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RESERVE (832)

EDUCATION, EMPLOYMENT AND WAGES IN KENYA

By

Arne Bigsten and Paul Collier

Working Paper 366

In the paper a wide range of data on the Kenyan labour market is presented. It is found that the traditional human capital model for unskilled labour is not supported by the data. An alternative explanation is proposed.

First, changes in employment and earnings for the period 1964-1977 and earnings by education level are considered. Then changes in employment and earnings by education level are presented. Finally, a theory which is consistent with these observations is presented.

(6)

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IDS/WP 366

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ABSTRACT:

In the paper a wide array of data on the Kenyan labour market is examined. It is found that neither the traditional human capital model nor segmented labour market theories provide an adequate explanation of the pattern of development. An alternative explanation is proposed.

First, changes in employment and earnings by occupation for the period 1964-1977 and earnings by education for the period 1968-1978 are considered. Then changes in employment prospects and migration by education are presented. Finally, a theory which is compatible with these observations is presented.

## EDUCATIONS, EMPLOYMENT AND WAGES IN KENYA

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### 1. INTRODUCTION

The apparent experience of the Kenya labour market has been influential in formulating theories of segmented labour markets (SLM) in opposition to the traditional human capital framework. Based on the evidence of the 1960s the ILO [16] concluded wage rigidity was responsible for heavy urban unemployment. House and Rempel [15] using data for the period 1968-72 concluded:-

"The primary question asked in this study was whether the increase in the supply of labour available in Kenya was exerting significant downward pressure on the wage structure in the modern sector. On the basis of the evidence considered in this study the conclusion reached is that wage levels have not been responsive to the growing labour supply pressures.<sup>1</sup>

Fields [3], influenced by the same period, postulated a model in which education was used as a screen by employers. The predicted result was that in the face of explosive growth in educational output the private returns to education would stay constant whilst the educated 'bumped' the uneducated out of job opportunities, so that over time the composition of job-seeking migrants would change in favour of the educated.

In this paper we examine in some detail the wide array of data now available on the Kenyan labour market. We conclude that none of the simple models survives the confrontation with reality. In their place we propose a framework which seems to live more compatibly with the behaviour of the labour market. In section II we document changes in employment and earnings by occupation over the period 1964-77. In section III earnings by education are introduced for the period 1968-78. In section IV changes in employment prospects and migration by education are presented for the same period. Section V proposes a theory which is compatible with these observations. Finally, Section VI offers a summary and conclusion.

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1. [15], p. 175.

II: Employment and Earnings by Occupation 1964-77

First, consider changes in the occupational composition of the formal sector labour force. Using the Manpower Surveys of 1964 [14] and 1972 [7], and the Employment and Earnings Surveys of 1964, 1969, 1972 and 1977 [4] enables us to build up an approximate picture. For 1977 and 1972 our data are for citizens, for 1964 for Africans, and for 1969 for both Citizens and African citizens. Since the number of African non-citizens is rather small (in 1969 4,680 in all occupations) 1969 provides us with a conversion factor from Africans to citizens.

Table 1 shows the data for citizens for the four years, whilst Table 2 gives the data for non-citizens. The figures on skilled manual are almost certainly subject to unspecified re-classification between 1964 and 1969 and between 1972 and 1977. This makes comparisons between the development of skilled and unskilled manual labour impossible.

Table 2: Wage Employment of Non-Citizens by Occupation

	Occupation			
	Directors Advin. and Professional	Middle level Executive + Managerial	Clerical and Secretarial	All Occupations
<u>Non-citizens</u>				
1977	6,067	2,517	1,236	18,387
1972	9,913	2,097	2,989	26,119
1969	8,731	7,930	7,320	37,887
<u>Non-African</u>				
1964	3,738	5,459	14,207	52,831

Three factors are particularly noteworthy. First, among citizens the proportion in white collar jobs has risen strongly throughout the period. Second, among manual workers the share of casual employees fell 1964-72 and then rose very strongly 1972-77. The fall in the earlier period is particularly marked in the non-agricultural sector. For example, 1967-72 non-agricultural casual employment fell from 82,556 to 57,207. Third, there has been a decline in the number of non-citizens. The exit of approximately 35,000 non-citizens 1964-77 must have had a substantial impact upon the citizen wage structure. For example, if we take as an arbitrary cut off point that wage which divides the highest 25% of Nairobi wage earners, in 1977 this amounted to 1,394 s.p.m. and in 1967 to 462 s.p.m. The total number of employees in Kenya earning above this level in 1977 was 96,094 and in 1967 was 70,855.

Table 1: Wage Employment of Citizens by Occupation

Year nos.	Occupation									
	Directors Admin. + Professional	Middle level Exec. + Managerial	Clerical and Secretarial	Teachers	Other White Collar	Technicians + Foremen	Skilled Manual	Unskilled Regulars	Casual Unskilled	Total
1977 cit	14,557	15,612	73,219	103,110	6,964	20,274	62,152	421,942	166,679	884,509
1972 cit	9,748	8,632	53,147	60,603	6,839	16,768	100,704	337,776	99,441	693,658
1969 cit	8,589	8,104	49,143	44,437	4,440	15,377	58,602	304,688	95,966	589,346
1969 AF	6,056	7,020	44,979	44,059	3,447	14,279	57,940	304,091	95,966	577,588
1964 AF	883	6,629	10,065	28,727	718	1,962	11,326	369,042	93,238	522,592
Per- centages										
1977	1.65	1.77	8.28	11.66	0.79	2.29	7.02	47.7	18.84	100
1972	1.41	1.24	7.66	8.74	0.99	2.42	14.52	48.69	14.34	100
1969 cit	1.45	1.38	8.34	7.54	0.75	2.61	9.94	51.7	16.28	100
1969 AF	1.05	1.22	7.79	7.63	0.60	2.66	10.03	52.65	16.61	100
1964	0.17	1.27	1.93	5.50	0.14	0.38	2.17	70.62	17.84	100

The number of non-citizens in wage employment was 18,387 in 1977 and 43,661 in 1967. On the assumption that all non-citizens are in the top 25% of wage earners this implies an expansion of citizen employment above these 25% of wage earning levels from 27,194 in 1967 to 77,707 in 1977. Further, in 1967 there were 8,640 non-African citizens in wage employment nearly all of whom would be in the high wage group so that the expansion of African citizen high-wage employment is even more dramatic.

We next consider changes in earnings by occupation. It will be seen in Section III that the experience of the Nairobi labour market is of particular interest so we start with this, although for Nairobi occupation specific earnings data are not available so changes must be inferred from the overall distribution of wages.

The distribution of Nairobi regular wage income is available for 1977 [4] and 1972 [4]. For earlier periods we have to use non-agricultural regular wage income. For 1977 and 1972 we take the mean earnings of the top 25%, and remaining 75% of Nairobi regular wage earners. For 1972 we then apply the level of income which divides the two groups (818 s.p.m.) to the non-agricultural regular wage distribution. The wage level divides non-agricultural workers in 1972 into the top 18% and the remaining 82%, whose mean earnings are then compared. For 1967 we retain this division between the top 18%, and the bottom 82%. The data are presented in Table 3.

Table 3: Mean Earnings by Wage Group  
(excludes casuals)

Year	Criterion	Mean Wage			Differential
		Low Wage	All	High Wage	
1977	75% 25% Nairobi (critical wage = 1,394)	629.1	1424.3	3881	6.169
1972	75% 25% Nairobi (critical wage = 818)	353.3	887.6	2490	7.049
1972	critical wage = 818 non-agricultural regulars (82% 18%)	342.4	681	2221	6.488
1967	82% 18% non-agricultural regulars (critical wage = 462)	183.7	590	2438	13.27

The earnings distribution has become progressively more equal. If the conversion from the non-agricultural to the Nairobi distribution which applied in 1972 (1.093) also applied in 1967 then the Nairobi wage differential must have narrowed from 14.5 in 1967 to 7.05 in 1972 and 6.17 in 1977. The period 1967-72 saw a fall in the nominal mean earnings of the high wage group - almost certainly the result of Africanisation.

Real wages of the low wage group rose very strongly 1967-72 and then fell 1972-77. Real wages of the high wage group fell sharply in each period.

For earnings specific to the occupational groups shown in Table 1 we have to restrict our analysis to the period 1968-1977, for which data are available on earnings by occupation for the entire formal sector. Unfortunately, these employment figures concern citizens only, while the earnings figures have had to be calculated for all employees, including non-citizens. This means that we get a biased estimate of the development of citizen earnings by using these data, since the proportion of non-citizens in the labour force decreased somewhat over the period. Since the non-citizens had higher average earnings than the citizens, the level of citizen earnings at the beginning of the period is more overestimated than the level at the end of the period. This implies that the growth in citizen earnings becomes underestimated.

Since the classification of unskilled and skilled workers has changed over time, we would get misleading results if we tried to consider these two categories separately. Instead we have grouped them together into the category manual. No reliable data are available for casuals, but one might assume that they earn only the minimum wage. This doubled between 1972 and October 1977, and thus was raised at a rate slightly above the inflation rate. Between 1968-72 the minimum wage was unchanged in nominal terms and so fell by 13% in real terms.

From Table 4 we see that relative to both average and manual earnings it is only the top category of directors and professionals that has managed to improve its position. The gap between manual and non-manual earnings thus decreased during the period under consideration.



### III. Education and Earnings

Currently, no national data are available on earnings by education. However, we are able to make use of two sample surveys, the Nairobi High and Middle level Manpower Survey (NHMLMS) conducted by the Central Bureau of Statistics in 1978 and the IBRD Labour force Survey (IBRDLS) conducted by Thias and Carnoy in 1968. Whilst the result of the latter are reported in [18], the NHMLMS is otherwise unanalysed.

The NHMLMS consisted of a random sample of 25 Nairobi firms drawn from the 1977 Employment and Earnings Survey listing of establishments. A total of 533 employees were questioned about age, salary, years of experience in the job, education and training.

Regression analysis was used in an attempt to explain the salary structure. Education was found to be the most important explanatory variable of salary, followed by age. All variables were significant at the 1% level. The results are given below with standard errors shown in brackets:

$$S = -7,749 + 607E + 107A + 52X + 799F + 448I \quad (1)$$

(36)    (13)    (18)    (245)    (231)

$$r^2 = 0.52$$

where S = salary in shillings per month  
E = years of education  
A = age in years  
X = years of experience in the job  
F = full-time training course attended  
I = in-service training

Considering that no information on the firm, industry, sex or race was available this was considered a very satisfactory level of explanation. Both education and full-time training were rewarded by substantial salary increases.

Training could be either a substitute for education or, since firms suffer training costs, they could screen for trainability by education. The former would give a negative correlation and the latter a positive correlation between education and training. The partial correlation coefficient between education and full-time training was 0.12, between education and in-service training 0.03, and between education and correspondence course -0.06. Regression analysis failed to establish any connection between training and education.

Table 4: Earnings by Occupation<sup>1</sup> (s.p.m. at current prices)

	Directors Admin. + Professional	Middle level Exec. + Managerial	Clerical Secretarial	Teachers	Other White Collar	Technicians Foreman	Manual Regulars	Total
1977	6083	3212	1190	862	1397	1851	452	861
1972	2621	2092	783	546	796	1565	263	494
1968	2168	2304	692	541	734	1252	213	408
(A) Normalised (Average earnings = 1: 1977: 861 = 1, 1972: 494 = 1, 1968: 408 = 1)								
1977	7.07	3.73	1.38	1.00	1.62	2.15	0.52	-
1972	5.31	4.23	1.59	1.11	1.61	3.17	0.53	-
1968	5.31	5.65	1.70	1.33	1.80	3.07	0.52	-
(B) Normalised (Manual earnings = 1: 1977: 452 = 1, 1972: 263 = 1, 1968: 213 = 1)								
1977	13.46	7.11	2.63	1.91	3.09	4.10	1.00	-
1972	9.97	7.95	2.98	2.08	3.03	5.97	1.00	-
1968	10.18	10.82	3.25	2.54	3.45	5.88	1.00	-
(C) Normalised (1972 real earnings; GDP deflator used <sup>2</sup> )								
1977	1.18	0.78	0.78	0.81	0.90	0.60	0.88	0.89
1972	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1968	0.95	1.26	1.01	1.13	1.06	0.92	0.93	0.95

1. Employment and Earnings Surveys, 1972 and 1977 and [15] T.2.4. for 1968.

2. For 1972-77 the GDP deflator is 1.96. The Nairobi higher, middle, and lower income indexes of consumer prices rose by 1.87, 1.84 and 2.00 respectively. For 1968-72 the GDP deflator is 1.145.

$$F = -0.3 + .02E^* + .003A - .002X \quad (2)$$

$$r^2 = 0.02.$$

\* = significant at the 1% level.

However, cross-tabulations of training by education and age suggested that for the younger age groups training was positively correlated with a high level of education. For all workers under the age of 35, of these with less than form 3 education 44% had received no training at all, whilst this applied to 28% of form 4 leavers and to only 3% of those with education beyond form 4.

On average, full-time training is worth 800 sh. p.m. to the employee. Breaking down by age and education the cell sizes become rather small except for Form IV leavers. Here we find a large differential payment for those who have full-time training.

Table 5: Training and Salary for Form IV Leavers, 1978<sup>1</sup>  
(mean salary s.p.m.)

Age group	Training		
	Full-time	In-service	Non
20-24	2,376	1,521	1,432
25-29	2,526	2,048	2,137
30-34	3,524	3,062	2,002

1. Source HMLMS printout.

Full-time training thus appears to raise initial salaries by 66% above those without training.

The Thias and Carnoy [18] survey of the labour force of Nairobi, Mombasa and Nakuru was conducted in January 1968. The total sample was 4,237 but the coverage was not confined to high and middle level manpower so that for this group the sample size is broadly comparable with the CBS survey. Thias and Carnoy do not report the mean wage of their sample. However, from their published tables this can be derived at approximately 521 s.p.m. This is well below the mean wage reported in the Employment and Earnings Survey 1967 [4] (using the Thias and Carnoy weights for the three cities) of 666 s.p.m.. Either this is because of discrepancies in reporting wages between the two surveys or because the Thias and Carnoy sample is biased. The former is unlikely since the Thias and Carnoy survey procedure involved cross-checking earnings with employers, and any tendency to overstate earnings so as to appear to comply with minimum wage legislation would be common to both surveys. The latter is rather more likely since

the sample represents only 1.8% of the relevant labour force and the public sector is known to have been under-represented in the sample. Differential reporting of unskilled wages would in any case not affect the reporting of wages for the skilled labour force which is what we are concerned with in the NHMLMS. We will therefore take the reported wages as being correct for particular education and age categories. Salaries by education level are shown below:

Table 6: Education, Salaries and Age 1968 and 1978

Education	Mean Age		Mean Salary (s.p.m.)	
	1968 <sup>4</sup>	1978 <sup>5</sup>	1968 <sup>4</sup>	1978 <sup>5</sup>
completed primary	28.8 <sup>1</sup>	38.3	401 <sup>1</sup>	1,827
form 2 secondary	26.8 <sup>1</sup>	34.0	505 <sup>1</sup>	2,366
form 4 secondary	25.4 <sup>1</sup>	29.8	764 <sup>1</sup>	2,667
form 6 secondary	27.9 <sup>1</sup>	28.8	1121 <sup>2</sup>	4,241
University	30.4 <sup>3</sup>	36.1	2429 <sup>3</sup>	7,171
All	32.8 <sup>6</sup>	32.2	521 <sup>6</sup>	3,273

1. [18] Table 3.6
2. [18] Table 3.10
3. [18] Table 3.11
4. African males only
5. NHMLMS printout
6. Derived from [18].

Great care must be taken in interpreting these data because the coverage of the two surveys differs. For example, the few workers with only primary education who nevertheless have achieved high or middle level positions in 1978 are in no sense representative of all primary school leavers and so their earnings cannot be compared with earnings of primary school leavers in 1968. The high age of those with only primary school education relative to those with more education in the 1978 sample indicates the extent to which this group has been displaced by higher educational cohorts. The decline in mean age as years of education rise up to form 4 for the 1978 Survey suggests that education cohorts below this level are experiencing displacement from this category of manpower.

However, the restricted coverage of the 1978 survey is useful in addressing the key question of whether occupation specific wage rates have adjusted along the lines of the human capital model or whether the educational complexion of occupations has altered along the lines of the SIM model. The criterion for whether a job is considered 'high or middle level' is that it should normally have been appropriate for those with a secondary education. Thus, in the 1968 survey all those with form 4 education and above would be part of high and middle level manpower. By 1978 some secondary school leavers had been displaced into lower level jobs excluded from the 1978 sample; that is they were in jobs which had previously been considered inappropriate for secondary school leavers. However, since our question requires information on salaries for given jobs the restricted coverage of the 1978 survey is precisely what we need. For to discover whether the presence of many unsuccessful job seeking form 4 leavers (let us say) has any impact upon the salaries offered to those who succeed in gaining managerial jobs, we need to know the earnings, not of all form 4 leavers but of successful form 4 leavers.

The mean wage reported in [4] for 1967 weighted for the three cities was 666 s.p.m., that for Nairobi alone being 731 s.p.m.. In early 1978 for Nairobi this had risen to about 1,296 s.p.m.<sup>1</sup> If we use these mean earnings as the numeraire for each survey then earnings are as follows:

Table 7: Normalised Salaries by Education

Education	1968 (666 s.p.m. = 1)	1978 (1296 s.p.m. = 1)
form 4	1.147	2.057
form 6	1.683	3.272
University	3.647	5.533

However, these figures are still not comparable since the age structure of the two samples differs. We therefore break the data down by age group:

Normalised on the relevant urban mean earnings in each year (B) in all cases the relative age and education specific salary for high and middle level manpower shows a strong rise 1978 on 1968. In all cases this rise exceeds the 28% by which the Employment and Earnings Survey 1967 mean earnings (666 s.p.m.) exceeds the mean sample earnings (521 s.p.m.), thus the increase cannot be ascribed to underestimation of earnings in the Thias and Carnoy procedure. The (unweighted) mean increase of the nine comparable cases (ages 25-44) is 60%, with that of the three cases of form 4 being 33%.

Table 8: Salaries by Age by Education

Age	<u>(A) shillings p.m.</u>					
	Form 4		Form 6		University	
	1968	1978	1968	1978	1968	1978
17-19	405	(1,922)	-	(1,550)	-	-
20-24	619	1,705	(714)	2,161	1,100	(1,820)
25-29	830	2,123	1,326	3,670	2,205	5,693
30-34	1182	3,003	1,325	5,616	2,661	6,801
35-44	1372	3,672	1,259	6,625	2,679	7,873
45-54	-	7,185	(3,020)	9,914	-	10,057
55+	-	7,250	-	-	-	(5,100)
<u>(B) Normalised (1968:666 = 1, 1978:1296 = 1)</u>						
17-19	0.61	-	-	-	-	-
20-24	0.93	1.32	-	1.67	1.65	-
25-29	1.25	1.64	1.99	2.83	3.31	4.39
30-34	1.77	2.31	1.99	4.33	4.00	5.25
35-44	2.06	2.83	1.89	5.11	4.02	6.07
45-54	-	5.54	-	7.65	-	7.76
55+	-	5.59	-	-	-	-
<u>(C) Normalised (25-29 = 1)</u>						
17-19	0.49	-	-	-	-	-
20-24	0.74	0.8	-	0.59	0.50	-
25-29	1.0	1.0	1.0	1.0	1.0	-
30-34	1.42	1.41	1.0	1.53	1.21	1.20
35-44	1.65	1.73	0.95	1.80	1.21	1.38
45-54	-	3.38	-	2.70	-	1.77
55+	-	3.41	-	-	-	-
<u>(D) (Normalised on Form 4 = 1)</u>						
17-19	1.0	1.0	-	-	-	-
20-24	1.0	1.0	-	1.27	1.25	-
25-29	1.0	1.0	1.59	1.73	2.64	2.68
30-34	1.0	1.0	1.12	1.87	2.26	2.27
35-44	1.0	1.0	0.92	1.81	1.95	2.14
45-54	1.0	1.0	-	1.38	-	1.40
55+	1.0	1.0	-	-	-	-
<u>(E) Normalised on 1968 real earnings</u>						
17-19	1.0	-	-	-	-	-
20-24	1.0	1.28	-	-	1.0	-
25-29	1.0	1.19	1.0	1.29	1.0	1.20
30-34	1.0	1.18	1.0	1.97	1.0	1.19
35-44	1.0	1.25	1.0	2.45	1.0	1.37
45-54	-	-	-	-	-	-
55+	-	-	-	-	-	-

Normalised on the age group 25-29 (C) there appears to have been a steepening of age scales. For example, the (unweighted) mean of the three education groups for the age group 35-44 was 1.77 in 1968 and 1.64 in 1978. However, this change did not occur among those with Form 4 education. In both years this group had the steepest age scale. This would suggest that, whilst the supply price of Form 4 leavers is much lower than that for the other groups, those selected then acquire experience on the job which raises their productivity at the same rate irrespective of education. Thus, whilst job seekers' recruitment prospects are very sensitive to their educational credentials, workers' promotion prospects are independent of education; the less educated do not catch up lost ground but do not fall further behind. It is, of course, quite plausible that promotion would depend upon performance rather than education.

Normalised on Form 4 (D), the differential between Forms 4 and 6 has widened between 1968 and 1978 but that between Form 4 and graduates has remained unchanged except for the highest age group.

Normalised on real earnings in 1968 (E) we find in all cases where comparisons can be made real wages rose over the period.

Combining this information a salient feature is the increase in relative earnings of those who are both older and well educated. Those both aged over 30 and possessing Form 6 or higher education raised their salaries relative to mean urban earnings (B) by 93%, compared to an increase of only 36% for the remainder of the group. A possible explanation for this is the Africanisation of higher level manpower noted in section II. This has increased the demand for highly educated, senior Africans. Further, in 1968 Europeans with Form 6 education were paid on average 149% more than Africans and European graduates 40% more than African graduates. As jobs were Africanised, had the existing wage rates been maintained, this would have increased increased African earnings substantially.

#### IV. Education, Employment Opportunities and Migration

We now combine the NHMMS data with the National Demographic Survey for 1977 (NDS) [8]. Our data is confined to Nairobi males for the NDS. Correcting for the aging and migration which took place between January 1977 (NDS) and January 1978 (NHMMS) the approximate male population of Nairobi with secondary education or better in January 1978 was as shown below:

Table 9: Nairobi Males by Age and Education 1978<sup>1</sup>

Age	Education		
	Form 1-3	Form 4-6	University
20-24	10,206	20,679	-
25-29	7,896	15,167	2,338
30-34	3,828	8,855	2,673
35-39	2,497	4,789	1,928
40+	2,243	4,197	3,488

1. Sources: for aging, death and migration [2].  
For 1977 figures [8].

Let us now assume that all males with university education and over the age of 24 were employed in high or middle level jobs. That is, we assume that the sample of workers with these characteristics observed in the NHMLMS is a sample of the set of 10,427 males with university education. This establishes the sampling fraction at 1:149. We then apply this sampling fraction to the other workers observed in the NHMLMS sample to yield the approximate number of Nairobi males in high and middle level jobs. The sample size of NHMLMS being 533 we are identifying the age and educational composition of approximately the top 80,000 male jobs in Nairobi. The resulting estimated employment is shown in Table 10.

Table 10: Nairobi High and Middle Level Male Employment by Age and Education, 1978<sup>1</sup>

Age	Education			
	Form 1-3	Form 4	Form 6	University
20-24	149	11,172	2,234	-
25-29	1936	11,619	1,490	2,979
30-34	1787	6,405	596	2,085
35-39	1192	3,575	298	2,383
40+	1341	10,427	1,043	2,979

1. Source: NHMLMS printout.



Of course, both the labour supply and the employment estimates are subject to error. The supply figures are more accurate in ten year rather than five year groups since the adjustment for aging and migration could only be done crudely. However, the resulting profiles look plausible. For example, from [8] we know that 48.06% of university leavers are aged 25-34, whilst 48.57% of university leavers in employment are in this age group according to the NHMIMS. There is one massive discrepancy, namely that there is a large excess of employment over supply of form 4 and form 6 educated males aged over 40. The explanation for this may lie in the differing enumeration points of the NDS and the NHMIMS. In the former, young enumerators went to the home and asked about education characteristics of each member of the household, probably in front of several members of the household. In the latter, highly educated young CBS employees enumerated at the place of work. It is not unlikely that senior managers aged over 40 who in fact had only primary education should, perhaps in the presence of their better educated junior employees, tend to overstate their educational attainments.

Unfortunately, the NDS does not distinguish between forms 4 and 6. We will make two alternative assumptions: (a) that form 6 leavers have employment priority over form 4 leavers so that the employment for form 6 leavers (Table 6) are equal to the labour supply and (b) that form 6 leavers have the same employment opportunities as form 4 leavers. Kenyan experience is likely to be somewhere between these two cases. These assumptions enable us to estimate the labour supply of form 4 leavers residually. In Table 11 we show the probability of access to high and middle level employment by age for those with secondary education up to form 4. We have assumed that all those with education above form 4 have access to such employment (column (a)) or alternatively, that form 6 leavers have the same opportunities as form 4 leavers (column (b)).

The resulting picture suggests that whilst form 1-3 leavers have progressively been bumped out of the high wage sector this is a very recent phenomenon for form 4 leavers. The proportion of all Nairobi form 4 leavers who gained employment in the high wage sector actually rose at one stage, for the age group 25-29 has a higher probability of access than older age groups. Indeed, whilst the probability for the age group 20-24 is lower, this might well reflect the fact that this is the normal age of job search unemployment, which would always depress the access of job seekers in this age group.

Table 11: Access to High and Middle Level Employment by Age and Education

Age	Form 1-3			Probability of Access	
	Supply	Employment	Excess	(a)	(b)
20-24	10,206	149	10,057	.015	
25-29	7,896	1936	5,960	.245	
30-34	3,828	1787	2,041	.467	
35-39	2,497	1192	1,305	.477	
40+	2,243	1341	902	.598	
			Form 4	(a)	(b)
20-24	18,445	11,172	7,273	.606	.648
25-29	13,677	11,619	2,058	.850	.864
30-34	8,259	6,405	1,854	.776	.791
35-39	4,491	3,575	916	.796	.809
40+	3,134	(10,427)*	(-7,273)*	-	. -

\* see text above.

Whilst the employment opportunities of those form 4 leavers resident in Nairobi have not deteriorated since the 1960s the national output of form 4 leavers has expanded enormously. The propensity of a non-Nairobi form 4 leaver to migrate to Nairobi in search of a job must therefore have declined. This can in fact be quantified utilising data independent of the NHMIMS, the results being given in Table 12. This suggests that whilst 79% of form 4 leavers have migrated to Nairobi in the period 1964-68, by 1973-76 only 12% of form 4 leavers chose to migrate.

Finally, we investigate whether this reduced propensity of form 4 leavers to migrate was nevertheless sufficient to bump out the less educated from job search. A reasonable proxy for this is the educational composition of male migrants. From Table 13 it can be seen that whilst the share of form 4 leavers did rise it was still only a small component of total migration. The demise of those migrants with no primary education is mainly accounted for by the push towards universal primary education.

Table 12: Migration Propensities of Form IV Leavers

	'000		
	1964-68	1969-72	1973-76
national output of leavers <sup>3</sup>	19.6	54.5	79.9
Nairobi output of leavers	3.9 <sup>4</sup>	6.8	10.0
migrants with form IV education (as % of all migrants)	12.4 <sup>5</sup>	8.7 <sup>1</sup>	8.5 <sup>2</sup>
propensity of non-Nairobi form IV leavers to migrate to Nairobi	.79	.183	.122

1. Estimated from total migrants over age 20, applying the proportion 23% with form IV observed by Rempel [17] 1964-68.
2. Residual of 1969-77 - 1969-72.
3. From Table 20, Ministry of Education, Annual Report, 1975, [14].
4. Using the proportion cited in Bigsten [1], Table XII; 2.
5. From Rempel, [17].

Table 13: Rural-Urban Migrants and Smallholders by Education

Education	Male Migrants to Nairobi		Male Smallholders <sup>3</sup>
	1964-68 <sup>1</sup>	1969-77 <sup>2</sup>	Aged 20-29
None (%)	10.8	- (1)	33.6
Primary (%)	55.2	52.1	54.2
Secondary I-III (%)	11.1	20.5	12.2
Secondary IV-VI (%)	22.9	27.4	

1. Derived from [17].
2. Derived from [6], [8], [9], [10] and [11], see [2] for further detail.
3. [12] table 5.5.

V. Predictions, Reality and a Theory of Recruitment

What can be made of this evidence? The provisional conclusion which surely emerges from Section II is of the astonishing flexibility of the labour market. First, for the period 1972-77 we might turn the House-Rempel dictum on its head and suggest that despite substantial increases in demand for labour real wages fell very rapidly. For example, in the clerical and secretarial group mean real earnings fell by 22%. Second, in addition to a general fall in real wages the structure of relative earnings has changed rapidly: manual earnings rose by 13% and professional earnings by 53% relative to clerical earnings over the same period. Third, this flexibility is not confined to the period 1972-77. The period 1967-72 displayed substantial movements in relative earnings, dramatically illustrated by the rapid narrowing of the two-class earnings differential among non-agricultural workers 1967-72.

Yet the data in Section III appear to contradict these conclusions; controlling for age and education the real earnings of African high and middle level manpower have risen considerably. Almost certainly the explanation for this conflict is Africanisation. This has the effects of raising African earnings and lowering mean earnings of all employees in an Africanised occupation, precisely the effects observed in Sections II and III. Further, in Section II we saw that Africanisation had been on a sufficiently large scale, and the African-European wage differential (controlling for age and education) sufficiently wide to have a major impact on the wage structure. Fortunately, whilst Africanisation explains the apparent conflict between Sections II and III it does not destroy the value of the data as a guide to labour market adjustment. The major impact of Africanisation was in the period 1968-72 so that the fall in real wages 1972-77 is genuine. The view that real wages are rigid is simply wrong.

The data of Section III and IV remain hard to reconcile with the standard 'bumping' migration and job-search model. Real earnings of young African form 4 leavers who gain access to good jobs have risen yet the propensity of form 4 leavers to migrate for job search has fallen so far that the probability of access in Nairobi has remained very high. The extent of bumping of those with less education has been rather limited. The facts throw up a series of paradoxes. If education is a selection criterion why has not more bumping occurred, if it is not why are the educated paid so much more than the less educated? Since wages are flexible why have the earnings of form 4 leavers not fallen in response to the huge expansion in

supply? Why is Nairobi not congested with unemployed form 4 leavers: that is why has the propensity to migrate borne all of the adjustment instead of adjustment being shared with the probability of access? Perhaps we have missed something out?

Consider just this possibility, for indeed there are some employee characteristics such as willingness to work and examination grade which are both economically productive and observable by firms at the time of employee recruitment yet are normally unobserved by those compiling socio-economic statistics. Other productive characteristics, such as skills and level of education are observable both by the firm and the economist. Might the omission of the former characteristics bias economic analysis?

In figure 1 the horizontal axis denotes a ranking of some particular characteristic unobservable to the economist, say willingness to work. For a given quantity of desired recruits the higher the wage which the firm offers the more exacting the standards it can impose and the higher will be the mean willingness to work of its recruits. This relationship between mean willingness to work and the wage offered is shown by SS. Since a willing worker is more productive than an unwilling worker a firm will be indifferent between employing a willing worker at a high wage and a less willing worker at some lower wage, reflecting the difference in their marginal products. The underlying differences in marginal products define a family of iso-cost curves shown in figure 2.

Figure 1

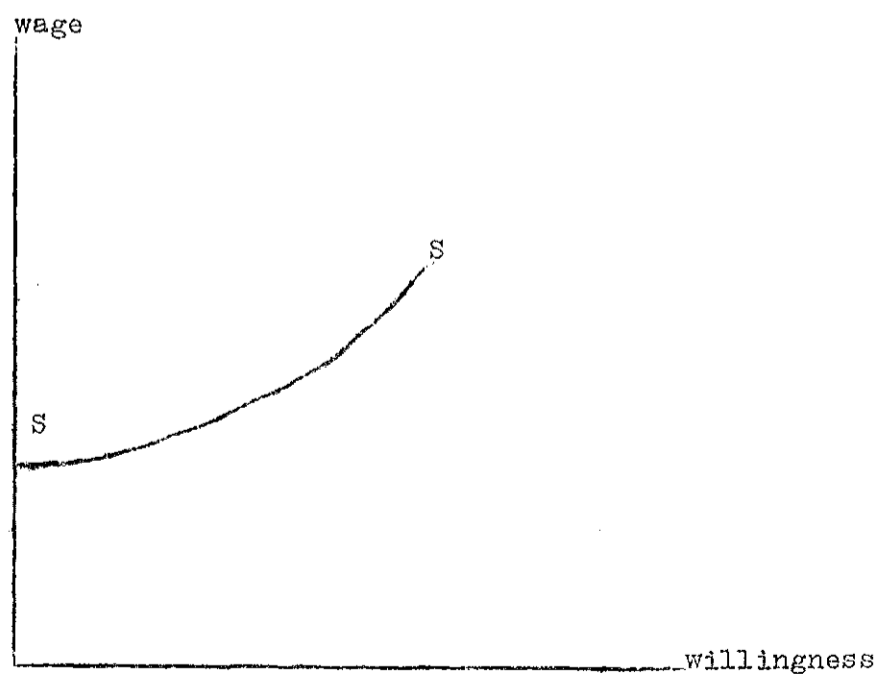
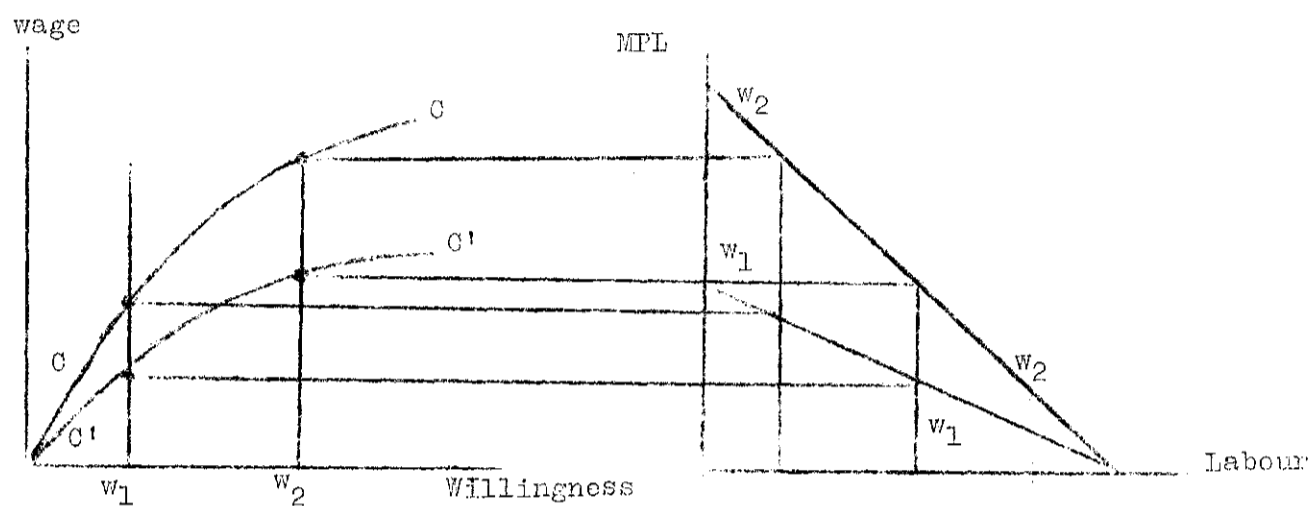
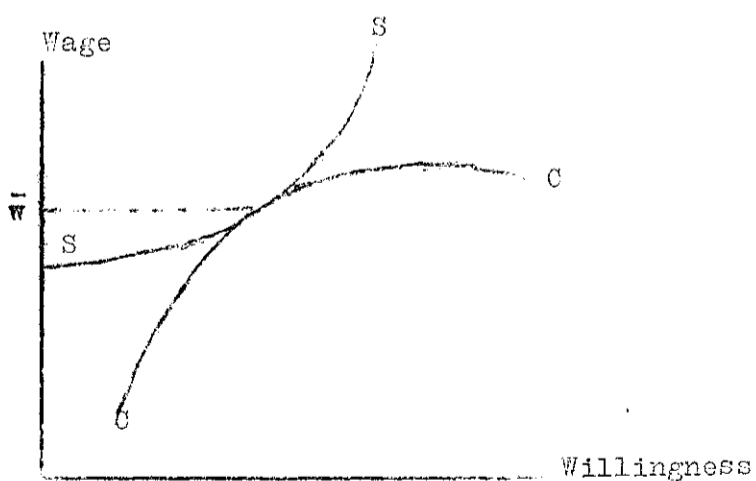


Figure 2



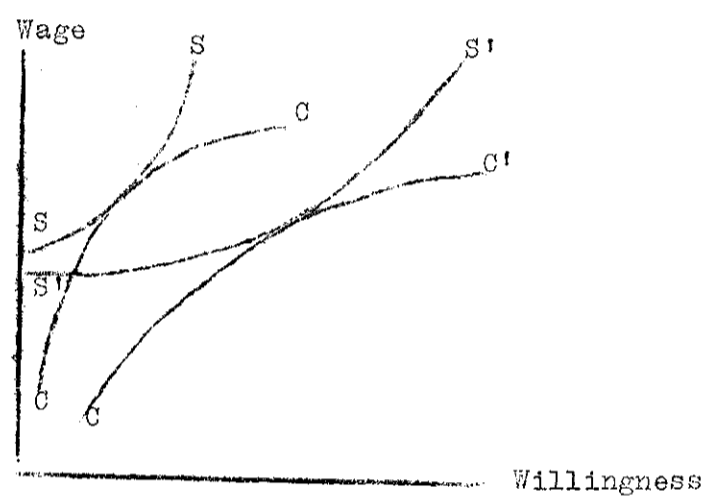
In some occupations the cost of monitoring productivity is so high as to prevent the introduction of piece rates. In this case, regardless of variations in willingness to work there will be a single wage,  $\bar{w}$ , which minimises the cost of labour in efficiency units (see figure 3).

Figure 3



Where the firm is free to vary the wage in line with variations in productivity then CC will identify a dispersion of wages though, unless the supply of recruits is a function of this wage dispersion in addition to the mean wage,  $\bar{w}$  will remain the cost minimising mean wage.

Figure 4



Consider a supply change in the labour market. Suppose, for example, that firms seek a given level of educational attainment in addition to willingness to work. An expansion in the educational system relative to employment opportunities will shift the SS curve to the right (see Figure 4). However, unless previously all educationally qualified people (regardless of willingness to work) were able to find employment in this occupation, then the reservation price at which educated labour will transfer its search to other occupations, is underpinned by the income level in these occupations. Hence, the SS curve flattens rather than shifts. The flatter the SS curve the more rewarding for the firm is an increase in mean wages in terms of increased willingness to work of recruits. Hence, an increased supply of educated labour may be associated with an increase in or stability of the wage at which such labour is recruited. This situation, in which firms are displaying rational cost minimisation, is characterised by an apparent downwards wage rigidity in the face of increased supply of job seekers and is therefore easy to confuse with a market imperfection.

Both job seekers and firms might or might not be able to identify at the time of recruitment these characteristics unobserved by the economist. Consider first a characteristic such as examination grade. This information is known both by the employer and the applicant at the time of recruitment. If applicants correctly perceive the critical grade below which employers refuse the job application then wage differentials will not induce job search unemployment. Only to the extent that job seekers are mis-informed or employers depart from their recruiting conventions will there be an excess supply of unsuitable applicants.

This account is at least compatible with the behaviour of the labour market for form 4 leavers. The enormous increase in supply enabled employers to discriminate by grade. If employers did this it would have put upward pressure on wages, offsetting the downward pressure of increased supply. Thus it would explain the resilience of earnings by education. It would also explain why the propensity of form 4 leavers to migrate to Nairobi fell so drastically, whilst those who did migrate found little difficulty in gaining access to good jobs. The consequence would be that, since the grade is achieved in a non-repeatable examination, the returns to form 4 education would have fallen without an increase in job search unemployment. The theory fits the facts but is there any direct evidence for it?

Since examination grade information has not been collected<sup>1</sup> the only potential evidence is that of the recruitment requirements of firms. Here there is powerful evidence of the introduction of screening by grade. For example, in 1974 the Government formally raised its minimum recruitment standards for high and middle level positions to form 4 grade 3 where previously no grade had been specified.<sup>2</sup>

Second, consider those characteristics which neither employers nor applicants can measure accurately upon recruitment, such as willingness to work. We might then expect firms to recruit employees for a probationary period. However, since lazy probationers will not be retained in the permanent workforce, the mean productivity of probationers will be lower than that of the

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1. A survey in Nairobi conducted in January 1980 by Bigsten, Collier, Knight, Hazlewood and Sabot will provide direct observations when analysed.

2. We are indebted to Mr. Oduor-Otieno for this information.



permanent workforce. The firm might therefore have a separate recruitment grade paid below the permanent workforce.

This provides us with an explanation for another otherwise puzzling feature of the urban labour market identified in Section II. Casual workers earn considerably lower wages than regular manual workers. Over the period 1968-77 casual workers increased substantially as a proportion of all manual workers<sup>1</sup> despite the absence of any significant change in relative wages. Indeed, the fastest expansion of the casual workforce, 1972-77 coincided with a 15% increase in the casual wage relative to the regular wage. If the casual-regular wage differential were an institutional distortion then firms should react by having a mainly casual workforce, yet even in 1977 only 25% of the manual labourforce was employed on a casual basis. Yet if the differential represents only a premium for skills acquired on the job then the movement of relative wages and relative employment in the same direction cannot be reconciled.

Our explanation is that the wage differential is determined at least in part by the difference in "unobserved" characteristics between probationary and permanent workers. Further, the relative size of the casual labourforce is determined primarily by the recruitment needs of employers. Recruitment is a function of turnover and net expansion of the labourforce, turnover being negatively related to the level of the modern sector regular wage. The 1960s being a period of high real wages and falling manual African employment would imply a low proportion of casual workers relative to the late 1970s when real wages were low and employment expanding. The low proportion of casual workers in 1972 is a consequence of the "Tripartite Agreement" of the previous year under which firms undertook to increase their regular workforce by 10%. This was commonly achieved by regularising casual workers.

Further, there is no doubt that firms do use the casual workforce as the normal means of recruiting unskilled, regular labour. Because of this ability to gather information on potential regular employees firms do not generally need to impose a crude proxy for unobserved characteristics by using education as a screening device for unskilled labour. The absence of education as a screen for unskilled labour in turn explains the failure of form 4 leavers to bump primary school leavers out of the labour market and is therefore consistent with the continued flow of primary school leavers to Nairobi documented in Table 13.

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1. See table 1 above.

VI. Conclusion

The experience of the Kenya labour market has been shown to be at variance both with conventional descriptions of that market and with the predictions of theories inspired by casual observations of its features. Neither the level of wages nor the wages structure were rigid. The educated did not bump the uneducated out of the urban labour market. In the face of rising real wages for the educated the propensity of the educated to migrate fell so drastically that employment access for those who did migrate remained easy. In the face of a large wage differential between casual and regular wage earners firms employed predominantly the apparently high cost group, yet as casuals became relatively more expensive relatively more of them were employed.

We have suggested that the explanation for the gulf between prediction and reality is that, by ignoring what they cannot observe, economists have produced biased models of the recruitment process. A more realistic account of recruitment yields predictions consistent with Kenyan experience. Further, the implications for the interactions between educational and employment expansion are sufficiently different from both the orthodox 'bumping' and human capital models to cast doubt on the evaluation of education policy using either framework.

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