15 years (%)	47.80	2.50
Net primary enrolment (%)	42.50	19.50
Male primary enrolment (%)	46.40	18.60
Female primary enrolment (%)	39.90	22.00
Literacy rate (%)	39.54	19.02
Male literacy rate (%)	47.96	21.54
Female literacy rate (%)	32.14	18.19
Female headed households (%)	17.98	9.87
Heads in agro-pastoral activities (%)	76.98	11.95
Access to sanitation (%)*	53.73	30.73
Access to piped water (%)**	10.64	11.35

Source: World Bank (1997): * information available for 11 countries; ** information available for 14 countries.

The picture is of a rural sector with a fairly young population, 48% below the age of 15 years, heavy reliance on agriculture as a source of employment (77% of the heads of households), and a high degree of deprivation: literacy rate of 40%, access to sanitation by only 55% of the population and access to piped water by only 11% of the population.

As usual, however, the average picture hides a lot of variation among countries as indicated by the standard deviation. Taking the literacy rate as an indicator of educational achievement, for example, we find that both Kenya and Tanzania have made commendable progress in rural education with total literacy rates of 71% and 70%, respectively (81% and 80% rates for males and 63% and 62% for females, respectively). At the other extreme, Guinea (with a total literacy rate of only 10%, male literacy rate of 23% and female rate of only 1%), Guinea-Bissau (12%; 22% and only 4% for females) and Zambia (12%; 16% and 8%) have a long way to go. Access to piped water, a proxy for rural health achievements, paints another extreme picture of deprivation in rural SSA for all countries. Of the 14 countries for which data are available the highest achievement is recorded for Côte d'Ivoire, in which 38% of the rural population have access to piped water. In the Central African Republic and Guinea only 1% of the rural population have access to piped water, while only 2% of the rural population in Guinea-Bissau,

Tanzania and Uganda have such access. Both education and health indicators reflect not only the extent of rural deprivation but also the magnitude of the development challenge facing the continent.

Regarding the gender dimension of rural SSA, it is not clear whether the 18% of the households being headed by females is high. This category, we hasten to note, includes both the *de facto* female heads, which refers to households where the husband is not present and the wife is head by default, and the *de jure* female heads, which refers to households where the head has never been married or is divorced or widowed. The *de facto* situation can capture some important socioeconomic processes such as migration. The highest incidence of female-headed households is recorded for Guinea-Bissau, where 43% of the households are female-headed, followed by Kenya (32%), Ghana (29%), Uganda (25%) and Central African Republic (24%). The lowest incidence is recorded for Gambia (3%) followed by Burkina Faso (8%).

The gender dimension, as discrimination between the sexes, is usually discussed in terms of educational attainment. From the table, the female literacy rate for rural SSA is 32% compared with a male literacy rate of 48%, which indicates a gender discrimination. The difference between the two is statistically significant at the 5% level. For the primary education level, however, the school enrolment ratios are 40% for females and 44% for males and the difference is not statistically significant. The gender bias observed in health in South Asia does not appear to be generally prevalent in Africa and this holds true for other indicators such as infant and child mortality (Appleton, Hoddinott and MacKinnon, 1996).

The picture of a fairly underdeveloped rural sector is reinforced by a consideration of welfare standards as judged by per capita expenditure. Annex Table A2 provides the country details for our sample. At the aggregate level a summary is provided in Table 2.

Table 2 : Average per capita expenditure in SSA 1993 (PPP $ 1985 unless specified otherwise)

Indicator	National	Urban	Rural	Rural/National (%)	Rural/Urban (%)	Rural food share (%)
Mean	513	829	380	74.6	48.5	58.2
Standard deviation	170	326	142	13.4	16.6	15.9

Source: Authors' calculations.

According to Table 2, the mean per capita expenditure for the sample countries was $513 per annum for 1993. This works out as $43 per person per month, which is 42.5% above the international benchmark poverty line currently in use by, among others, UNDP and the World Bank for international comparisons. This indicates that we are dealing with an overall depressed economic situation in SSA. Within this, we note that mean urban expenditure works out as $69 per person per month, while mean rural per capita expenditure is only $32 per person per month (only 7% above the international poverty line). Compared with mean national per capita expenditure, the rural welfare indicator is 75% of the national average. Urban expenditure is twice that of rural expenditure, indicating a fairly wide rural–urban gap.

Once again this aggregate picture hides a lot of variations among countries. Eight countries in the

sample have a rural per capita expenditure below the international poverty line of $30 per person per month: Burkina Faso, $23; CAR, $22; Gambia, $24; Guinea, $23; Guinea-Bissau, $24; Niger, $24; Tanzania, $20; and Zambia $16. Four countries have a rural per capita expenditure between $30 and 40 per person per month (Madagascar, $31; Senegal, $35; Sierra Leone, $36; and Uganda, $35), while the remaining four have a rural per capita expenditure of $40 or more per person per month (Côte d'Ivoire, $42; Ghana, $59; Kenya, $40; and Nigeria, $53).

The share of food in rural expenditure averages 58% for the sample. This varies from a low of 21% for Côte d'Ivoire to a high of 78% for Zambia. Ten of the 15 countries for which information is available have a food share in rural expenditure of 60% or more.

A comparison of these indicators as well as additional health (life expectancy and infant mortality rates) indicators for SSA and other developing regions reveals clearly the relative underdevelopment of SSA.

1.2. Income distribution and inequality measures: SSA compared with other developing regions

Comparisons based on national data

The difficulties surrounding the use of income distribution data in developing countries have been addressed extensively in the literature (see, for example, Deininger and Squire, 1996; Fields, 1994; Chen, Datt and Ravallion, 1994; Ravallion, 1995). The crux of the matter is that such data are scarce and full of inconsistencies and that care should be exercised in using them. Deininger and Squire (1996: 567—71) specify minimum standards for the quality of income distribution data as the following: (1) the database must be an actual household survey; (2) the data, even if drawn from household surveys, must be based on a representative sample covering all of the population; and (3) the data source must be based on a comprehensive coverage of different income sources as well as population groups (see also Fields, 1989 and 1994). Ravallion (1995) discusses the problems related to the comparability of data used in making cross-country comparisons of poverty.

To guard against such problems, and to maintain maximum comparability with the literature, Ali (1997: Appendix tables A2 and A3) used the original data set of Chen, Datt and Ravallion (1994). This set included 44 countries, 3 of which were European (then socialist), with a total of 63 income distribution observations, where 19 countries had two observations each. In using the data set the three socialist countries were excluded and hence only 41 countries and 58 observations were used for regional comparisons. Table 3 summarizes the results in terms of averages over observations, where figures in parentheses are standard deviations.

It is an easy matter to check that there exists a statistically significant difference at the 5% level of significance for all reported measures of inequality between sub-Saharan Africa and both South Asia and Asia, so that it will be safe to conclude that SSA exhibits more unequal distribution of income than either of the other two regions. However, there exists no statistically significant difference between SSA and East Asia.[1]

[1]This, we believe, is an interesting result in its own right. Relating these results to the share of population living in rural areas tends to confirm the assumption frequently invoked in the development literature that the more rural an economy is the more equal its distribution of income is likely to be.

Table 3: A summary of inequality measures: Averages by region (percentages of total consumption except for last two columns)

Region (no. of countries)	No. of observations	Share of lowest 40%	Share of top 20 %	Share of top 10%	Gini coefficient	Ratio of top 20% to lowest 40%
SS Africa (14)	16	14.50 (5.02)	51.34 (8.85)	35.95 (8.47)	45.37 (10.75)	4.19 (2.08)
East Asia (5)	9	16.76 (2.88)	47.01 (5.17)	31.33 (5.18)	40.02 (06.21)	2.96 (0.89)
South Asia (5)	8	21.85 (1.00)	39.73 (1.31)	25.43 (1.13)	30.50 (01.81)	1.83 (0.14)
Asia (10)	17	18.63 (3.23)	44.50 (4.96)	29.42 (4.56)	36.77 (06.29)	2.53 (0.79)

Source: Calculations based on Ali (1997).

We note that these results are not qualitatively different from those reported by Deininger and Squire (1996: 383–85). To see this we summarize their results in Table 4.

Table 4: Deininger and Squire inequality results for the 1990s: Averages by region (percentages of total consumption except for last two columns)

Region (no. of countries)	No. of observations	Share of lowest 20%	Share of top 20 %	Share of middle class (3rd and 4th quintile)	Gini coefficient	Ratio of top 20% to lowest 40%
SS Africa (14)	16	5.15	52.37	33.54	46.95	10.1689
East Asia (9)	16	6.84	44.33	37.53	38.09	6.4810
South Asia (4)	6	8.76	39.91	38.42	31.88	4.5559
Asia (13)*	22	7.80	42.12	37.98	34.98	5.5184

* The last row is a simple average of the two Asian regions and is meant to be indicative.

Source: Based on Deininger and Squire (1996: tables 5 and 6).

An interesting result reported by Deininger and Squire (1996) pertains to the decadal behaviour of inequality. According to these results SSA inequality declined over the period 1960–1980 (from average Gini of 49.9% in the 1960s to an average Gini of 43.46% in the 1980s) and increased thereafter to an average Gini of 46.95% in the 1990s. By contrast, for East Asia inequality first increased from a Gini of 37.43% in the 1960s to a Gini of 39.88% in the 1970s, before declining to a Gini of 38.7% in the 1980s and 38.09% in the 1990s. The behaviour of inequality in South Asia was different; there it declined over the period 1960–1970 (from a Gini of 36.23% in 1960s to 33.95% in 1970s), then increased to a Gini of 35.01% in the 1980s prior to declining again to an average Gini of 31.88% in the 1990s. Once again, given data limitations, these results should be taken as indicative rather than definitive.

Comparisons based on rural sector data

Next we concentrate on the distribution of income *within* the rural sector (Table 5). For this we report the results from our sample of 16 SSA countries for which information is available. As is clear from Annex Table A3, the income distribution information for SSA relates to the early 1990s and indeed for most of the countries it relates to 1993. The results reported for a sample of five Asian countries (in Table 6), on the other hand, relate to the mid 1980s and as such are not strictly comparable.

Table 5: Income distribution measures for rural SSA: A summary (percentages)

Inequality measure	Mean	Standard deviation	Minimum	Maximum
Share of lowest 40%	15.55	5.1	3.54	21.38
Share of top 20%	50.46	10.8	37.94	78.44
Gini coefficient	42.88	11.2	29.72	66.67
Ratio of top 20% to lowest 40%	4.5996	4.9	1.77	22.16

Source: Annex Table A 3 .

The summary yields a picture of a fairly high unequal distribution of income within the rural sector of SSA. As usual, being a summary, the picture hides a lot of variation among countries in the sample. For all the inequality measures reported, however, Côte d'Ivoire comes out as having the most equal rural distribution in SSA, with the highest share of income for the lowest 40% of the population (21.38%), the lowest share for the top 20% of the rural population (37.93%), the lowest Gini coefficient (29.72%) and the lowest ratio of the share of the top 20% to that of the lowest 40% (1.77). At the other extreme, Sierra Leone comes out as having the most unequal rural distribution in SSA with the lowest share of income for the lowest 40% of its rural population (only 3.5%) and the highest values for the remaining inequality measures as reported in the table.

The distribution of the sample countries with respect to the mean of the inequality measures could be summarized as follows: (1) seven countries have a share of the lowest 40% less than the mean (Central African Republic, Guinea-Bissau, Kenya, Nigeria, Senegal, Sierra Leone and Zambia); (2) five countries have a share of the top 20% greater than the mean (CAR, Guinea-Bissau, Kenya, Nigeria, Sierra Leone and Uganda); (3) six countries have a Gini coefficient greater than the mean (CAR, Guinea-Bissau, Kenya, Nigeria, Sierra Leone and Zambia); and (4) three countries have a ratio of the top 20% to the share of the lowest 40% greater than the mean (CAR, Guinea-Bissau and Sierra Leone). This distribution implies that about 48.5% of the rural population of SSA is living under conditions where the distribution of income is relatively highly unequal.

Having noted this situation, we report in Table 6 the results for the inequality of income in the Asian region. The available information on the distribution of income in the Asian rural sector is from a recent ILO compendium of data authored by Tabatabai (1996). This source provides

quintile or percentile data suitable for further analysis for only five countries. However, since the countries in the sample include China, with its already noted dominating share of population in rural Asia, the results could be taken as strongly indicative of the state of income distribution in the Asian rural sector.

Table 6: Income distribution measures for rural Asia: A sample of countries (percentages except for the last column)

Country (Year)	Share of lowest 40%	Share of top 20%	Gini coefficient	Ratio of top 20% to lowest 40%
China (1988)	18.6	44.2	36.34	2.38
Indonesia (1987)	23.5	37.6	27.60	1.60
Malaysia (1984)	14.1	49.4	44.45	3.50
Nepal (1984/85)	25.5	35.2	23.78	1.38
Pakistan (1990/91)	16.5	47.3	40.99	2.87
Mean	19.6	42.7	34.63	2.35
Standard deviation	4.3	5.5	7.84	0.79

Source: Based on Tabatabai (1996).

Comparing the two tables it is perhaps clear that the distribution of income in the Asian rural sector in the mid 1980s was significantly more equal than that prevailing in SSA at the beginning of the 1990s (with the exception of Malaysia). Indeed, conducting a t-test it is an easy matter to show that for all the all reported inequality measures, except the ratio of the top 20% to the lowest 40%, the difference is statistically significant at the 5% level.

1.3 Extent and incidence of poverty in SSA

As usual we report the poverty results for rural SSA in terms of the three well-known poverty measures: the head-count ratio (H: which measures the spread of poverty), the poverty-gap ratio (P_1: which measures the depth of poverty) and the squared poverty-gap ratio (P_2: which measures the severity of poverty).[2] The detailed country results are presented in Annex Table A4. To generate comparable results we followed Chen et al. (1994) in using per person consumption expenditure denominated in 1985 PPP dollars. Indeed, for the countries for which they report such figures we adjusted their figures to the corresponding survey years using appropriate growth rates from the World Development Reports of the World Bank. For countries where such figures are not reported, we used the original Summers and Heston (1991) results and adjusted them as appropriate. Note, however, that Chen et al. (1994) do not report mean consumption figures for rural and urban sectors. To obtain the rural sector figures we used the original sectoral ratios reported in the World Bank (1997) summary of these surveys.

[2]As is well known the three poverty measures are special cases of the Foster–Greer–Thorbecke (1984) measure defined as $P(\alpha) = 1/n\ E[(z - y_i)/z]^{\alpha}$, where z is the poverty line, y_i is the income (or expenditure) of poor person I and α is a non-negative poverty aversion parameter, and where the summation is over q poor persons. When α takes the values 0, 1 and 2 we get the head-count ratio, the poverty-gap ratio and the squared poverty-gap ratio, respectively.

Given rural per capita consumption expenditure we estimated the relevant country poverty lines by using the estimated equation reported in Ali (1997) where the relationship between the poverty line and mean income is given by the following semi-log functional form (figures in parentheses are t-values):

$$\text{Ln } z = \underset{(100.9)}{5.181} + \underset{(18.3)}{0.00158}\,\mu - \underset{(-10.9)}{0.0000003485}\,\mu^2; \quad R^2 = 0.96 \qquad (1)$$

Given Equation 1 and the rural distribution information, the rural poverty results are generated by Povcal, a programme for calculating poverty measures from grouped data developed by Chen et al. (1994). (See Table 7.)

Table 7: SSA rural poverty in 1993: A summary

Poverty indicator	Mean	Standard deviation	Minimum	Maximum
Head-count: (%)	58.72	12.16	34.42	77.57
Poverty-gap: (%)	26.51	12.22	9.26	55.58
Squared PG: (%)	15.89	11.01	3.55	45.86
Mean income: ($)	380.00	142.00	191.00	706.00
Poverty line: ($)	311.00	60.50	237.00	456.00

Source: Annex Table A4 .

From Table 7 it is clear that at the beginning of the 1990s poverty in rural SSA was very widespread, with 59% of the rural population living below the poverty line of approximately $26 per month per person. SSA rural poverty is also found to be both deep, as reflected by a poverty-gap ratio of
27%, and severe, as reflected by a squared poverty-gap ratio of 16%. To further appreciate the extent of this poverty it can easily be shown that the average income of the poor in 1993 amounted to only $14 per person per month.

The spread, depth and severity of SSA rural poverty differ among countries as captured by the magnitude of the reported standard deviations. In terms of spread, Côte d'Ivoire ranks as the country with least rural poverty with a head-count ratio of 34%, while Central African Republic ranks as the worst with 78% of its rural population living below a poverty line of $103 per person per annum (or only $9 per person per month). In terms of both depth and severity, Ghana ranks as the country with least poverty (with a poverty-gap measure of 9.3% and a squared poverty-gap measure of 3.6%), while Sierra Leone has the worst rural poverty (with a poverty-gap measure of 55.6% and a squared poverty-gap measure of 45.9%).

Further, the distribution of the countries of the sample with respect to the reported mean head-count ratio is such that eight countries have a ratio greater than the mean (Burkina Faso: 68%; Central Africa Republic: 78%; Guinea: 61%; Guinea-Bissau: 68%; Niger: 60%; Tanzania: 67%; and Zambia: 77%). Four countries have mean poverty-gap ratios and squared poverty-gap ratios

greater than the mean (CAR: 46% and 32%; Guinea-Bissau: 40% and 29%; Sierra Leone: 54% and 44%; and Zambia: 40% and 26%).[3]

How sensitive is SSA rural poverty to changes in mean income and the Gini coefficient? Table 8 provides indicative results of estimating a double-log relationship between the poverty measures and their growth and distribution determinants.

In terms of its sensitivity to its major determinants, SSA rural poverty exhibits a pattern that is now becoming stylized for the three poverty measures used above. Thus the head-count ratio is relatively more responsive to growth in income compared with distribution, though in the case of SSA rural poverty this difference is not great: a 1% increase in income leads to half a percentage point reduction in poverty, while a 1% increase in the Gini coefficient leads to an increase in poverty by 0.48 of a percentage point. The poverty-gap ratio and the squared poverty-gap measure are more sensitive to changes in the distribution than to changes in mean income. The elasticities of the two measures with respect to the Gini coefficient are almost double those with respect to mean income (in absolute value). This is an important result for policy purposes. Given these elasticities, poverty alleviation through an extrapolation of the present growth pattern would take a very long time in SSA—as some simulation exercises undertaken by us (but not reported here) reveal.

Table 8: The sensitivity of SSA rural poverty to growth and distribution (figures in parentheses are t-values)

Dependent variable	Constant	Log Income	Log Gini Coefficient	R^2
Log head-count ratio	5.2175 (14.33)	-0.5028 (-10.75)	0.4792 (7.61)	0.93
Log poverty-gap ratio	2.5105 (4.6)	-0.7648 (-10.92)	1.3801 (14.63)	0.96
Log squared poverty-gap ratio	0.2894 (0.35)	-0.9585 (-9.0)	2.1116 (14.72)	0.96

Poverty is an extremely elusive concept and essentially normative—depending on how the poverty line is defined. Given the paucity of reliable surveys in Africa and the intrinsic difficulty of making inter-country and inter-regional comparisons, only weak inferences relating to poverty trends can be made. A very recent and careful analysis of poverty trends in the developing world concluded that although the head-count ratio of poverty was still somewhat

[3]No attempt has been made to compare these SSA results with ones for the Asia region due to lack of data that could be used to conduct a comparable exercise. Secondary results on rural poverty such as the ones appearing in Ravallion and Sen (1996) for Bangladesh (1991/92: H = 52.9, P1=14.6, P2=5.6); Balisacan (1995) for Philippines (1991: H = 64.5, P1 =22.82, and P2 = 10.42); and Ravallion and Bidani (1994) for Indonesia (1990: H = 23.58, P1 = 4.25, and P2 = 1.08) are not readily comparable to ours. Further, not all sources provide the information we require to use the distribution data reported in Table 6 to generate comparable poverty results. Tabatabai's (1996) compilation is not of much help: it is incomplete on poverty in the rural sector and sometimes does not report the most recent results (as in the case of Philippines where Balisacan, 1995, is not used).

higher in 1993 in South Asia (43.1%) than in SSA (39.1%), the severity of poverty (according to the poverty-gap index) was significantly greater in the latter. In addition, SSA was the only developing region where poverty continued to increase—at least over the period 1987 to 1993 (see Table 5 in Ravallion and Chen, 1997).

1.4 Food output and employment in rural SSA

In a recent study, Khan (1997) has documented the stagnation of the rural sector in SSA and its dismal performance compared with other developing regions. Table 9 summarizes the evidence.

Table 9: Comparative indicators of the status and trends for the rural economy

	SSA	ESEA	SA	LAC	MENA
Rural population as % of total population (1994)	69	68	74	26	44
Agricultural labour as % of total labour force (1990)	68	68	64	26	37
Annual growth rate of rural population (1980-94)	2.26	0.56	1.79	-0.18	1.84
Annual growth rate of agricultural labour productivity (1980-90)	-0.4	1.9	2.7	1.8	3.9
Growth rate of food output per capita (1963-92)	-0.3	1.4	0.6	0.4	na

Note: Adapted from Khan (1997). SSA =Sub-Saharan Africa, ESEA =East and Southeast Asia, SA South Africa, LAC =Latin America and the Caribbean, MENA =Middle East and North Africa. Rows 1, 2 are from World Bank (1996) and rows 3 and 4 are based on the data shown in World Bank (1996). Row 5 is from Table 2 in Platteau and Hayami (1996).

As highlighted in the table, SSA is not the most rural of developing regions; that distinction belongs to South Asia, where the share of the total population residing in rural areas was 74% as compared with 69% in SSA in 1994 (see row 1 of Table 9). Moreover, SSA was the only developing region recording a negative growth rate of food output per capita between 1963 and 1992 (i.e., -0.3%) and a negative growth rate of agricultural labour productivity between 1980 and 1990 of -0.4%. Particularly worrisome is the fact that in the years since 1990, the rate of decline of labour productivity in agriculture accelerated greatly to 1.5% per year (Khan, 1997). The fall in food output per capita becomes an even greater concern when it is seen in conjunction with another trend in SSA, the fall in the proportion of the rural labour force engaged in non-farm activities, at least when comparing the late 1980s with the mid 1960s (Khan, 1997, Table 2). Furthermore, the very strong demographic pressures that Africa is being subjected to are reflected by the very high annual growth rate of rural population of 2.26% in the recent period. As Khan (1997) emphasizes, the evidence on trends in employment and productivity in agriculture and in employment in non-farm activities suggests that the growth of output in rural SSA was far short of what was necessary to provide employment to the growing rural labour force at either constant productivity or income and that consequently rural poverty is likely to have worsened.

1.5 Summary

The rather bleak rural profile we have painted reveals that SSA, compared with other regions, suffers from greater, more severe and more persistent poverty; more unequal distribution of income; declining per capita food production and agricultural labour productivity; and a continuing population explosion. The new entrants in the labour force cannot be absorbed productively in sufficient number either in rural non-farm activities or in urban activities, tending thereby to depress agricultural productivity.

Why did the rural sector in SSA evolve so differently from that of other regions and particularly Asia? What are the main factors, proximate causes and constraints that help explain the particular rural development path followed by SSA in the last few decades? An attempt is made in the next sections to provide some answers to these questions.

2. Factors influencing SSA rural sector development path

In an important recent paper Platteau and Hayami (1996) provide a comprehensive and systematic explanation of why "Sub Saharan Africa appears as the perfect counter-model to the East Asian experience". The thesis that is developed in their paper is rather convincing and one we generally subscribe to. Hence, we shall draw repeatedly on their contribution. At the same time, we bring up some additional factors and issues and highlight further, and in some instances qualify and question, elements of their thesis. In a nutshell their thesis is that "differences in population density are responsible, through short- or medium-term physical and economic effects or through (very) long-term social and cultural effects (effects on cultural values and norms mediated by social and family patterns) for most of the divergence observed between rural development performance in SSA and Asia" (p. 3).

A necessary qualification that has to be made at the outset is that "SSA in the mid-1990s represents a mosaic" and that "it is no longer possible, if it ever was, to talk of the continent as an undifferentiated whole" (World Bank, 1995: vii). The continent is constituted by one relatively giant country, Nigeria, with a population in excess of 100 million, one large country, Ethiopia (56 million) and a large number of very small countries, i.e., about a dozen SSA countries have a population of 6 million or less. To quote Oyejide (1997):

> The typical African economy is small, in terms of both population and gross national products. Taken together the SSA region has a very limited human resource base, in spite of its rapidly growing population. Furthermore , these small economies suffer from inherent inflexibility and structural rigidities that constrain their ability to respond to external shocks. An important constituent of the rigid economic structures is agriculture. SSA's highly extensive and diversified farming systems have traditionally been based, essentially, on household food self-sufficiency. SSA's agricultural sector is further characterized by fragile soils, and is predominantly rain-fed agricultural and frequently exposed to unfavourable weather and other climatic conditions. Dynamism is severely limited by extremely low levels of technology and the lack of rural infrastructure such as roads and irrigation. (p. 13)

There is a whole constellation of factors that have influenced the path of African rural development. In what follows, we group these elements into three categories: (1) physical, technological and legal (mainly land tenure) environment; (2) policies and institutions bearing on rural development; and (3) cultural and community norms and customs.

2.1 Physical, technological and legal environment

Access to land

The initial resource endowment particularly in terms of access to land is likely to be a crucial determinant of the pattern of agricultural development a country or region will follow. Platteau and Hayami (1996: 4) provide evidence that Asia is characterized by scarcity of land resources relative to population and labour force as compared with Africa. As they put it,

> The high population density and the unfavourable land—labour ratio have induced more intensive land use, resulting in high percentages of land used for agricultural production..., by building better land infrastructure...above all, irrigation. The better land infrastructure created suitable conditions for the introduction of modern land-saving technologies such as high-yielding varieties and chemical fertilizer.

Taking the amount of arable land per agricultural worker as a measure of access to land, Platteau and Hayami (1996) show that it ranged from 0.3 (hectares of arable land to agricultural workers) in East Asia to 0.8 in South Asia (and 0.5 for the whole of Asia) and 1.2 in Africa in the early 1990s. Khan (1997), using different sources, comes up with somewhat different estimates, i.e., 0.43 for Asia (with 0.20 for China and 0.73 for India) contrasting with 0.96 for SSA. Khan (1997, Table 5) demonstrates the wide diversity of land endowments among African countries, ranging from a ratio of 0.27 in Kenya to 1.88 in Nigeria, which prompts him to state that "this overall measure of land endowment hides a great deal of difference among individual countries of SSA. In many countries land scarcity is worse than the Asian average and in some it is as bad as in quintessentially land-scarce China" (p. 8). Furthermore, Khan argues that "once the higher cropping intensity due to irrigation and the better land quality in Asia is taken into account, the relative advantage of SSA over Asia...becomes much narrower. ... (and) SSA should perhaps be considered just as land scarce as India" (p 8).

Even if the contrast in relative land access between Africa and Asia is significantly less pronounced today than some authors would argue, the initial conditions that prevailed in the past—say at the outset of the post colonial era and before the greater population growth trends in Africa than in Asia reduced the differential in the land/person ratio over time—would appear to be consistent with greater land scarcity in Asia as a stylized fact.

Quantity and quality of infrastructure

There is a great scarcity of physical infrastructure in SSA—particularly road networks within rural areas (as well as farm to market roads) and between rural and urban areas. There is also tremendous underinvestment in irrigation projects: only 4.6% of SSA agricultural land is

irrigated, compared with 38.4% in Asia, (Khan, 1997, Table 5). The quantity and quality of the road network play a crucial role in facilitating trade at all levels (intra-regional, inter-regional, and international). This network is tremendously underdeveloped in SSA and is a major cause of (1) the very high transportation costs that prevail; (2) the high price spreads between initial agricultural producer prices and ultimate consumer prices; (3) segmented agricultural product markets; and (4) very limited market-orientation on the part of the small African farmers who produce largely for subsistence with low marketable surpluses.

In short, all these interrelated factors—together with technological constraints and discriminatory policies against agriculture (which are discussed subsequently)—go a long way in explaining the essentially stagnant agricultural production picture in SSA over the last three decades or so.[4]

In the remainder of this section we compare Africa's road network with that of Asia before moving to issues related to the extent of market integration, the relative size of the marketable surplus, agroclimatic diversity and technological constraints, and land tenure and titling.

Very large inter-regional and inter-country differences in the extent of transport infrastructure can be observed.[5] Ahmed and Rustagi (1984) have documented the underdeveloped stage of road infrastructure in Africa. Africa possesses only between 0.01 to 0.11 kilometres of road per square kilometre of land area, compared with 0.30 to 0.45 kilometres of road per square kilometre of land area in Asian countries.[6] Furthermore, as of the early 1980s, only about 10% of the road network in African countries consisted of paved roads, compared with about 35% of the road network in Asia being paved. The relatively poor state of physical infrastructure in much of SSA compared with Asia is directly related to another characteristic of the physical environment, mainly a much lower population density in the former. Asian countries are likewise significantly better off in terms of railways and river transport networks. Because of greater reliance on trucks and railways in Africa, the import content of transportation marketing costs in Kenya and Tanzania, for example, is about 50% compared with an estimated average import intensity of only 17% in Indonesia and Bangladesh (Ahmed and Rustagi, 1994: 4.3). The absolute transport costs in marketing were also found to be twice as high in Africa compared with selected Asian countries. To this list, Platteau and Hayami (1996) add the low quality of the rural road network in Africa, with about half the rural road network requiring "substantial rehabilitation".

[4]These factors have been systematically discussed in a paper by Thorbecke (1992) on "The Anatomy of Agricultural Product Markets and Transactions in Developing Countries" where comparisons were drawn between Africa and Asia.

[5]Much of the evidence comes from the excellent paper by Ahmed and Rustagi (1984). Both Thorbecke (1992) and Platteau and Hayami (1996) rely extensively on the Ahmed and Rustagi (1984) paper. The summarized evidence that follows is based on Thorbecke (1992), supplemented by more recent evidence unearthed by Platteau and Hayami (1996).

[6]Quoting from more recent sources, Platteau and Hayami (1996) mention that in the early 1990s, Africa (i.e., a group of 18 countries) had only one-sixth the rural roads density per square kilometre of land as India.

Extent of market integration for agricultural products

Market integration can take different forms: spatial integration intertemporal integration and intercommodity integration. In the present discussion, the emphasis is on spatial integration.[7] A market is spatially integrated when price differences between any two regions (or markets) that trade with each other just equal transfer (mainly transportation) costs. Alternatively, markets will be spatially segmented if the inter-regional price differences are less than their transfer costs. Integrated markets have been defined as "markets in which prices of differentiated products do not behave independently" (Monke and Petzel, 1984: 482), the assumption being that identical products are differentiated by location.

Markets are centred on specific items to be exchanged, such as wheat, rice or maize. Each item possesses its own set of characteristics, actors and environmental setting. Since the marketing chain between initial producers (farmers) and ultimate consumers may involve many intermediaries, it is useful to think in terms of specific commodity systems. During the marketing process, agricultural commodities gain in value as they are moved through space; held over time; and transformed. Each commodity system has its own particular marketing chain and network and set of transactions corresponding to the various functions performed by different actors as the commodity progresses from producer to final consumer (Thorbecke, 1992).

In evaluating the extent of market integration and the efficiency along a commodity system (marketing chain) and inter-regionally, two types of price spread indicators suggest themselves. The price spread between the producer and consumer end of a commodity system represents the overall marketing margin. Its relative magnitude, as well as its decomposition among components, yields insights about the efficiency of the product market and the degree of integration among the various configurations constituting the marketing chain. A second category of price spreads, spatial price spreads, reflects the differences in prices obtaining in various regional markets at a particular time.

These two types of price spreads in food grain markets were estimated for five African and four Asian countries by Ahmed and Rustagi (1984).[8] Three major empirical findings emerge from an analysis of the data:

- Average producer prices expressed as a percentage of final consumer prices in the African countries ranged from 30% to 60%, while in Asia they ranged from 75% to 90%. Thus, African farmers received a significantly smaller proportion of final consumer prices of marketed food grains than did their Asian counterparts.

- The regional price differences within each country were also substantially larger in Africa than in Asia; in some African countries the lowest price in one region was only one-fourth to one-third that of the highest price in another region. In contrast, the corresponding ratio in Asia ranged from 64% to 83%.

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[7]This subsection is based on Section 4.2 of Thorbecke (1992).

[8]Their results are summarized in their Table 2, p. 3.4 and cover the following countries: Nigeria, Malawi, Tanzania, Kenya, Sudan, Indonesia, India, Bangladesh, and the Philippines. Depending on the country, the following food grains were used: maize, rice, sorghum and wheat.

- The absolute size of the regional price spread in Africa was significantly larger than the marketing margin (i.e. the producer/consumer price spread).

From this quantitative analysis, Ahmed and Rustagi (1984:109) conclude that:

> Many markets may not be linked with one another in African countries because of high transport costs resulting from poor transport and communication infrastructure or government restrictions. In the Asian countries, the regional price spreads are quite close to the marketing margins, which indicates that the markets scattered over various regions are probably well integrated with one another.

The example of Zaire may be enlightening in this respect. Koné and Thorbecke (1996:303), in a detailed study of sectoral investment priorities in Zaire, found that

> Owing to chronic transport and marketing problems, about 40% of total production is consumed by the farmers themselves, while urban markets are increasingly supplied by imports. Clearly, there is great potential for increased production in agriculture through exports and further increase in domestic demand once the major obstacles, both on the production and the distribution side, are removed.

However, the producer/consumer and inter-regional price spreads are not only determined by transportation and marketing costs, they are also influenced by government taxes, profit margins of parastatals and private traders, and transaction costs. Ahmed and Rustagi (1984) concluded that almost two-thirds of the larger marketing costs in Africa compared with Asia are accounted for by transport and transaction costs. The latter reflect the greater degree of government intervention in grain marketing in Africa, through such measures as bans on the inter-regional movement of commodities by private traders and a variety of licensing schemes imposed on these same traders.

At this stage, we can summarize the main factors that have been identified as being responsible for Africa's relatively low levels of market infrastructure development and market integration compared with Asia, and the associated marketing inefficiencies and significantly greater price spreads. (See Ahmed and Rustagi, 1984, and FAO, 1992, particularly p. 226). These factors are:

- The much lower population densities in most African countries (15 to 30 persons per square kilometre compared with 500—750 persons per square kilometre in Asia) result in a wider dispersion of production and consumption centers in Africa.

- Road, railway and river transport systems are generally much less developed in Africa compared with Asia, as some of the earlier statistics indicated.

- Transport modes in Africa are less diversified and more import intensive.

- Some African countries generate a small volume of marketable surplus in food grains

because of the predominance of subsistence production, which reduces the scope for scale economies in transport and marketing (an issue that is examined in the next subsection).

- A bimodal structure in agriculture is typical of many African countries, which results in market dualism.

- Economies of scale in Asian marketing have enabled separate specialization in transport services and grain trade, whereas in Africa the more typical pattern is for truckers to combine transport services with wholesaling and retailing.

- The more extensive spread of rural electrification in Asia allows more small-scale milling and processing to occur close to the production location with concomitant lower transportation costs.

Relative Size of the Marketable Surplus

It is well known that on the whole the relative size of the marketable surplus (the proportion of farm household output sold out of total farm household production) is significantly higher in Asia than in SSA. As the World Bank (1997: 31) emphasized, most farmers in SSA operate on a small scale "often producing commodities that, because of their type and small quantities, are not part of the market economy. In Côte d'Ivoire, Ghana and Malawi, the rural poor grow 60% of their food; in Tanzania the poor produce 50% of what they consume". In other words, African small farmers tend to be much more subsistence-oriented than their Asian counterparts.

Why is the proportion of farm household output consumed within the farm household typically larger in SSA than in Asia and, conversely, why is the size of the relative marketable surplus smaller? To answer this question, we have to analyse the behaviour of peasant households in terms of their reliance on intra-household (nonmarket) transaction vs. market transactions. In other words, how do farm households decide on the extent to which they engage in intra-farm household transactions such as production for own consumption, and family farm labour applied to own farm production, as opposed to participating in transactions in existing market configurations for the same items?

De Janvry, Fafchamps and Sadoulet (1991) have provided a formal framework within which this question can be answered.[9] They start by offering an interpretation of market failure for food and labour that is specific to the household and not to the commodity. They proceed to derive within an integrated farm household model (acting as a producing and a consuming unit) the household response to changes in the price and productivity of cash crops, changes in the price of manufactured and consumption goods, the levying of a monetary tax, and availability of new technological opportunities in the production of food. They postulate that for commodities such as food and labour that can be sold and bought by peasant households, their sales price is a fraction of the purchase price. In turn, the width of this band depends on a whole set of transaction costs (such as transportation costs and marketing margins). "The poorer the infrastructure, the less competitive the marketing systems, the less information is available, and

[9]The description that follows is based on Thorbecke (1993).

the more risky the transactions, the greater the size of this band" (de Janvry et al. 1991: 1402). When the shadow price of a product, or of labour produced and used by a farm household, falls within this price band, no trade takes place and the household reverts to self-sufficiency (subsistence) and relies on intra-household transactions.

The key finding is that the chronic inelasticity of supply response---particularly within the context of SSA—may be explained "as a structural feature associated with missing markets and not as an inherent behavioral trait of peasants" (de Janvry et al., 1991: 1410). This implies that a number of specific characteristics of the environmental element such as the previously discussed large price spread from farm gate to ultimate consumer, reflecting high transportation and transaction costs and the scarcity of road infrastructure, operate as binding constraints on the behaviour of actors within the farm household configuration. In turn, the more inelastic supply response in the African context, relative to Asia, can be attributed to the fact that most, if not all, environmental and physical elements are less structurally rigid in the latter case.
The key policy implication that flows from this analysis is how to relax the structural constraints (i.e., yielding an upward shift and narrowing the price band) so as to elicit greater market responsiveness on the part of peasant actors. De Janvry et al. (1991) mention a number of potentially desirable interventions, such as infrastructure investment, increased competitiveness among local merchants, better access for peasants to credit markets, technology transfer, and a more elastic and low-price supply of manufactured consumption goods such as textiles, footwear, processed foods and some inputs. We shall return to these policy implications in the last section of this paper.

Agro-climatic diversity and technological constraints

It has been well documented that the "physical environment for agriculture (and cattle-rearing) in SSA is marked by an exceptional diversity of agro-climatic and soil characteristics, of farming systems and socioeconomic conditions" (Platteau and Hayami, 1996: 19). This diversity is not only across SSA countries but also within countries and even regions. Another characteristic of SSA agricultural production is that it occurs almost completely on rain-fed land—less than one-twentieth of the total arable land is irrigated. Still another feature is the lack of congruence between the large number of locally produced foodstuffs (such as coarse grains) and preferred foodstuffs (such as wheat and rice) that largely have to be imported (Oyejide, 1997).

Given such characteristics, SSA is at a great technological disadvantage compared with Asia. The Green Revolution technologies have been extremely successful in creating new and highly productive high-yielding varieties of rice, wheat and maize grown on irrigated land, but have had only very limited success coming up with improved new varieties applicable to rain-fed land and other crops. Thus, given the diversity of products grown in SSA on rain-fed land that is itself agronomically heterogeneous, a standard technical package comparable to single rice varieties (such as IR36) that worked so well in Asia has no chance to succeed within the context of SSA (Platteau and Hayami, 1996).

What is perhaps surprising is that notwithstanding the bleak picture described above, there is evidence that expenditures on agricultural research have had high returns in SSA. In a study of total factor productivity (TFP) in SSA agriculture, based on a data set of physical output aggregates (where different products are converted into wheat-equivalent units) and corrected for

artificial price and exchange-rate effects, Block (1994) found that after 15 years of stagnation, African agricultural TFP increased substantially during the mid 1980s, growing at about 2% per year from 1983 to 1988.[10] In turn, taking the real exchange rate depreciation as a proxy for policy reform (i.e., adjustment), his suggested finding is that policy reform *and* lagged research expenditures explain most of the improvement in agricultural TFP growth. One possible explanation for the very limited expenditures on agricultural research in SSA provided by Block (1994) is that cuts in domestic absorption following structural adjustment programmes have come largely from public investment, a critical source of funding for agricultural research. This issue is discussed in Thorbecke and Koné (1995).

The conditions described above also help explain (1) the "pitifully low level of fertilizer consumption in SSA", amounting to only 14% per hectare of the average consumption in low-income LDCs in 1992/93 (Khan, 1997); and (2) the very limited scope of extension services provided in the light of the topographic and physical constraints.

Land tenure and titling

The typical land tenure pattern in SSA is collective land ownership at the village or tribe level. Village chiefs allocate land to individual members of the community who maintain their land use rights throughout their life times and often can pass it on to their descendants. This pattern is in dire contrast with the Asian model where small farmer-cultivators own their own land.

There is a school of thought—perhaps best reflected by the World Bank—that subscribes to the so- called Evolutionary Theory of Land Rights (ETLR) as being applicable to SSA in largely the same way that it applies to other parts of the world. According to this thesis, growing population pressure and increasing commercialization of agriculture have given rise, as it were endogenously, to changes in land tenure practices in the direction of enhanced individualization of tenure (Platteau, 1996: 32). In turn, land titling and security of tenure would create the necessary incentives for small farmers in Africa to invest in their land through a variety of activities such as land leveling, terracing and other types of improvements that would increase yields and output. In other words, the absence of clear titling and property rights is seen as a major institutional constraint to the growth of agricultural production in SSA.

Platteau (1996) shows, in a very incisive piece, that the ETLR based on the theory of induced innovation does not lead to the expected institutional innovation in the form of land titling in the African context. Platteau (1996) demonstrates that in order to be valid that theory requires two crucial conditions to be fulfilled, first, new technical packages must be available so as to create attractive investment opportunities for people willing and able to invest, and, second, efficiency and equity considerations must be separable. Since neither of these conditions hold in SSA, enhanced land titling will not evolve endogenously as an induced institutional innovation.

[10]Incidentally, TFP is defined as the difference in the growth rate of real product and the growth rate of real factor input. Therefore, a positive growth rate of TFP means that resources are used more efficiently in agriculture but not necessarily that total real output actually increased. However, it is fair to state that many studies have found very low or even negative TFP rates for SSA. Once again, the earlier warning relating to the very low quality of African statistics and particularly agricultural output statistics should be borne in mind.

If in the specific setting of SSA, land titling is not to evolve naturally, what about imposing it by fiat? Platteau (1996) provides strong arguments against the alteration of customary rights under the aegis of governments. In a nutshell he argues that titling is undesirable for a number of reasons. For one, sections of local populations face a serious risk of being denied legal recognition of their customary rights to land during the registration process; this is especially true of vulnerable groups such as women who have traditionally enjoyed subsidiary or derived (usufruct) rights to land. This point is echoed in a recent study by Lastarria-Cornhiel (1997) on the impact of privatization on gender and property rights in Africa, which concluded that "It is under the increasing transformation of customary tenure systems to market-based, individualized tenure systems that women's limited but recognized land rights may be ignored and consequently lost" (p.1329). Further, since most of the people in SSA continue to adhere strongly to the traditional ethical principle that land ought to belong to the "sons of the village", a separation of land ownership from land use and the assignment of transfer of land to strangers are bound to arouse deep seated feelings of injustice. The problem of registering land is enormous because of limited administrative capabilities and is likely to invite corruption. Finally, the empirical evidence on the relationship among land rights, land improvements and agricultural yields in SSA is generally inconclusive—a conclusion also reached by Pinckney and Kimuyu (1994), who flatly state that "Land titling is unimportant for development; governments should invest scarce fiscal and managerial resources in other areas".

In short, individual land titling and property rights within much of the context of SSA is not the panacea its supporters claim.

2.2 Policies and institutions bearing on rural development

Policies and the agricultural surplus

The major mechanism for obtaining the resources needed for industrialization at an early stage of development is through an intersectoral transfer out of agriculture. It is important to identify the major components of this transfer. A first component consists of the resources that tend to flow out of agriculture, automatically, through the market mechanism wherever the rate of return on resources is higher in agriculture than in non-agriculture (typically in the incipient industrial sector). Teranishi (1997) has called this flow a "market-based resource shift". In addition, there are resource flows that are policy induced through the direct intervention of the government. Therefore, it is useful to make a distinction as Teranishi (1997) does between (1) market based resource flow; and (2) policy based resource flow, further broken down into net direct taxation; net indirect taxation; and infrastructure investment in agriculture.

Typically, developing countries tax their agricultural sector heavily through direct taxation (usually by turning the internal terms of trade against agriculture through such interventions as artificially low consumer prices for food and high input prices, e.g., the hidden rice tax through high fertilizer prices in Taiwan); and indirect taxation (mainly through the impact of an over-valued exchange rate on agricultural tradeables).

In a careful empirical study of intersectoral resource flows, Teranishi (1997) showed that there

was no significant difference in the (high) degree of direct and indirect taxation on agriculture among the four regions, East Asia, South Asia, Latin America and SSA, but that the regional differences in infrastructure investment in agriculture were enormous. Teranishi (1997: 289) concluded that:

> In East Asia, the adverse effects of indirect taxation (real exchange rate over-valuation and industrial protection) and direct taxation of agriculture were counterbalanced by government efforts in agricultural development, particularly in the area of infrastructure investment, resulting a the relatively low level of total policy-based resource shift from agriculture.

The explanation that is given for the radically different treatments of agriculture in Asia and in SSA, and the consequent very disparate performances, is that in SSA governments used "divisible benefits" in a very selective way to keep or win over agricultural actors who supported the incumbent political regimes regardless of their contribution to production. Furthermore, Teranishi (1997) provides an interesting political economy explanation of why small farmers in SSA do not react collectively against the effects of policies detrimental to agriculture, in contrast with East Asia. The answer lies in the shifting mode of cultivation of small African farmers, which does not provide incentives to invest in land improvement, a situation made worse by the fact that most small farmers do not own their land in contrast with Asia. Given the very different production and tenure conditions in East Asia, incentives for small farmers to resist policies detrimental to agriculture are much larger in the former than in Africa.

In the 1980s, the Development Centre of the Organization for Economic Cooperation and Development (OECD) embarked on a large-scale research project to evaluate the effects of policies and institutions on agricultural performance over time in six poor developing countries: Mali and Burkina Faso in West Africa, Kenya and Tanzania in East Africa, and Nepal and Sri Lanka in Asia. Six individual case studies following the same conceptual framework were undertaken in connection with this project.[11] For each of these countries, a careful attempt was made to measure the agricultural surplus (i.e., the net transfer out of agriculture) over time. The main lesson to be drawn from the experience of a large set of developing countries (including the six noted above) was summarized by Thorbecke and Morrisson (1989: 1490):

> The process of capturing the surplus is quite delicate. The goal should be to generate a reliable and continuous flow of *net* resources from agriculture into the rest of the economy throughout much of the structural transformation. A lesson learned from those countries which were most successful in achieving both growth and equity throughout their development history is that a continuing *gross* flow of resources should be provided to agriculture in the form of such elements as irrigation, inputs, research and credit, combined with appropriate institutions and price policies to increase this sector's productivity and potential capacity of contributing an even larger flow to the rest of the economy. It is much easier to extract a net surplus from increasing production than from stagnant or falling output.

[11]For a synthesis and lessons of these studies, see Lecaillon, Morrisson, Schneider and Thorbecke (1987).

One interesting finding of the comparative analysis is that in those countries in which foodstuff prices were most depressed as a result of the actions of the government, aggregate output either fell or stagnated. For example, in Tanzania, the sheer magnitude of the burden imposed on both the domestic food crop and cash crop export sectors was shown to have short-circuited the development process and, more specifically, jeopardized the desired industrialization. The ridiculously low regulated food price in the official market led to a blooming parallel market where at one time prices were 11 times higher than the official food price.

Likewise, in Nigeria (approximately half of SSA in terms of population) agriculture was seen as a sector to be squeezed and taxed with impunity to provide an agricultural surplus to finance the incipient industrial sector. The contrast between Nigeria and Indonesia—both large oil exporting countries—in the treatment of agriculture is enlightening. In particular, the divergent macroeconomic policies followed by these countries had very different impacts on agricultural performance. Indonesia, from the outset, supported its agricultural sector, indirectly, through regular devaluations to maintain an equilibrium exchange rate and, more directly, through large-scale investment in irrigation, other physical infrastructure and a fertilizer subsidy scheme, among others. On the other hand, Nigeria squeezed agriculture unmercifully since its independence, directly, through the regional, and later national, marketing boards, and indirectly, through the negative impact of distorted trade and exchange rate policies on domestic agricultural production. By dogmatically holding on to a fixed nominal exchange rate that led to a grossly over-valued real exchange rate, Nigeria caught a massive dose of the Dutch disease in contrast with Indonesia, which largely escaped it. The over-valued exchange rate of Nigeria discriminated strongly against agricultural exports, which remained stagnant for a long period of time (Thorbecke, 1996).

Institutions

Institutions in addition to policies can affect agricultural and rural performance in a major way. In what follows, we give a few examples of inappropriate institutions within the context of SSA that contributed significantly to the dismal performance of the agricultural sector. Perhaps the most extreme example of inappropriate organizations and institutions is the forced villagization and collectivization programme imposed in Ethiopia, which wreaked havoc on agricultural production incentives (Khan, 1997). In Tanzania, the Arusha Declaration of 1967 signified a complete break with the previous, relatively free enterprise regime. It emphasized socialism and self-reliance. In addition to a passive process of nationalization of private enterprises in urban and rural areas, the *Ujamaa* movement was introduced in the rural areas. While in the 1967—1973 regime, agricultural production remained in private hands, distribution channels were rapidly taken over by the state. In the next phase (1973—1982) the villagization programme was further accelerated, leading to massive resettlement and dislocation. Furthermore, the government intervened increasingly on both the production and distribution sides. This helped trigger a vicious circle of cumulatively worsening agricultural performance, described in Lecallion et al. (1987).

Sahn and Sarris (1994), in a study of the evolution of states, markets and civil institutions in rural Africa based largely on four countries (Guinea, Malawi, Mozambique and Tanzania), concluded that state mandated and sponsored systems of production, which ironically had been built upon

an exploitative colonial legacy, failed dismally. Production and yields plummeted in some cases, and stagnated in others. In all four of the countries (and in most other) analysed "the state tried either to modify/strengthen inherited centralized controls from the West or to adopt authoritative socialist institutions from Eastern Europe" (p. 286). Sahn and Sarris (1994: 286) conclude as follows: "Why was there such uniformity in neglecting indigenous organizations and arrangements? The answer seems to be first, the need to create centrally controlled financial resources, and second, the imperative of maintaining a contented political base, defined as the urban elite, rather than the peasantry that was the real backbone of the economy".

A final example of a misguided government initiative to modernize agriculture that occurred in the 1970s in Nigeria allowed foreign companies to acquire large-scale interests in the sector. The initiative involved a number of complementary policies, i.e. (1) removal of import duties on tractors and provision of subsidies for tractor hiring; (2) large-scale investment in irrigation and other public works; and (3) subsidized credit. The notion was to bypass the traditional small farmer and encourage the emergence of a new class of commercial farmers. These measures artificially lowered the price of capital and thereby triggered an inappropriately induced technological change (Thorbecke, 1996). Khan (1997) gives additional examples of policies and institutions favouring employment-hostile techniques and activities. For example, in Kenya, the system of incentives in the late 1980s favoured the use of tractors and heavy machines and discriminated against the use of less mechanized techniques, e.g., ox-drawn plows and hand tools.

2.3 Cultural and community norms

The differences in cultural and community norms and customs between SSA and Asia and their impact on the divergent rural development paths followed by these two regions in recent times have been perceptively analysed by Platteau and Hayami (1996). Their thesis can be summarized as follows:

- Cultural and social norms under land-abundant conditions in Africa compared with land-scarce Asia have constrained capital accumulation.

- "The critical role of community as an economic organization is to guide its members to voluntary cooperation....to insure the subsistence of all community members".

- In Asia, high population density has shaped community norms so as to prevent free riders from depleting scarce natural resources, in contrast with land-abundant Africa where norms did not adapt quickly enough to prevent serious degradation.

- Rural communities in SSA are "typically tribal, lineage-based societies" relying on "production activities characterized by spatial mobility such as shifting cultivation and nomadic grazing", in contrast with "strongly immobile village communities based on settled agriculture in much of Asia" (p. 24).

- "Since land commands relatively low value in SSA, private property rights on land have not become well established", resulting in little social stratification arising from unequal land ownership.

- As a consequence, tribal communities in SSA are characterized by strong egalitarianism; no causal link is seen between effort applied and resulting output and success is attributed to "luck" and hence it is expected that some type of balanced reciprocity norm should lead to redistribution from alleged "lucky" to "unlucky" individuals.

- Asian rural communities are based on conjugal owner-cultivator farm households living together in villages and having to cooperate for their security and survival, leading to the emergence of community norms based on cooperative and collective actions aimed at the conservation of the common-property resources.

- Under those circumstances reciprocity norms evolved in Asia and were consistent with the acceptance and full recognition of the link between effort and outcome (such as the yield-increasing effects of careful water control), in contrast with the redistributional norms in Africa that tend to deny the relationship between effort and outcome.

The bottom line of the Platteau—Hayami (1996) thesis is that the redistributive norms in SSA have growth-retarding effects in contrast with the growth-enhancing effects of reciprocity norms in the Asian rural sector.

3. Conclusions and some policy implications

The bleak real profile drawn in Section 1 revealed that SSA, compared with other developing regions, suffers from more severe and persistent poverty, a more unequal distribution of income, declining food production per capita, and a continuing population explosion. This paper attempted to provide at least some answers to the question as to why the rural sector in SSA evolved so differently from those in other regions and particularly Asia.

We scrutinized and identified a whole constellation of factors that helps explain the particular development path followed by SSA in the last three or four decades. In a nutshell, the relatively lower population density and greater spatial distribution of population in SSA compared with Asia represented major obstacles to the provision of an adequate rural infrastructure network. The greatly underdeveloped road network, in turn, was a major contributor to (1) the very high transportation costs that are observed; (2) the high price spreads between initial agricultural producer prices and ultimate consumer prices; (3) segmented agricultural product markets; and (4) very limited market-orientation on the part of small African farmers, who produce largely for subsistence with low marketable surpluses. Superimposed upon these factors is the great diversity of agro-climatic and soil characteristics and farming systems within SSA, as well as within individual countries, which presented a further obstacle to sustained agricultural growth. In particular, no standard technological package—similar to the Green Revolution high yielding varieties for rice and wheat that have been so successful in Asia—was available and could succeed in an agronomically heterogeneous, essentially rain-fed African setting.

Compounding the negative effects of physical and technological factors on rural and agricultural development, it was seen that governments in SSA almost universally followed policies and

institutions that discriminated against agriculture. The large agricultural surplus squeezed out of agriculture contributed directly to agricultural stagnation. In contrast with Asia, the adverse effects of indirect and direct taxation on agriculture were not counterbalanced by a reverse flow into agricultural development, particularly into rural infrastructure and irrigation.
Many inappropriate institutions, such as the ill-fated villagization experiments in Tanzania and Ethiopia, and attempts to modernize agriculture through reliance on large farms and capital intensive techniques in Nigeria and Kenya also contributed to the dismal performance of the agricultural sector.

Finally, a case can be made that the very different physical and socioeconomic settings prevailing in SSA and Asia have led to the evolution of different norms—in the former case, growth-retarding and in the latter case, growth-enhancing. More specifically, the land abundant conditions and corporate land tenure conditions in Africa constrained capital accumulation and helped foster egalitarian redistributive norms, in contrast with the land-scarce and individual property rights conditions in Asia that encouraged cooperative actions and reciprocity norms.

It goes beyond the scope of this paper to come up with a detailed policy and institutional agenda to remedy the rather discouraging state of rural development in SSA. At best a few suggestions may be in order.

The first observation that needs to be made is that recent reforms under the various structural adjustment programmes followed by SSA countries, at both macroeconomic and sector specific levels, have substantially reduced the anti-agricultural bias in the heavy direct and indirect taxation of agriculture. As a consequence of these reforms, the prices of agricultural tradeables (following devaluations) increased significantly. In addition, the improved rural–urban terms of trade are likely to result in favourable direct and indirect effects on rural non–agricultural activities through the strong demand and supply linkages between the latter and agricultural activities.

However, getting the prices right is, at best, only one blade of a pair of scissors. There is strong evidence that the growth of total factor productivity in SSA is highly correlated with public expenditures on agricultural research and that the latter tended to be further curtailed during the adjustment process. Likewise, an inadequate transportation and distribution network can raise the marketing and other transaction costs so much that even in the presence of attractive prices, farmers' incentives to increase output vanish and they revert largely to producing for their own subsistence.

The dilemma faced by adjusting countries is how to balance short-term cuts in public expenditures with the long-term need for improving the physical infrastructure and financing agricultural research. Given the very limited public resource base that these countries can tap, it appears that one partial solution to this dilemma lies in a change in the composition of external funding. Specifically, increasing the share of agricultural sector adjustment loans (SECALs) while reducing that of generalized programme loans (SALs) in the World Bank lending portfolio and in the portfolios of bilateral donors suggests itself. The main advantage is that transfers imbedded in agricultural SECALs contribute directly to the building of physical infrastructure projects and the funding of an agricultural research network (i.e., a tangible productive

counterpart) instead of taking the form of undifferentiated programme and balance of payments support. When properly designed, agricultural sector loans need not reduce the conditionality leverage but rather would allow these requirements to be expressed in much more concrete and specific terms (Thorbecke, 1995).

Improving the prospects for better infrastructure investment and the funding of agricultural research could provide the complementary second blade of the scissors needed to render price incentives effective and, thereby, increase supply responsiveness on the part of the African farmers.

Although there is some skepticism about the potential scope for expanding the exports of primary commodities in SSA, it seems likely that the agricultural export sector will be required to carry the main burden in moving African agriculture forward in the medium term.

While the projected growth in world demand for primary and agricultural commodities is very limited, it is important to recall that Africa has lost a significant share of most of these products to other regions in recent times. With appropriate policies and complementary measures, however, SSA should be able to recapture a part of these losses. Hence, the potential scope for African agricultural export growth is higher than the anticipated growth of world demand. Estimates of short- and long-run revenue elasticities of major SSA commodities suggest that the "adding-up" problem that most critics point to may hold for some commodities (such as cocoa and to a lesser extent, coffee, sisal, tea and tobacco), but certainly not for all commodities. Furthermore, there appears to be a potential scope for expanding African production in commodities such as cut flowers that face relatively high income elasticities of demand.

Insofar as the domestic food crops sector is concerned, even a part of it could benefit from higher farm-gate prices, as some of its presently nontradeable products could become tradeables. This might be the case of rice and maize farmers in some settings who could engage in import substitution. In the case of producers of subsistence food crops, Platteau and Hayami (1996) advocate the desirability of undertaking mini Green Revolutions in a limited number of food crops through concentration of government infrastructure investments and support services in favourable, high potential areas in tandem with a strategy of promoting export cash crops.

This is an interesting suggestion. However, one obvious issue this high potential strategy raises is how feasible it would be within many small African countries and, conversely, how strong the interregional and international spillover effects of successful experiments in large countries (such as Nigeria and Zaire) would be on the rest of SSA.

References

Ahmed, R. and N. Rustagi. 1984. "Agricultural marketing and price incentives: A comparative study of African and Asian countries". International Food Research Institute, May.

Ali, A.A.G. 1997. "Dealing with poverty and income distribution issues in developing countries: Cross regional experiences". AERC, Nairobi.

Appleton, S., J. Hoddinott and J. Mackinnon. 1996. “Education and health in subSaharan Africa”. *Journal of International* .

Balisacan, A.M. 1995. "Anatomy of poverty during adjustment: The case of Philippines". *Economic Development and Cultural Change*.

, S.A. 1994. “A new view of agricultural productivity in SubSaharan Africa”. *American Journal of Agricultural Economics*, vol. 3, no. 76 (August).

Chen, S., G. Datt and M. Ravalllion. 1994. “Is poverty increasing in the developing World?” *Review of Income and Wealth*, vol. 40: (December). 359—76.

de Janvry, A., M. Fafchamps and E. Sadoulet. 1991. “Peasant household behaviour with missing markets: Some paradoxes explained”. *The Economic Journal*, vol. 101 (November).

Deininger, K. and L. Squire. 1996. "A new data set measuring income inequality". *World Bank Economic Review*, vol. 10, no. 3.

Fields, G.S. 1994. "Poverty and income distribution: Data for measuring poverty and inequality changes in developing countries". *Journal of Development Economics*, vol. 44: 87—102.

Fields, G.S. 1989. "Changes in poverty and inequality in developing countries". *World Bank Research Observer*, vol. 4: 167-85.

Food and Agriculture Organization (FAO). 1992. *Agricultural Price and Marketing Policy: Government in the Market*, Policy Analysis Division, ESPT, Rome.

Foster, J., J. Greer and E. Thorbecke. 1984. "A Class of Decomposable Poverty Measures", *Econometrica*, vol. 52, no. 3 (May): 761—766.

Khan, A.R. 1997. *Reversing the Decline of Output and Productive Employment in Rural sub-Saharan Africa*. Issues in Development Discussion Paper 17. International Labour Office, Geneva.

Koné, S. and E. Thorbecke. 1996. “Sectoral investment priorities for renewed growth in Zaire”. Chapter 10 in D.E. Sahn, ed., *Economic Reform and the Poor in* Africa. Oxford*:* Clarendon Press.

Lastarria-Cornhiel, S. 1997. “Impact of privatization on gender and property rights in Africa”. *World Development*, vol. 25, no. 8.

Lecaillon, J., C. Morrisson, H. Schneider and E. Thorbecke. 1987, *Economic Policies and Agricultural Performance of Low-Income Countries.* Paris: OECD Development Centre.

Monke, E. and T. Petzel. 1984. “Market integration: An application to international trade in cotton”. *American Journal of Agricultural Economics*, vol. 66.

Oyejide, T. Ademola. 1997. “What can subSaharan Africa Learn from the Taiwanese Development Experience?” In Erik Thorbecke and Henry Wan, ed., *Government and Market: The Relevance of Taiwan’s Experience for Development Theory and Policy* (in process).

Pinckney, T.C. and P.K. Kimuyu. 1994. “Land tenure reform in East Africa: Good, bad or unimportant?” *Journal of African Economies*.

Platteau, J.-P. 1996. “The evolutionary theory of land rights as applied to SubSaharan africa: A critical assessment”. *Development and Change*, vol. 27.

Platteau, J.-P. and Y. Hayami. 1996. “Resource endowments and cultural endowments in agricultural development: Africa vs. Asia”. Paper presented at a Round table conference on the Institutional Foundation of Economic Development in East Asia by the International Economic Association, Tokyo, December.

Ravallion, M. 1995. "Issues in measuring and modeling poverty". Unpublished paper. The World Bank, Washington, D.C.

Ravallion, M. and B. Bidani. 1994. "How robust is a poverty profile". *World Bank Economic Review*, vol. 8, no. 1.

Ravallion, M. and S. Chen. 1997. "What can new survey data tell us about recent changes in distribution and poverty?" *World Bank Economic Review*, vol. 11, no. 2.

Ravallion, M. and B. Sen. 1996. "When methods matter: Monitoring poverty in Bangladesh". *Economic Development and Cultural Change*.

Sahn, D.E. and A. Sarris. 1994. “The evolution of states, markets, and civil institutions in rural Africa”. *The Journal of Modern African Studies*.

Summers, H. and A. Heston. 1991. "The Penn World Table (Mark 5): An extended set of international comparisons, 1950–1988". Quarterly Journal of Economics, vol. CVI(2): 327–68.

Tabatabai, H. 1996. *Statistics on Poverty and Income Distribution: An ILO Compendium of Data.* Geneva: International Labour Organization.

Teranishi, J. 1997. “Sectoral resource transfer, conflict, and macro stability in economic development: A comparative analysis”. Chapter 10 in N. Aoki, Y.-K. Kim, and N. Okuno-Fujiwara, eds., *The Role of Government in East Asian Economic Development, Comparative Institutional* Analysis. Oxford: Clarendon Press.

Thorbecke, E. 1996. “The institutional foundations of macroeconomic stability: Indonesia vs. Nigeria”. Paper presented at a Round Table Conference on the Institutional Foundation of Economic Development in East Asia by the International Economic Association. Tokyo,

December.

Thorbecke, E. 1995. “Causes of African development stagnation; Policy diagnosis and policy recommendations for a long-term development strategy”. Chapter 5 in J.-C. Bertelemy, ed., *Wither African Economies.* Paris: OECD Development Centre.

Thorbecke, E. 1993. “Impact of state and civil institutions on the operation of rural markets and nonmarket configurations”. *World Development*, vol. 21, no. 4.

Thorbecke, E. 1992. “The anatomy of agricultural product markets and transactions in developing countries”. Working Paper No. 43. Institute for Policy Reform, Washington, D.C., July.

Thorbecke, E. and S. Koné. 1995. “The impact of stabilization and structural adjustment programmes on performance in SubSaharan Africa”. Chapter 1 in J.-C. Berthélemy, *Wither African Economics?* Paris: OECD Development Centre.

Thorbecke, E. and C. Morrisson 1989. “Institutions, policies and agricultural performance: A comparative analysis”. *World Development*, vol. 17, no. 9 (September).

World Bank. 1997. *Development in Practice: Taking Action to Reduce Poverty in SubSaharan Africa*. Washington, D.C.

World Bank. 1996. *Status Report on Poverty in Sub-Saharan Africa 1996.* (Draft). International and Social Policy Group, Africa Region, World Bank, Washington, D.C.

World Bank. 1995. *A Continent in Transition: Sub-Saharan Africa in the Mid-1990s.* Africa Region, Washington, D.C.

Annex: Country-level statistics

Annex Table A1 : Characteristics of the African rural sector

Country	Household size (persons)	Literacy rate (%)	Male literacy rate (%)	Female literacy rate (%)	Female-headed households (%)	employment head (% in agric.)
Burkina Faso	8.1	4.0	2.0	4.0	8.0	86.0
CAR	4.5	30.0	47.0	14.0	24.0	82.0
Côte d'Ivoire	5.4	33.0	39.0	27.0	12.0	83.0
Gambia	11.4	43.0	63.0	24.0	3.0	80.0
Ghana	4.6	43.0	57.0	31.0	29.0	56.0
Guinea	6.5	10.0	23.0	1.0	16.0	84.0
Guinea-Bissau	7.3	12.0	22.0	4.0	43.0	87.0
Kenya	5.2	71.0	81.0	63.0	32.0	74.0
Madagascar	4.9	51.0	57.0	45.0	19.0	91.0
Niger	7.1	36.0	53.0	21.0	11.0	88.0
Nigeria	4.8	33.0	39.0	27.0	14.0	73.0
Senegal	9.0	33.0	56.0	15.0	14.0	74.0
Sierra Leone	5.9	27.0	37.0	19.0	14.0	45.0
Tanzania	6.3	70.0	80.0	62.0	11.0	81.0
Uganda	4.9	21.0	28.0	14.0	25.0	84.0
Zambia	5.5	12.0	16.0	8.0	23.0	89.0

Source: Calculations based on World Bank (1997).

Annex Table A2 : Mean per capita expenditure in sub-Saharan Africa : 1993 (in PPP 1985 dollars unless specified otherwise)

Country	National	Urban	Rural	Rural/National ratio	Rural/Urban ratio	Rural share of food in exp. (%)
Burkina Faso	368	908	267	0.73	0.29	59
CAR	402	625	261	0.65	0.42	61
Côte d'Ivoire	667	717	500	0.75	0.70	21
Gambia	535	831	290	0.54	0.35	60
Ghana	796	986	706	0.89	0.72	37
Guinea	379	586	277	0.73	0.47	62
Guinea-Bissau	367	551	288	0.78	0.52	na
Kenya	640	1690	476	0.74	0.28	56
Madagascar	481	867	376	0.78	0.43	72
Niger	312	527	289	0.93	0.55	29
Nigeria	674	727	641	0.95	0.88	68
Senegal	846	1481	423	0.50	0.29	65
Sierra Leone	641	871	437	0.68	0.50	69
Tanzania	302	439	245	0.81	0.56	72
Uganda	450	865	415	0.92	0.48	64
Zambia	345	589	191	0.55	0.32	78

Source: Calculations based on World Bank (1997) and Summers and Heston (1991) and their Internet database.

Annex Table A3 : Inequality measures for rural Africa (percentages unless stated otherwise)

Country	Share of lowest 40%	Share of top 20%	Gini coefficient	Ratio of top 20% to lowest 40%	Survey year	Sample size (number)
Burkina Faso	18.37	45.71	38.70	2.4883	1995	5912
CAR	8.00	67.43	64.11	8.4288	1993	4462
Côte d'Ivoire	21.38	37.93	29.72	1.7741	1995	520
Gambia	17.90	41.75	35.21	2.3324	1993/94	1185
Ghana	20.00	41.75	33.98	2.0875	1992	2945
Guinea	20.06	40.82	32.61	2.0349	1993/94	1680
Guinea-Bissau	8.33	59.79	56.68	7.1777	1991	1178
Kenya	12.61	56.10	51.26	4.4489	1992/93	6352
Madagascar	16.87	46.81	40.24	2.7748	1993	2557
Niger	21.20	39.60	31.47	1.8679	1993	2024
Nigeria	13.82	52.71	47.80	3.8140	1992	5276
Senegal	15.00	50.00	40.27	3.3333	1991	4158
Sierra Leone	3.54	78.44	66.67	22.1582	1989/90	2244
Tanzania	19.76	41.40	33.81	2.0951	1993	2262
Uganda	18.34	56.67	37.98	3.0900	1993	6395
Zambia	13.67	50.40	45.60	3.6869	1993	3900

Source: Calculations based on World Bank (1997) and Summers and Heston (1991) and their Internet database.

Table A4 : Poverty measures in rural Africa: 1993 (percentages unless stated otherwise)

Country	μ (PPP 1985)	z (PPP1985)	Gini coefficient	Head-count ratio	Poverty-gap ratio	FGT (2)
Burkina Faso	276	268	38.70	67.97	26.42	12.93
CAR	261	251	64.11	77.57	45.69	31.94
Côte d'Ivoire	500	359	29.72	38.42	10.45	3.76
Gambia	290	273	35.21	56.30	22.86	12.67
Ghana	706	456	33.98	34.56	9.26	3.55
Guinea	277	268	32.61	60.96	22.27	10.46
Guinea-Bissau	288	273	56.68	68.20	39.90	28.45
Kenya	476	349	51.26	58.52	25.79	14.55
Madagascar	376	307	40.24	54.67	21.04	11.04
Niger	289	273	31.47	59.84	19.79	8.78
Nigeria	641	424	47.80	48.12	19.75	10.89
Senegal	423	326	40.27	49.67	21.77	12.25
Sierra Leone	437	332	66.67	70.70	55.58	45.86
Tanzania	245	256	33.81	66.85	25.94	12.93
Uganda	415	323	37.98	50.19	17.51	8.25
Zambia	191	237	45.60	77.02	40.14	25.76

Source: Calculations based on World Bank (1997) and Summers and Heston (1991) and their Internet database.