Employment Generation in Africa: How Have Females Shared?

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Introduction

Although it is known that women produce 60 per cent of the food in African[(1)], not much is known about the importance of women in the labour force (even in the agricultural labour force) or to what extent females have benefited in employment growth since independence. Several studies have been undertaken to ascertain the causes of labour force (LF) migration from rural to urban area in individual countries (2-13); some of these studies have included both male and female migration, others have been primarily concerned with male migration. Recent International Labour Office (ILO) and World Bank data now allow a comparison of employment growth from 1950 to 1978 by country and by sex. How have women shared? This paper looks at these African data to ascertain the rates at which employment was increasing for the continent as a whole and the distribution of employment by sex.

The ILO data brought together population and labour Force (LF) participation for each country using standard concepts through out.

> LF is defined as "all employed and unemployed persons, including those seeking work for the first time. It covers employers, persons working on their own account, salaried employees, wage earners, unpaid family workers, members of producer's co-operatives and members of the armed forces. It covers all persons working regardless of age" (14, p.vii).

The World Bank[1] definition of the LF includes only persons from 15 to 65 years of age, whereas ILO includes anyone working regardless of age.

When one looks at the proportion of the population in the LF by sex using the ILO data with the standard concepts, the variation of females in the LF by country is astounding. In Algeria, only 1.9 per cent of the total female population was considered to be in the LF in 1970 compared to 51.7 percent in Mali. For Africa as a whole, 25.0 percent of the total female population and 52.7 per cent of the male population were in the LF in 1970, (14. Tables 1 and 2).

Obviously, these ILO data depend on the categories or definitions utilised in each country; in most countries 'homemaking and child care' are not considered "work"! However, other factors also influence female participation outside the household. One of these is religion, with the Moslem religion being less supportive of women working outside the household than most others; another is tradition and culture; for wage employment, level of education is an important entreé.

Both the World Bank and ILO divide the LF into three broad categories, agriculture, industry, and service.[2] Table 1: The percentage of the LF in each of these categories for African over time is shown by the unbracketed figures; unbracketed figures show the percentage of females in each category.

Table 1. Summary for Africa of Distribution of Total Labour Force by Sector and Percentage of Women in each Sector (Brackets)*

		Agriculture %	Industry %	Services %
Africa	1950[2]	81 (34)	7 (15)	12 (33)
	1960[2]	77 (35)	9 (15)	14 (31)
	1970[2]	72 (35)	11 (18)	17 (34)
	1960[3]	79	8	13
	1979[3]	69	13	18

* Source:

[2]Source: 14, Table 3.

[3]Source: 16, Table 19 and 21, Table 35.

Agriculture

As expected, the percentage of the LF in agriculture declines as the level of employment rises; in the 29-year period the percentage in Africa has declined from 81 to 69 per cent. It appears to reach 50 per cent at annual per capita incomes of around $900 in 1978 (figure 1). Again the percentage of the LF in agriculture varied widely from 91 per cent in Rwanda and Niger to 30 per cent in South Africa and 20 percent in Libya in 1979 (Table 2). Although the World Bank uses a different definition of the LF, their distribution of the LF by category in 1960 is remarkably similar to the ILO data and the more recent year (1979) allows the use of a more recent time period. It should be noted that the World Bank data are for 45 African countries[3] while the ILO data are for 49.

In most countries of Africa, persons in the agricultural LF are self-employed rather than being wage employed or tenant farmers. The percentage of females in the agricultural LF varied widely from less than 2 percent in Libya to 56 per cent in Botswana in 1970 (Table 2). Note that the percentage of females in the total agricultural LF in Africa has remained stable at 34 to 35 percent from 1950 to 1970; these percentages are shown in the bracketed figures in Table 2. (These bracketed figures indicate the percentage of women in each of the categories; for example a third of the LF in agriculture and services but only 18 per cent of that in industry was female in 1970).

Two countries in which religious differences do not appear significant, and which are geographically side by side, have very different percentages of women in the agricultural LF, these are Benin with 14 per cent and Togo with 37 per cent in 1970! Such differences are hard to explain except as outlined at the top of page 2.

The average annual growth rate of the total African LF was 1.85 percent from 1950 to 1970; the number of men in the LF has grown slightly faster than the number of women (1.87 compared with 1.81) for the same period, ILO projections are that the rate of total LF participation will accelerate each decade until 2000, reaching an average annual rate of 2.7 percent in the 1990's; however, ILO projections are that males will enter the total LF at a faster annual rate than females for each decade.

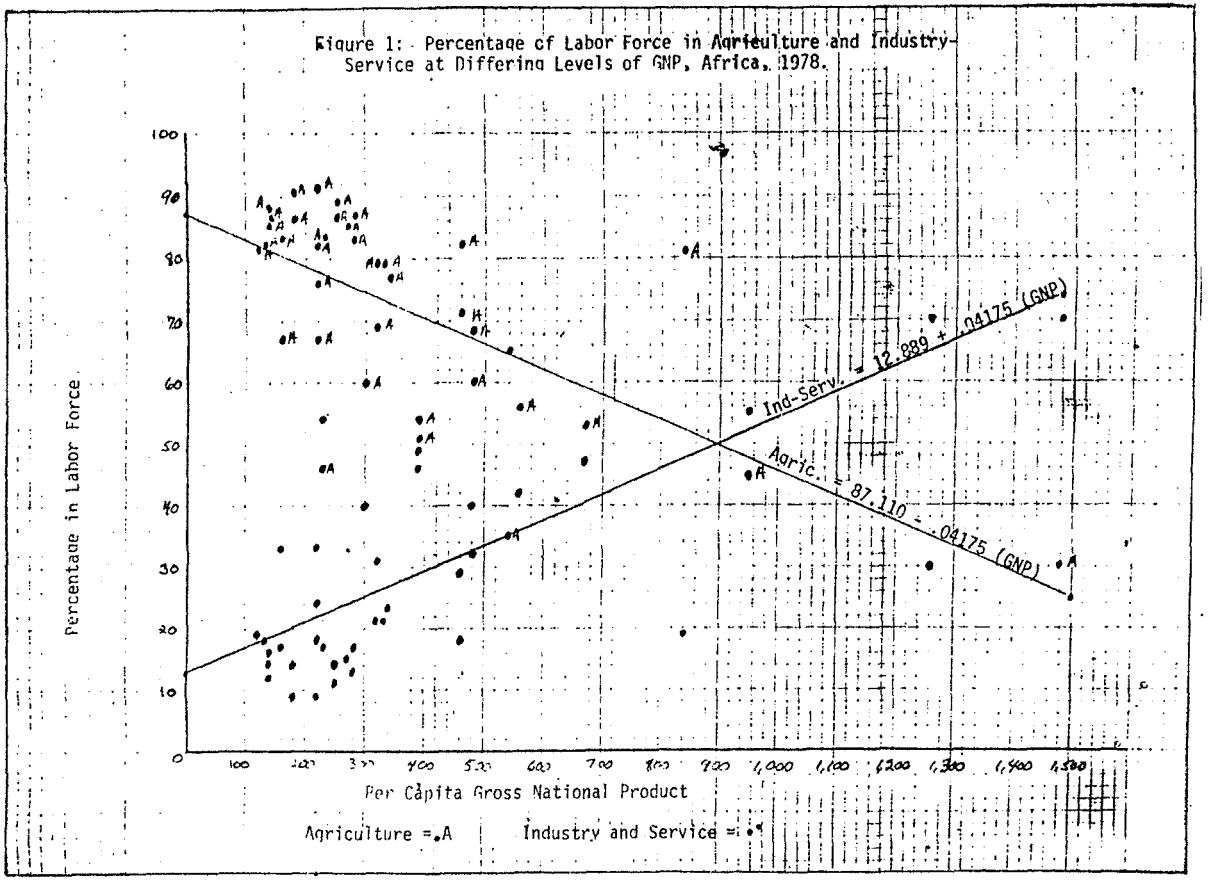
Figure 1: Percentage of Labor Force in Agriculture and Industry-Service at Differing Levels of GNP, Africa, 1978.
Percentage in Labor Force
Per Capita Gross National Product
Ind-Serv. = 12.889 + .04175 (GNP)
Agric. = 87.110 - .04175 (GNP)
Agriculture = A
Industry and Service = •

Table 2. Distribution of the Total Labour Force by Sector and Percentage of Women in Each Sector (shown in brackets), Africa, 1960,[1] 1970,[1] and 1978*[2]

Country		Agriculture	Industry	Services
		%	%	%
Africa	1960[2]	77 (35)	9 (15)	12 (33)
	1970[2]	72 (35)	11 (18)	14 (31)
	1979[3]	69 ( )	13 ( )	18 ( )
Algeria	1960	67 (1)	12 (4)	21 (10)
	1970	61 (2)	15 (4)	24 (9)
	1979	30 ( )	25 ( )	45 ( )
Angola	1960	69 (5)	12 (2)	19 (21)
	1970	64 (6)	14 (3)	22 (21)
	1979	60 ( )	16 ( )	24 ( )
Benin	1960	54 (17)	9 (51)	37 (85)
	1970	50 (14)	12 (49)	38 (84)
	1979	46 ( )	16 ( )	38 ( )
Botswana	1960	92 (50)	3 (7)	5 (4)
	1970	86 (56)	4 (9)	10 (36)
	1979	83 ( )	5 ( )	12 ( )
Burundi	1960	90 (48)	3 (7)	7 (22)
	1970	87 (48)	4 (9)	9 (25)
	1979	84 ( )	5 ( )	11 ( )
Cameroun	1960	88 (52)	5 (3)	7 (12)
	1970	85 (48)	6 (4)	9 (14)
	1979	(83)	7 ( )	10 ( )
Cape Verde	1960	68 (5)	10 ( )	22 (14)
	1970	62 (6)	12 ( )	26 (15)
	1978	( )	( )	( )
Central African Republic	1960	94 (53)	2 (21)	4 (16)
	1970	91 (53)	3 (23)	6 (18)
	1979	88 ( )	4 ( )	8 ( )
Chad	1960	95 (24)	2 (3)	3 (15)
	1970	90 (25)	4 (3)	6 (9)
	1979	85 ( )	7 ( )	8 ( )
Congo	1960	52 (41)	17 (23)	31 (42)
	1970	42 (36)	21 (27)	37 (43)
	1979	35 ( )	26 ( )	39 ( )
Egypt	1960	58 (6)	12 (3)	30 (12)
	1970	54 (6)	19 (5)	27 (15)
	1978	51 ( )	26 ( )	23 ( )
Ethiopia	1960	88 (39)	5 (36)	7 (26)
	1970	84 (36)	6 (37)	10 (28)
	1979	80 ( )	7 ( )	13 ( )

Gabon	1960	85 (45)	7 (6)	8 (20)
	1970	81 (44)	9 (5)	10 (27)
	1979	79 ( )	10 ( )	11 ( )
Gambia	1960	85 (48)	7 (14)	8 (18)
	1970	82 (49)	8 (20)	10 (21)
	1979	79 ( )	10 ( )	11 ( )
Ghana	1960	64 (43)	14 (33)	22 (52)
	1970	58 (39)	17 (38)	25 (51)
	1979	54 ( )	20 ( )	26 ( )
Guinea	1960	88 (51)	6 (21)	6 (10)
	1970	85 (44)	8 (26)	7 (11)
	1979	82 ( )	11 ( )	7 ( )
Guinea Bissau	1960	90 (3)	4 ( )	6 ( )
	1970	87 (4)	5 ( )	9 ( )
	1979	93 ( )	1 ( )	6 ( )
Guinea Equatorial	1960	84 (3)	6 ( )	10 (12)
	1970	80 (3)	8 ( )	12 (18)
	1978	( )	( )	( )
Ivory Coast	1960	88 (51)	2 (5)	10 (42)
	1970	84 (45)	3 (5)	13 (46)
	1979	79 ( )	4 ( )	17 ( )
Kenya	1960	86 (38)	5 (9)	9 (21)
	1970	82 (37)	7 (10)	11 (22)
	1979	78 ( )	10 ( )	12 ( )
Lesotho	1960	93 (48)	2 (18)	5 (36)
	1970	90 (46)	3 (16)	7 (36)
	1979	87 ( )	4 ( )	9 ( )
Liberia	1960	80 (39)	10 (4)	10 (18)
	1970	75 (38)	12 (6)	13 (22)
	1979	71 ( )	14 ( )	15 ( )
Libya	1960	53 (2)	16 (13)	31 (6)
	1970	32 (2)	22 (9)	46 (5)
	1978	21 ( )	27 ( )	52 ( )
Madagascar	1960	93 (48)	3 (15)	5 (32)
	1970	89 (48)	4 (17)	7 (34)
	1979	87 ( )	4 ( )	9 ( )
Malawi	1960	92 (40)	3 (11)	5 (22)
	1970	89 (40)	4 (11)	7 (25)
	1979	86 ( )	5 ( )	9 ( )
Mali	1960	94 (42)	3 (70)	3 (14)
	1970	91 (48)	4 (72)	5 (16)
	1979	88 ( )	5 ( )	7 ( )

Mauritania	1960	91 (4)	3 ( )	6 ( )
	1970	88 (5)	4 ( )	8 (3)
	1979	85 ( )	5 ( )	10 ( )
Mauritius	1960	40 (20)	26 (6)	34 (27)
	1970	34 (22)	25 (8)	41 (25)
	1979	30 ( )	24 ( )	46 ( )
Morocco	1960	62 (3)	14 (25)	24 (19)
	1970	57 (10)	17 (19)	26 (20)
	1978	53 ( )	20 ( )	27 ( )
Mozambique	1960	81 (35)	8 (5)	11 (6)
	1970	73 (33)	13 (3)	14 (8)
	1979	67 ( )	17 ( )	16 ( )
Namibia	1960	62 (22)	17 (3)	21 (42)
	1970	56 (24)	21 (2)	23 (40)
	1978	( )	( )	( )
Niger	1960	95 (9)	1 ( )	4 (9)
	1970	93 (10)	2 ( )	5 (8)
	1979	91 ( )	3 ( )	6 ( )
Nigeria	1960	71 (43)	10 (24)	19 (48)
	1970	62 (38)	14 (31)	24 (51)
	1979	55 ( )	18 ( )	27 ( )
Reunion	1960	46 (7)	21 (5)	33 (45)
	1970	38 (7)	21 (8)	41 (45)
	1978	( )	( )	( )
Rwanda	1960	95 (50)	1 (6)	4 (26)
	1970	93 (50)	2 (6)	5 (30)
	1979	91 ( )	2 ( )	7 ( )
Senegal	1960	84 (44)	5 (11)	11 (18)
	1970	80 (44)	6 (16)	14 (23)
	1979	76 ( )	10 ( )	14 ( )
Sierra Leone	1960	77 (41)	12 (7)	11 (29)
	1970	71 (40)	15 (10)	14 (35)
	1979	66 ( )	19 ( )	15 ( )
Somalia	1960	88 (32)	4 (5)	8 (18)
	1970	85 (32)	6 (6)	9 (20)
	1979	84 ( )	8 ( )	8 ( )
South Africa	1960	32 (12)	30 (7)	38 (45)
	1970	31 (33)	30 (12)	39 (49)
	1978	30 ( )	29 ( )	41 ( )

Sudan	1960	86(1)	6(12)	8(11)
	1970	82(1)	8(13)	10(11)
	1979	78( )	10 ( )	12( )
Swaziland	1960	89 (49)	4 (17)	7 (27)
	1970	81 (49)	6 (17)	13 (40)
	1979	52 ( )	9 ( )	39 ( )
Tanzania	1960	89 (42)	4 (10)	7 (22)
	1970	86 (39)	5 (12)	9 (25)
	1979	83 ( )	6 ( )	11 ( )
Togo	1960	80 (37)	8 (30)	12 (66)
	1970	73 (37)	11 (34)	16 (70)
	1979	68 ( )	15 ( )	17 ( )
Tunisia	1960	56 (1)	18 (15)	26 (10)
	1970	50 (1)	21 (17)	29 (11)
	1978	45 ( )	24 ( )	31 ( )
Uganda	1960	89 (36)	4 (10)	7 (25)
	1970	86 (36)	5 (10)	9 (27)
	1979	83 ( )	6 ( )	11 ( )
Upper Volta	1960	92 (47)	5 (71)	3 (15)
	1970	87 (46)	8 (72)	5 (17)
	1979	83 ( )	12 ( )	5 ( )
Zaire	1960	83 (51)	9 (4)	8 (7)
	1970	79 (52)	11 (6)	10 (9)
	1979	75 ( )	13 ( )	12 ( )
Zambia	1960	79 (34)	7 (14)	14 (40)
	1970	73 (31)	9 (20)	18 (45)
	1979	68 ( )	11 ( )	21 ( )
Zimbabwe	1960	69 (32)	11 (13)	20 (32)
	1970	61 (32)	13 (14)	26 (33)
	1979	50 ( )	15 ( )	25 ( )

* Sources: 2. ILO 14, Table 3.

3. World Bank 16, Tables 19 and 21, Table 35.

Table 3: Average Annual Growth Rates (Percent), of Males and Females in the Labour Force in Africa by Sector, Selected Years*

	Total LF			Agricultural			Industry			Services		
	Total	M	F	Total	M	F	Total	M	F	Total	M	F
1950—1960[1]	1.6	1.7	1.4	1.1	1.1	1.2	4.5	4.4	4.9	4.2	4.7	3.2
1069—1970[1]	2.1	2.0	2.2	1.5	1.5	1.5	5.7	5.1	8.9	4.6	4.0	5.9
1960—1970[2]	1.8											
1970—1980[2]	1.9											
1970—1980[3]	2.2	2.3	2.1									
1980-1990[3]	2.4	2.5	2.3									
1990—2000[3]	2.7	2.7	2.7									

*Sources:
1. ILO, 14 Tables 1 and 4.
2. World Bank, 16, Table 19.
3. ILO Projections, 14, Table 4.

The agricultural LF had grown at a faster annual rate for the decade of the 1960's than a decade earlier as has industries and services. Females were entering the total LF and industries and services at a faster annual rate than males in the 1960's. Although there are no projections by sector for the post-1970 periods, ILO predicts that males' entry into the LF will be at a faster rate than females for those periods. The countries where ILO predicts that females will enter the total LF at a faster percentage rate than males are the predominantly Moslem countries.[4] Thus the author challenges the ILO projection regarding rate of male to female entry; given changes in attitudes, levels of education and opportunities, and the low levels of female participation in the Moslem countries currently, I predict that women will continue to enter the LF at annual percentage rates at least equivalent to men. I further argue that the continued liberation of Moslem women will strengthen my estimate. Unfortunately, there are no recent World Bank estimates to compare with the ILO projections nor are there ILO estimates by sector. However, it is known that if employment opportunities do not open in industries and services, agriculture will have to absorb the surpluses. Employment in industries and services was growing at a much faster annual rate than agriculture for both decades.

Women's Participation

It is noted from the bracketed figures in Table 1 that African women form a higher percentage of the LF in agriculture and services (where self-employed is more important) than in industry (where wage employment is the norm). Approximately one-third of the LF in agriculture and services was female and this has been constant throughout the 1950-1970 period. In contrast, only 15 percent in 1960 and 18 percent in 1970 of industrial employees were female. Again there were wide variations among countries; in general, the countries with the highest percentage of women in the agricultural LF have the highest percentages in industry and services but the percentages in industry are much lower.

Again, some data were difficult to explain; Upper Volta had only 8 percent of the LF in industry but 72 percent of that group were women and Benin had 12 percent in industry with 49 percent female. Namibia and Chad had the lowest percentage of the industrial LF which was female — 2 and 3 percent, respectively. Again, the predominantly Moslem countries had smaller percentages than most other countries (Table 2).

Tanzania

Unlike the ILO data, which relate to the total labour force and not just to wage employment, the Tanzania Bureau of Statistics publishes information on wage employment by industry each year; the data are obtained by sending mailed questionnaires to all employers. Enumeration covers all known wage-earners on the mainland with the exception of wage-earners in smallholder agriculture, in private households and members of the foreign diplomatic corps and armed services.

Data in Table 4 show Tanzanian wage employment for selected years contrasted with ILO and World Bank total LF data. Wage employment in agriculture has fallen rapidly since independence in 1961 when there was significant employment in estate agriculture in sisal, coffee, and tea, largely owned by foreigners. Some of these estates were nationalised and operated by the public sector; however, the importance of sisal in the economy decreased markedly as world sisal prices dropped sharply in the 1960's. Thus, wage employment (WE) in agriculture has dropped from 51 percent of total WE in 1962 to 26 percent in 1974, while industrial employment has grown from 8 to 14 percent, and the service sector from 41 to 60 percent during the same period. Although 39 percent of the total LF in the agriculture sector was female, only 4 percent of wage-employed persons in that sector was female. Similarly, although 25 percent of the LF in services was female in 1970, only 12 percent of WE employees was female. Thus, females have had a disproportionately low share of wage-employment gains compared with their entry into the total labour force. In industry, almost the same proportion of the LF and WE was female in 1970, confirming the hypothesis that most industrial employment in Tanzania was wage employment.

Table 4: Distribution of Wage Employment and Total Labour Force by Sector and Percentage of Employees Female, Tanzania, Various Years*

		Agriculture		Industry		Services	
		%	% F	%	% F	%	% F
ILO[1]	1960 LF	89	39	4	10	7	22
	1970 LF	86	39	5	12	9	25
World Bank[2]	1960 LF	89		4		7	
	1970 LF	84		6		10	
	1979 LF	83		6		11	
Bureau of St.[3]	1962 WE	51	8	8	6	41	7
	1970 WE	29	3	13	8	58	14
	1974 WE	26	4	14	10	60	12

* Sources:
1, 14, Table 3, LF is labour force.
2, 16, Table 19, LF is labour force
3, 17, Tables, WE is wage employment.

WE by industry in Tanzania is shown in Table 5; rates of growth for each of these sectors are shown at the bottom of the Table. Manufacturing, public utilities, finance, construction and community services were the fastest growing sectors during the 1962—1974 period.

The percentage of females in each industry from 1972 to 1974 is shown in Table 6. In 1974, 62 percent of all females compared to 28 percent of males in WE in Tanzania were in the community services sector; males were more evenly distributed among other industries than were females. The ratio of female to male earnings in Tanzania also are shown in Table 6. The same data are available for Kenya but only for 1977 (Table 7).

Kenya

In Kenya, a higher percentage of female wage employees were in community services than in any other industry; females constitute 49 percent of wage earners in that industry in Kenya but only 20 percent in Tanzania; in Kenya female employees received 62 percent of the wages of male employees in that industry compared with 85 percent in Tanzania. For Kenya, 26 percent of all wage employees in the modern sector were female in 1977; wages of these employees averaged 66 percent of the wages of males. In Tanzania, only 10 percent were female. In Tanzania a larger percentage of employees in finance were female than in any other industry, where women constitute 23 percent of total employees and earned 85 percent as much as males in 1974. Overall, female employees in Tanzania were paid at par with men.

Table 5. Wage Employment by Industry, Tanzania 1962 to 1974

Year	Agriculture	Mining quarrying	Manufacturing	Public Utilities	Construction	Commerce	Communication & Transport	Finance	Community Service	Total
1962	203845	8764	23397	4878	41173	16943	41262		73709	397028
1963	165499	7387	22678	3880	28290	16384	24409		71964	340490
1964	163589	7826	23583	4637	33740	17341	25670		74871	351257
1965	139162	7192	25729	4752	31457	17843	26426		81194	333755
1966	126223	6191	29890	5303	37460	20935	27560		82935	336497
1967	123887	6493	31186	7093	41929	20077	29725		86351	346741
1968	109213	6121	35359	9601	47305	21415	31764		90933	351711
1969	112888	5919	40323	9755	52767	19072	32389	4257	90556	367926
1970	107368	6096	43746	11296	54560	20617	33813	4835	93295	375635
1971	108971	5753	55158	10603	50931	23353	35404	5668	94929	392770
1972	113843	5558	55389	12324	51842	24777	37049	6356	98575	405713
1973	109047	5013	59336	18904	104777	26713	38115	6515	104083	472503
1974	123973	4762	64921	16074	72810	25322	45166	7399	123659	484086
Average Annual Growth Rate (%)	-6.4	-3.8	14.8	19.1	6.4	4.1	0.8	14.8	5.6	2.2

*Source: Table 17, 18-a, p. 15, 1974 and various issues.

Table 6. Ratio of Female to Male Earnings and Percentage of Female Employees by Industry in Tanzania, 1972—1974*

	1972		1973		1974	
	Ratio	%Female	Ratio	%Female	Ratio	%Female
Agriculture	79	4	101	3	110	4
Mining	122	8	110	5	97	7
Manufacturing	69	11	79	9	82	10
Public Utilities	136	4	113	3	68	4
Construction	111	2	176	1	116	1
Commerce	103	8	90	9	68	8
Transportation & Communication	142	2	128	3	114	3
Finance	68	24	83	22	86	23
Community Services	89	18	87	19	85	20
	102	9	106	9	100	10

*Source: 17, Table Appendix V (a) and VI, 1974

Table 7: Ratio of Female to Male Average Earnings by Industry, and Percentage of Females in Paid Labour Force by Industry, Kenya, 1977*

	Percentage of Females in Wage Employment	Ratio of Female to Male (Regular Employees) Earnings
Agriculture	9	61
Mining	1	14
Manufacturing	9	63
Public Utilities	5	85
Construction	6	55
Commerce	12	94
Transport, storage & Communication	7	117
Finance, Insurance	22	100
Community Services	49	62
Total	26	66

*Source: 18

Malawi:

In Malawi the numbers of females in WE have been increasing for the period 1971 to 1977; the percentage of females has increased from 8 to 11 percent. There are more females in banking and real estate than any other category although there are also significant percentages in community services and in agriculture. The percentage of females in WE in agriculture is much higher in Malawi than for other countries for which data are available. Malawi has a significant production of export crops — tea and tobacco — which are labour intensive. Unfortunately, the Malawi statistics do not allow a comparison of relative wages paid to males and females.

Table 8. Percentage of Females in Paid Employment by Industry, Malawi, 1971-1977*

	1971	1974	1977
Agriculture, forestry, fishing	12	17	14
Mining & quarrying	1	0	0
Manufacturing	2	4	5
Electricity & water	2	5	7
Construction	0	0	0
Trade & restaurants	5	7	7
Transport & communications	2	3	4
Banking, real estate	18	15	9
Community, social & personal services	10	11	11
TOTAL	8	10	11

*Source: 19, Table 7.6.

Factors influencing the rate of LF growth in industry and services

Given the fact that the percentage of the LF in agriculture is falling over time, and that by 1979 World Bank estimates were that 69, 13 and 18 percent of the LF would be in agriculture, industry and services, respectively, it seemed interesting to try to determine the factors which most influenced the rate of growth of the LF in the industry and services sectors. The most recent World Bank data (21) available for 39 African countries were used; data constraints restrict some factors one might wish to include.

Our hypothesis was that the percentage of the LF in industry and services (Y) was a function of:

x_1 Per capital GNP (1979).
x_2 Annual percentage rate of population growth (1970-77) (this was expected to have a negative co-efficient).
x_3 Literacy rate (1978)
x_4 Index of per capita food production (1977-79) (1969-71 = 100)
x_5 Gross domestic investment (as a percentage of GDP) (1979).
x_6 Value of exports (as a percentage of GDP) (1979)
x_7 Energy consumption per capita (1979)
x_8 Net inflow ofloans (private and public) (1979) (in $millions).
x_9 Daily calorie supply as a percentage of minimum requirements (1977).
x_{10} Percentage of the population which was Moslem.

One variable thought to be highly significant was the ratio of rural to urban income; however, since data for only 11 countries could be found, the variable was not used.

The resulting equation (with T values in brackets) was:

(1)

$$Y = \underset{(2.7156)}{68.6128} + \underset{(4.3089)}{.0705x_1} - \underset{(-3.0741)}{9.1316x_2} + \underset{(1.0431)}{.1351x_3} - \underset{(-1.7452)}{.3197x_4} - \underset{(-1.6012)}{.4722x_5}$$

$$+ \underset{(1.6623)}{.3839x_6} - \underset{(-2.5602)}{.0234x_7} + \underset{(2.0770)}{.0123x_8} - \underset{(-.2967)}{.0734x_9} - \underset{(-1.6449)}{.1109x_{10}} \qquad R^2 = .72$$

These variables explained 72 percent of the variation in Y ($R^2 = 72$) (the percentage of the LF in industry and services), but only six variables were significant at the 90% confidence level. This equation can be interpreted as stating that, as GNP per capita increases by $1 per annum, Y increases by .07 percent; as the annual percentage growth in population increases by 1 percent, Y decreased 9.13 percent, as energy consumption per capital increases, Y decreases .02 percent, and as net inflow of loans increased by $1 million, Y increases, .01 percent. As the index of per capita food production increases one percentage point, Y decreases .32 percent, and as the percentage of the Moslem population increases 1 percent, Y decreases .11 percent.

The negative sign on per capita food production was surprising. The hypothesis was that, as one increased food production per capita, more of the LF would be released for industry and services, just the opposite is suggested by the estimated equation. Perhaps the change in the index of per capita food production is a proxy for relative incomes in agriculture and industry; as the index improved, a larger percentage of the LF stays in agriculture.

Seventy-six percent of the variation in Y was obtained by using all of the independent variables above, except energy consumption per capital (X_7) and net inflow of loans (X_8) and substituting the percentage of students of secondary school age enrolled (X_{11}). The equation now became:

(2)

$$\begin{array}{llllll} Y = 39.6431 & + .0319x_1 & - 5.7086x_2 & + .0458x_3 & - .1927x_4 & - .2949x_5 \\ \quad (2.0823) & (4.9543) & (-1.9602) & (.4875) & (-1.2347) & (-1.4524) \end{array}$$

$$\begin{array}{llll} + .1901x_6 & + .0176x_9 & - .0113x_{10} & + .5439x_{11} \\ (1.1411) & (.0776) & (-.2224) & (3.5774) \end{array} \qquad R^2 = .76$$

Now, only per capita GNP, the annual rate of population growth and the percentage of students of secondary school age enrolled in school are significant; the co-efficient of the annual rate of population growth continues to be negative.

Factors influencing the variation in LF in industry (Y_1)

Seventy-six percent of the variation in Y_1 was obtained using the same independent variables as in equation (2), this time GNP/capita, rate of population growth, per capita food supply and enrollment in secondary school were significant at the 90 percent confidence level. The co-efficients of rate of population growth and per capita food supply were negative. The results are shown in equation (3).

(3)

$$\begin{array}{llllll} Y_1 = 18.6024 & + .0117x_1 & - 4.3683x_2 & + .0315x_3 & - .0448x_4 & - .1807x_5 \\ \quad (2.1245) & (3.9704) & (-3.2615) & (.7295) & (-6.6245) & (-1.9349) \end{array}$$

$$\begin{array}{llll} + .1254x_6 & - .005x_9 & + .0243x_{10} & + .2937x_{11} \\ (1.6360) & (1.0346) & (1.0346) & (4.1997) \end{array} \qquad R^2 = .76$$

Factors influencing the variation in LF in services (Y_2)

The variables in equation 1 (omiting X_7 and X_8) explained 65 percent of the variation in Y; only per capita GNP and the index of food production per capita were significant.

Summary and Conclusions

In this paper, data have been drawn together from ILO and World Bank sources which show that the African LF was increasing at an average annual rate of 1.6 percent, between 1950 and 1960, and 2.1 from 1960 to 1970. Projections are that, the annual rate will increase from 2.2 to 2.7 percent, in the decades of the 1970's to 1990's. Women entered the LF at a faster percentage rate than men during the 1960's and the author predicts this will continue although ILO projections do not confirm her optimism.

Women make up one-third of the LF in agriculture and service but only 18 percent in industry. Most of the industrial LF is wage-employed, whereas most of the agriculture LF is self-employed; the service sector in Africa is a combination of each. Thus, as females entered the LF in increasing numbers, growth of wage employment has not kept pace with the increase in numbers of persons entering the LF, and more persons (including females) are forced into the informal or self-employed sectors. In entering wage employment, African females have lower levels of formal education than males; in entering self-employment, females have less access to capital than males (20).

Women are much less active in the LF in the predominantly Moslem countries of Africa than the non-Moslem countries. This is true of LF participation in all the 3 sectors (including agriculture). How much of this is due to underreporting in these countries, is unknown. The ILO and World Bank use standard definitions and concepts for each country but if the government officials do not consider that females are working outside the home, they will not be reported even if they are actively involved (as young girls are in many African Moslem agricultural areas). Thus, in my judgement, data for the predominantly Moslem countries are underreported.

Data in Table 2 show that if women are actively involved in the agricultural LF in a given African country, they are much more likely to be involved in the industrial and service sectors also, although there will be much lower percentage in the industrial sector.

Data were not available for a more detailed breakdown of wage employment by industry and by sex. However, for those countries for which these data were available (Kenya and Tanzania), manufacturing, public utilities, construction and community services were the fastest growing sectors for total employment from 1962 to 1974, whereas, finance and community services employed the most females. In Kenya, female wages on average were 66 percent of male wages in 1977, whereas, there was parity between the two sexes in wages reported in Tanzania. These wage ratios by industry are shown in Table 6 and 7.

It is known that as economic development occurs, the percentage of the LF in agriculture decreases, hence, the LF in agriculture reaches 50 percent of the total in Africa at per capita (1978) incomes of approximately $900. The average percentage of the LF in industry and services for 39 African countries was 31 percent in 1979, the mean per capita annual GNP was $549.

Regressions computed to determine the factors which best explained the variations in the percentage of the LF in industry and services, accounted for 76 percent of the variation in industry and services; 65 percent of services alone and 76 percent of the LF in industry (when separated from services). Certainly, population growth rates, the index of food production per capita and percentage of the Moslem population were significant negative influences on the percentage of the I F in industry and services. GNP per capita, the percentage of

students enrolled in secondary schools, and the percentage of the urban population are positive influences. Data were insufficient to test other variables which might have been more influential.

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Footnotes

1. World Bank data on population are primarily based on UN data adjusted by more recent data from the World Bank and the US Bureau of the Census (16, p. 184).

2. Agriculture includes agriculture, forestry, hunting and fishing. The industrial sector comprises mining, manufacturing, construction, electricity, water and gas. Services contain all other economic activities.

3. The World Bank omits Cape Verde, Equitorial Guinea, Namibia and Reunion.

4. Algeria, Egypt, Mauritania, Libya, Sudan, Tunisia, Niger, Chad as well as South Africa, Cape Verde, Reunion, Angola, Congo, Equitorial Guinea and Guinea Bissau are the countries where ILO estimates women will enter the LF at faster annual rates than men