

Private Sector Wages and Poverty in Ghana: 1988-1998*

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Abstract: Real wage rises for the unskilled are one mechanism by which poor people can obtain rises in their incomes and a reduction in their economic vulnerability. In this paper it is shown that over a period in Ghana when measured poverty declined, 1988 to 1992, real wages for the unskilled rose, by about 11 per cent. Over the 1990s evidence from the manufacturing sector suggests substantial falls in the real wages of the unskilled, some 23-26 per cent between 1992 and 1998. In the longer term such wages are lower than those of the mid 1980s and approximately one-third the level of the early 1970s. Even if poverty can be reduced in this context, any fall in poverty will omit one of the most vulnerable groups of the working population. There is evidence that high rates of inflation and low investment are two factors explaining these falls in real wages.

*This paper draws on two sources of data. The first is the Ghana Living Standard Surveys (GLSS) for the periods 1987/88, 1988/89 and 1991/92 which are nationally representative household surveys. The second is two sets of firm level surveys. The first of these, covering the period 1992-1994, were conducted as part of the Regional Program on Enterprise Development (RPED) organised by the World Bank. Since 1994 similar survey information has been collected as part of the Ghana Manufacturing Enterprise Survey (GMES) organised by the Ghana Statistical Office (GSO) and the Centre for the Study of African Economies (CSAE) at Oxford University. The GMES data took over from the RPED surveys the content of much of the original questionnaire designed by a team from the World Bank. For brevity the firm based data will be referred to as RPED data. As part of the surveys extensive information was collected on workers in the firms and it is this information which is used in this paper to measure changes in real wages after 1992. The CSAE is greatly indebted to the GSO for both making the GLSS data available and for assistance with the firm surveys. The research has been undertaken as part of the Employment and Labour Markets Research Programme funded by the Department for International Development of the UK. The CSAE is funded by the Economic and Social Research Council of the UK.

1. Introduction

In both the 1970s and 1990s Ghana has been the focus of much attention as a case study for economic performance in Africa. Killick (1978) saw in the failure of Ghanaian economic policy of the period from 1957 to 1970 the failure of the type of policies that characterised development economic policy of the 1960s. Just as Ghana in the 1960s led the way in the direction of government intervention and public sector controls so its post-1983 reforms are seen as offering a test of the efficacy of the reversal of these earlier policies. The macro data show that a trend decline in per capita GDP of 2.7 per cent from 1970 to 1986 was replaced by a trend growth rate of 1.4 per cent over the period 1986 to 1996, World Bank (1998). While this rate of growth is low it clearly represents a decisive improvement over the pre-1983 period. Household survey data for 1987/88 to 1991/92 shows that poverty fell in Ghana, GSO (1995), and has been widely used to argue that reform can lead to higher incomes and lower levels of poverty, Demery and Squire (1996).

In this paper the issue of the determinants of poverty is approached by an examination of changes in real wages. There would appear to be three routes for a reduction of poverty in economies such as Ghana. The first is by innovation in the agricultural sector leading to rises in real incomes for the rural population. Insofar as poverty is primarily rural the first route would have a direct impact on the livelihoods of the relatively poor. Where comparative data is available it is clear that poverty in Africa remains much higher in rural than urban areas, as is the case in Ghana, so the first of these routes has yet to be traversed. The second is that there could be an expansion of higher wage employment opportunities for the relatively unskilled. By this means individuals would switch between sectors and incomes would rise as employment expanded within the higher income sector. This route seems to have been one aspect of the rise in incomes in Mauritius which is the only country within sub-Saharan Africa to have had a substantial growth of manufacturing exports. The rise in labour input came from a switch from the household sector to manufacturing employment, Milner and Wright (1998). Thirdly unskilled wage rates could rise as a result of high rates of investment. It is this factor which has been the driving force for raising incomes in the NICs, see the comparative wage data in Horton, Kanbur, and Mazumdar (1994) and the evidence of high investment rates in the NICs in Young (1995). In this paper this third route is investigated for Ghana. Is there evidence that poverty reduction through rises in the wage rate of the unskilled has occurred? The answer to that question leads to a second, more speculative, question posed in the paper. Can a sustained fall in poverty be achieved without a continuing rise in such wages?

In this paper two sources of data from Ghana are used to assess how real wages have changed from 1987/88 to 1998. The two sources of data differ substantially and one task of the paper is to make them as comparable as possible. The first data source is the Ghana Living Standard Surveys (GLSS) the first three of which were conducted in 1987/88, 1988/89 and 1991/92. The second data source is surveys of the labour force in Ghana's manufacturing sector which have been conducted over the period 1992 to 1998. These data sources are used in the next section to measure real wages for both private and public employees and to establish how far the two data sources present a consistent picture of the level of earnings. In section 3 earnings functions for the two sets of data are run to establish how real wages have changed over time once allowance is made for the human capital characteristics of the workers. There is a direct overlap from the third of the GLSS surveys with the first of the RPED enterprise ones. By combining data from the two sources it is possible to present a picture of the changes in real wages for the unskilled over the period from 1988 to 1998. An earnings function combining the two data sources is used in section 4 to assess how the macro performance of the Ghana economy has impacted on real wage levels. A final section concludes.

2 Real Wages 1987/88-98

In this section we begin by using the data collected in the GLSS surveys to ask if there is evidence for any increases in real wages over the period 1987/88 to 1991/92 and then link the GLSS to the RPED data. We focus on private sector wage employees who are a minority of the workforce in Ghana.

As is explained in the appendix to this paper there are alternative procedures within the GLSS data to assess the employment status of an individual. We have chosen the method that ensures the

maximum degree of comparability across the surveys. Individuals who report any labour income are classified into one of four classes on the basis of their main job: wage employees, farmers, non-agricultural self-employed workers, and unpaid family workers. Those who were not employed, but were seeking work, are classed as unemployed and included in the labour force. The sample is confined to those aged over 18, to ensure comparability between the GLSS and RPED data.¹

Table 1 shows the proportions of the labour force divided into these five categories. A further distinction is made for wage employees between three categories of employees: government employees, those working in state enterprises and the private sector. In the analysis of the data the government and state enterprise employees are aggregated to form the public sector. As is clear from the table private sector employees are a small part of the work force and there is no evidence of any rise in their relative importance over the four year period covered by the three surveys. The labour force is dominated by self-employment either as farmers or in the non-agricultural sector. The measured rates of unemployment are very low. The rate is highest in the third round at 3.2 per cent. These very low rates for Ghana stand in marked contrast to those observed in other African countries. In South Africa household data for 1993 gives an average unemployment rate of 30 per cent using a broad measure of unemployment, Kingdon and Knight (1999), while data for urban Ethiopia shows unemployment rates of 39 per cent in 1994 and 30 per cent in 1997, Krishnan, Selassie and Dercon (1998).

In Table 2 the monthly earnings for wage employees and the non-agricultural self-employed are reported. The figures for the self-employed are not directly comparable with those of wage earners. Three measures of earnings are given. The first is earnings in thousands of cedis. The second converts this number to constant prices by deflating the nominal wage by the consumer price index based on 1977=100. The third measure converts the cedis to US\$ using the official exchange rate. The data show substantial rises in real wages over the period, a rise of 21 per cent for all wage employees. For public employees the rise was 26 per cent, for private employees 12 per cent. The data suggest that over his period real wages in the public sector were rising much faster than in the private but for both sectors there were substantial increases.

In Table 3 the data in Table 2 is extended to look at earnings by gender. It needs to be noted that the sample size for female employees is much smaller than that for male and the sample of private female employees is very small indeed, less than 100 in each year of the survey. Earnings for public sector male employees rose by 27 per cent, while the rise for those in the private sector was 14 per cent. These figures suggest that male earnings were rising faster than those of females and confirm that both male and female public sector employees were doing much better than those in the private sector.

In order to link the GLSS data to that for the RPED we present in Tables 4 and 5 the figures for the manufacturing sector from the GLSS and the RPED data, which is exclusively for earnings in manufacturing. The available GLSS data ends in 1991/92. The first of the RPED surveys was conducted in 1992. Thus the estimates for earnings from these two quite separate sources can be directly compared. The RPED data gives a figure for average earnings in 1992 of Cedis 33,300 per month (Table 5), the GLSS data gives a figures of 22,900 (Table 4), about 30 per cent less

The RPED data produces substantially higher estimates of wages than the GLSS data. The source of the discrepancy can be traced to two factors. The first, and less important, is the higher proportion of

¹The RPED sample is restricted in two respects. Firms that were added to the survey for the fifth round (data for 1997 and 1998) are excluded as these firms were larger than the average and their inclusion would render the most recent data not directly comparable with earlier years. The second restriction is that apprentices are excluded. This was done to ensure comparability between the GLSS and RPED data. For reasons to do with the design of the questionnaire it is not possible to identify apprentices in the GLSS data.

skilled labour in the RPED data. The second is that the skill differentials in the RPED data are much greater than those reported in the GLSS data.²

To see the importance of these factors in explaining the discrepancy between the two sources Table 6 gives a breakdown of the RPED earnings by gender and skill. Unskilled male workers in the RPED data had monthly earnings, in 1992, of Cedis 26,500 while the figure for male workers in the GLSS data for 1991/92 was Cedis 26,100, virtually identical. This congruence between the two sources is not true for female workers. Female unskilled workers in the RPED data have monthly earnings of Cedis 21,300 while in the GLSS data the earnings for 1991/92 are Cedis 14,100, a discrepancy of more than 30 per cent.

It is possible to use the RPED data presented in Table 6 to examine changes in the earnings of skilled and unskilled manufacturing sector workers over the period 1992 to 1998. While the data reported in Table 5 showed there was on average no change in real earnings over the period from 1992 to 1998 the real wages of skilled workers shown in Table 6 rose by 19 per cent between those two years while the real wages of the unskilled fell by 20 per cent. There was an appreciation of the real exchange rate over the latter part of the period so for skilled workers the US\$ wage rose by 39 per cent between 1992 and 1998, for unskilled workers there was a fall of 8 per cent in US\$ terms. There is little difference in the pattern of male and female earnings. The important differences in the data are between skilled and unskilled workers. There seems, for both men and women, to have been an absolute and relative fall in the wages of the unskilled over the period 1992 to 1998. The evidence for any rise in the absolute level of the skilled wage is less clear-cut. Skilled wages in 1998 were below the level of 1994 (Table 6). We return to the changes in relative rates of pay for the skilled and unskilled below.

In the next section we pose two questions. First, are the relative wage effects apparent in the sample data also apparent in earnings functions run on the data. Second, are these increases in skilled earnings an occupational or an education effect. In other words is there evidence over the sample that the returns to education have been rising. Both the GLSS and RPED data will be used in answering these questions.

3 Earnings Functions from the GLSS and RPED data

Table 7 presents a pooled earnings function for the GLSS data while the pooled RPED data is presented in Table 8; the latter specified to allow us to capture changes in the levels and relativities of skilled and unskilled labour in Ghana's manufacturing sector.³

The earnings functions reported in Table 7, which cover the period 1987/88 to 1991/92, now show a result which is standard in earnings functions on African countries that the Mincerian returns to education rise with the level of education, see the survey in Appleton, Hoddinott and Mackinnon (1996). In the GLSS data the average years of education of those working as wage employees in the private sector is 8 years (Appendix Table 1) at which point the returns to education are only 3 per cent. There are no significant differences between the returns for men and women. A test is reported in Table 7 which shows that there is no evidence of a significant shift in any of the human capital coefficients over the period of the surveys. In the GLSS data there are no significant returns to skills. The regressions suggest

²Workers are classed as unskilled on the basis of their occupation. The classification of workers from the GLSS into skilled and unskilled is shown in Appendix Table 3. The skilled workers have 10.9 years of education as compared with 6.9 for the unskilled, the skilled earn 34 per cent more than the unskilled. For the RPED data the average education of those in skilled occupations is 13.4 years compared to an average of 10.7 for the unskilled, a difference of 25 per cent. Skilled wages are on average over twice those of the unskilled (Appendix Table 4).

³ The earnings in Table 7 are for private sector workers not simply those in the manufacturing sector. The differences between the two groups is slight and using all private sector workers enables us to have a much larger sample.

a rise in the earnings of men of 11 per cent over the period and no rise for women. The rise for men is similar to that shown for the data reported in Table 3.

An earnings function for the RPED data is reported in Table 8. The average years of education for those in the RPED data is 11 (Appendix Table 2) at which point the Mincerian returns to education are 6 per cent. These higher return to education in the RPED data as compared with the household data from the GLSS simply reflect the higher levels of education recorded in the RPED data. The coefficients on the educational variables in the two regressions are not significantly different. Indeed there is a remarkable conformity both across the data sets and over time in the coefficient on the quadratic term on education.⁴ In contrast to that for the GLSS there are substantial returns to skill and, as the data we have already reported suggests, the return to skills has been changing. The regression results suggest that some of the pattern in the data is due to the changing characteristics of the sample. There is no evidence that once these changes are allowed for that the real wages of skilled workers are rising in fact there is a small fall. The fall for the unskilled is very substantial. In 1998 real wages for the unskilled are approximately 26 per cent below their level in 1992. Such a fall is clearly sufficiently large to reverse the rise which appears to have occurred over the period 1987/88 to 1991/92. Recall data from the RPED surveys reported in Teal (2000, Table 1) show real wages for those starting employment in 1991/92 were about half their levels of the early 1970s. The results here imply that the 1990s have seen a continuing fall in the wages for the unskilled in the Ghana economy.

While another round of the GLSS has just been collected (in 1998/99) it is too early for the results from this survey to be available. The fall in poverty which appears to have occurred over the 1987/88-1991/92 period was associated with rises in real wages. We turn now to the speculative question posed in the introduction as to whether a decline in poverty is possible with falling real wages for the unskilled.

Clearly the real wages for the unskilled are only rather indirectly related to the household per capita consumption levels that are the basis for the comparisons that have been made to assess if poverty in Africa has been falling in economies which are undertaking reforms. The first two possibilities suggested in the introduction as means by which poverty may be reduced require rises in rural incomes and switches between sectors. Rises in rural incomes remains a possibility. If the falls in real wages are associated with a sufficient expansion of employment opportunities and these workers are switching from lower wage occupations then falling real wages are not inconsistent with rising sectoral incomes. There is evidence from the RPED surveys that employment has been growing at 4 per cent per annum over the period 1991 to 1995, Teal (1999b). This rate, if sustained over the whole period, is high enough to generate rises in income in the sector. Whether the new entrants are switching from lower income sectors, or the net effect is sufficient to prevent poverty rising, only more comprehensive household data can reveal. Even if the answer to that is yes it seems clear that the failure of policies to raise unskilled wage rates makes the problem of reducing poverty much more difficult.

4 Factors in the Determination of Unskilled Wages

What are the factors which might explain the rise in real wages over the period 1989 to 1992 and the subsequent fall? In this section we investigate whether the macro performance of the Ghana economy can explain any part of this outcome. In Figure 1 we show three variables, the rate of growth of real GDP per capita, the inflation rate and the average investment rate in the manufacturing sector. The first two

⁴We have made no attempt to allow for any selectivity bias in the coefficients. Our primary interest is in changes over time rather than how well the coefficient on education does capture the return on education. A recent study examining this issue is Glewwe (1996). If selectivity is allowed for in the private sector earnings function then the coefficient on years of schooling becomes insignificant. Glewwe then calculates the rate of return on education based on the measures of cognitive skills available for the data. He finds a figures of 4 per cent, for an individual aged 25, which compares with a rate of return of 7 per cent from the OLS earning function.

are macro variables, the last is derived from the surveys. The growth rate of GDP over the period since 1988 has been low and stable, while the rate of inflation has been high and highly variable. In 1987 urban inflation was over 40 per cent, it then fell to a low of just under 10 per cent in 1992 after which it rose steeply reaching a peak of 62 per cent in 1995. The average rate of investment within manufacturing, as derived from the surveys, rose between 1991 and 1992, was then stable before falling off markedly in 1997. Over the whole period it was below 10 per cent which contrasts with private sector investment rates in the NICs of 25 per cent in the mid 1990s. There seem two routes by which these aggregate variables might impact on manufacturing sector wages. If wages take time to adapt then the rate of inflation may, at least in the short term, adversely affect wages. Both growth and investment, by altering the demand for labour, may permanently change real wages. In so far as variable inflation impinges on growth and investment the effects of inflation on real wages may be long term rather than simply short term adjustment effects.

In Table 9 we report the results of an earning regression over the whole period, 1988 to 1998, obtained by combining the data from the GLSS with that from the RPED surveys. We confine attention to male unskilled workers as these are the ones which have seen the largest falls in their real wages. The first column of the Table reports the results of merging the GLSS and RPED data creating a time series of 9 years running from 1988 to 1998.⁵ The combined data set shows the rise from 1988 to 1992 and then the substantial fall of some 22 per cent from 1992 to 1998. In column [2] we report the result of including the rate of inflation and the rate of growth of real per capita GDP. It is clear that the rate of inflation has a substantial negative effect on real wages and that now only one of the time dummies is significant. In column [3] we report the results of dropping the time dummies. The coefficient on the rate of growth of GDP is now positive but not significant. Finally, in column [4], we investigate how the investment to capital ratio impacts on real wages. Both inflation and the rate of investment are highly significant determinants of the earnings of the unskilled.

It is clearly possible that the significant effect of the rate of inflation on real wages reflects an impact effect, rather than a long term one. We do not have a panel of individuals so we cannot assess whether, in the long run, real wages can be sustained in the face of rapid inflation. It is possible that variable rates of inflation have an adverse effect both on growth and investment. The results in Table 9 provide some direct evidence that both growth and investment at an aggregate level impinge positively on real wages. While the time series is short the evidence is consistent with the poor macro performance of the economy over this period, particularly the low rates of investment in the manufacturing sector, being at least part of the explanation for the fall in wages of the unskilled.

6 Summary and Conclusions

While real per capita GDP has risen steadily, if slowly, over the period from 1988 to 1998, the same is not true for real wages of the unskilled. Over the early part of this period, 1988 to 1992, their real wages rose both in constant price terms and in US dollars. Over the period from 1992 to 1998 they have fallen very substantially, by between 23-26 per cent in real terms. There is strong evidence that there has been a relative rise in the price of skilled labour. This change in the relative wages of the skilled and unskilled is an occupational effect, there has been no measurable change in the returns to education over the decade.

In the longer term real wages for the unskilled in Ghana are now lower than in the mid 1980s and approximately one-third the level of the early 1970s. The pattern, over the period from 1992 to 1998, of rising per capita income and falling real wages is the opposite of that observed in the pattern of successful growth in the NICs. However in Mauritius real wage growth was modest over the period of rapid export growth. The most important contrast with Mauritius is in the level of real manufacturing

⁵We treat the first year of the GLSS survey as 1988, the second as 1989 and the third as 1992. The RPED data then runs from 1993 to 1998. For the overlap year, 1992, it was necessary to make a small adjustment to the data to ensure full comparability over the nine year period.

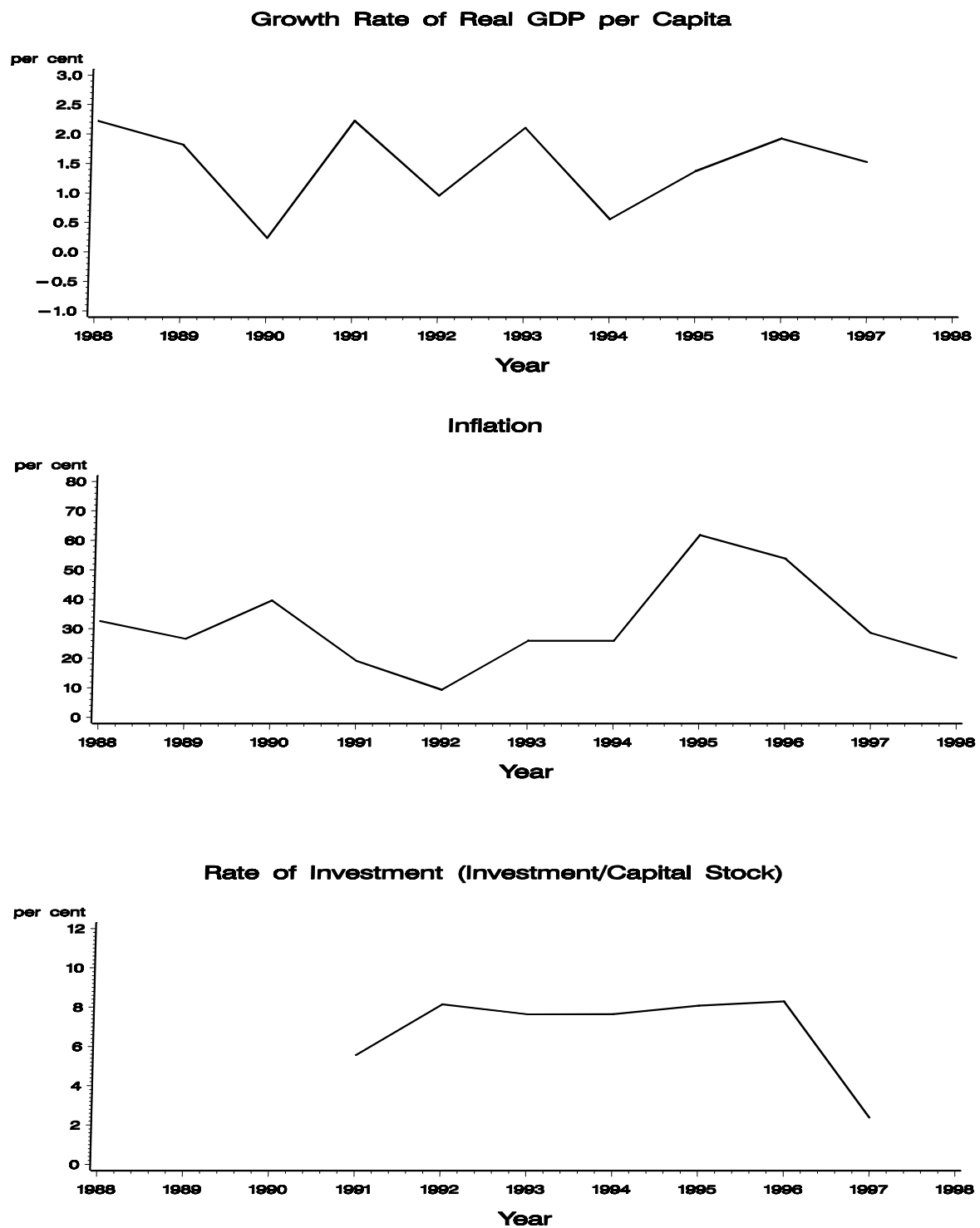
wages in the two economies. In Ghana they have been remarkably constant at between US\$ 50 and 60 per month over the whole of the 1990s, in Mauritius wages are US\$339 per month. These differences in wages are reflected in the efficiency with which firms in the manufacturing sector operate, see Teal (1999a). Clearly sectoral shifts into a sector paying US\$339 per month have very different impacts on household income than shifting into a sector paying US\$ 60. The reform process in Ghana has delivered rises in per capita aggregate incomes, it has yet to deliver rising wages for the unskilled. Indeed it has yet to reverse the very long run decline in this wage.

The paper has provided some evidence that these falls may be related to the macroeconomic environment in Ghana. Taking the nine years of data which is now available by combining both the GLSS household data with the RPED enterprise surveys shows a highly significant adverse effect of inflation on real wages. This may be temporary, the lack of panel data over this period prevents our measuring long run effects. There is some evidence from the RPED data that both aggregate growth and investment impact positively on real wages. While this evidence is not strong, given the limited time period for which we have the data, it is consistent with the poor investment rate, less than 10 per cent over the period, adversely affecting the demand for unskilled labour and, indirectly, the real wage.

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Figure 1 Ghana 1988-1998



Sources: GDP growth is from the World Bank Indicators, urban Inflation is from the Ghana Statistical Service Statistical Newsletter, various issues, Investment to Capital Stock is the yearly average from the RPED surveys.

Table 1 The Distribution of Workers in the Labour Force (defined as the economically active over the age of 18)			
Percentages	1987/88	1988/89	1991/92
Wage employees	17.3	18.1	15.3
Government	8.0	7.9	7.7
State enterprise	1.9	2.3	1.1
Private	7.4	7.9	6.5
Farmer	58.7	54.6	56.6
Non-agricultural self-employment	19.5	24.2	23.5
Unpaid family	2.2	1.2	1.3
Unemployed	2.2	1.9	3.2
Total	100	100	100
Sample size	6076	6259	8021
Source: author's calculations from the GLSS surveys.			

Table 2 Monthly Earnings in the Main Job (All workers who earn aged over 18)				
		1987/88	1988/89	1991/92
All wage employees	N	1005	913	1126
Cedis (thousands)		9.5	12.3	26.9
1977 Cedis		122	126	148
US \$ at the official exchange rate		53	52	67
Public employees	N	566	518	671
Cedis (thousands)		9.8	13	28.8
1977 Cedis		126	132	159
US \$ at the official exchange rate		55	55	71
Private employees	N	439	395	455
Cedis (thousands)		9.1	11.4	24.2
1977 Cedis		118	116	132
US \$ at the official exchange rate		51	48	60
Non-agricultural self-employment	N	1137	1103	1786
Cedis (thousands)		12	15.7	27.1
1977 Cedis		156	160	150
US \$ at the official exchange rate		68	67	67
GLSS data. The sample is confined to those individuals for which there is information on age, education and job tenure. Individuals who earn less than US\$2 per month or more than US\$500 per month have been deleted from the sample.				

Table 3 Monthly Earnings in the Main Job by Gender (All wage employees aged over 18)				
		1987/88	1988/89	1991/92
All male employees	N	784	733	835
Cedis (in thousands)		9.8	12.6	27.8
1977 Cedis		126	129	154
US \$ at the official exchange rate		55	53	69
Male public employees	N	425	404	475
Cedis (in thousands)		10.1	13.1	29.5
1977 Cedis		129	133	164
US \$ at the official exchange rate		57	55	73
Male private employees	N	359	329	360
Cedis (in thousands)		9.5	12.1	25.6
1977 Cedis		123	124	140
US \$ at the official exchange rate		53	51	64
All female employees	N	221	180	291
Cedis (in thousands)		8.3	11	24.2
1977 Cedis		108	112	133
US \$ at the official exchange rate		47	47	60
Female public employees	N	141	114	196
Cedis (in thousands)		8.9	12.8	26.9
1977 Cedis		115	130	148
US \$ at the official exchange rate		50	54	67
Female private employees	N	80	66	95
Cedis (in thousands)		7.3	7.9	18.8
1977 Cedis		95	80	101
US \$ at the official exchange rate		41	34	47
GLSS data.				
N is the number of observations				

Table 4 Monthly Earnings in the Main Job: Manufacturing Sector Workers only (All wage employees aged over 18)				
		1987/88	1988/89	1991/92
All employees	N	76	60	78
Cedis (in thousands)		9.1	13.6	22.9
1977 Cedis		120	139	125
US \$ at the official exchange rate		51	57	57
Male employees	N	55	46	57
Cedis (in thousands)		10	15.8	26.1
1977 Cedis		131	162	142
US \$ at the official exchange rate		56	67	65
Female employees	N	21	14	21
Cedis (in thousands)		6.7	6.3	14.1
1977 Cedis		90	63	77
US \$ at the official exchange rate		37	27	35
GLSS data. N is the number of observations				

Table 5		Monthly Earnings of Private Sector Workers in the Manufacturing Sector 1992-98: Workers aged over 18: Restricted sample (a)						
		1992	1993	1994	1995	1996	1997	1998
All workers	N	461	528	811	744	822	785	867
Cedis (thousands)		33.3	41.7	54.6	94.1	125.1	168	204
1977 cedis		179	178	185	197	170	178	180
US\$ at official exchange rate		76	64	57	78	76	82	89
All male workers	N	373	427	674	620	677	652	714
Cedis (thousands)		34.6	44.8	56.2	96.5	131.5	174	213
1977 cedis		185	191	190	201	179	183	187
US\$ at official exchange rate		79	69	59	80	80	85	93
All female workers	N	88	101	137	124	145	133	153
Cedis (thousands)		28.1	29	46.7	82.1	95.1	141	166
1977 cedis		151	123	158	172	129	149	146
US\$ at official exchange rate		64	45	49	68	58	69	72
Average number of employees in firms		85	67	79	88	86	96	93
RPED data.								
N is the number of observations.								
(a) As explained in footnote 1 the sample is restricted in two respects. Firms that were added to the survey for the fifth round (data for 1997 and 1998) are excluded as were apprentices.								

Table 6 Monthly Earnings of Skilled and Unskilled Private Sector Workers in the Manufacturing Sector 1992-98: Workers aged over 18: Restricted sample								
		1992	1993	1994	1995	1996	1997	1998
Skilled workers	N	168	178	227	276	306	308	330
Cedis (thousands)		45.2	63.2	89.1	143	199.4	263	327
1977 cedis		242	269	302	299	271	278	288
US\$ at official exchange rate		103	97	93	119	122	128	143
Male skilled workers	N	130	136	178	225	246	261	273
Cedis (thousands)		47.6	71.4	93.8	147.4	210.7	263	334
1977 cedis		255	304	317	308	286	277	293
US\$ at official exchange rate		109	110	98	123	129	128	146
Female skilled workers	N	38	42	49	51	60	47	57
Cedis (thousands)		37.1	36.8	72.2	123.1	153.2	266	292
1977 cedis		199	157	244	257	208	280	257
US\$ at official exchange rate		85	57	76	103	94	130	127
Unskilled workers	N	293	350	584	468	516	477	537
Cedis (thousands)		26.5	30.8	41.2	65.3	81	107	129
1977 cedis		142	131	139	137	110	113	114
US\$ at official exchange rate		61	47	43	54	49	52	56
Male unskilled workers	N	243	291	496	395	431	391	441
Cedis (thousands)		27.6	32.3	42.8	67.5	86.3	115	138
1977 cedis		148	138	145	141	117	121	121
US\$ at official exchange rate		63	50	45	56	53	56	60
Female unskilled workers	N	50	59	88	73	85	86	96
Cedis (thousands)		21.3	23.3	32.4	53.4	54.1	73.3	90.2
1977 cedis		114	99	110	112	74	77	79
US\$ at official exchange rate		49	36	34	45	33	36	39
Average number of employees in firms		85	67	79	88	86	96	93

RPED data. N is the number of observations.

Table 7 Earnings Functions for Private Sector Wage Employees (Employees who earn aged more than 18): GLSS data for 1987/88-1991/92.			
	All	Male	Female
Constant	2.92 **	3.0**	2.9**
Age	0.06 **	0.06**	0.05*
Age ²	-0.0006 **	-0.0006**	-0.0007*
Tenure	0.03 **	0.03**	0.04*
Tenure ²	-0.0004 *	-0.0003	-0.0003
Education (in years)	-0.013	-0.019	-0.03
Education ²	0.003**	0.003**	0.006**
Skill	0.05	0.04	0.16
Round 2	0.01	0.03	-0.15
Round 3	0.06	0.11 ⁺	-0.09
Adjusted R ²	0.15	0.19	0.19
N	1289	1048	241
White χ^2 [df]	88 [47]	77 [47]	49 [47]
F test for pooling all human capital variables and skill dummy (% p value)	1.36 (19)	1.07 (38)	1.29 (24)
N is the number of observations.			
⁺ indicates significance at the 10 per cent level, * at the 5 per cent level, ** at the 1 per cent level.			

Table 8 Earnings Functions for Manufacturing Sector Workers aged over 18: Restricted sample: RPED data 1992-1998.

	All Workers	Male Workers	Female Workers
Constant	3.2**	3.3**	3.9**
Male	0.26**		
Age	0.05**	0.06**	0.01
Age ²	-0.0005**	-0.0006**	-0.0001
Tenure	0.01**	0.01**	0.04**
Tenure ²	-0.0001*	-0.0001	-0.002**
Education (in years)	-0.003	-0.01	0.01
Education ²	0.003**	0.003**	0.002**
Skill	0.29**	0.26**	0.41**
Skill * Round 2	0.11	0.17*	-0.13
Skill * Round 3	0.12	0.15	0.01
Skill * Round 4	0.11	0.13	0.08
Skill * Round 5	0.16*	0.18*	0.16
Skill * Round 6	0.19**	0.17*	0.35*
Skill * Round 7	0.20**	0.21**	0.26
Round 2	-0.03	-0.03	-0.02
Round 3	-0.01	-0.01	-0.01
Round 4	-0.07	-0.05	-0.11
Round 5	-0.30**	-0.28**	-0.41**
Round 6	-0.24*	-0.22**	-0.32**
Round 7	-0.26**	-0.25**	-0.28*
Adjusted R ²	0.37	0.35	0.36
N	5018	4137	881
White χ^2 [df]	266 [136]**	228 [116]**	143 [116]*
F test for pooling education coefficients (% p value)	2.08 (1.5)	1.45 (13.5)	2.49 (0.3)

N is the number of observations. * indicates significance at the 5 per cent level, ** at the 1 per cent.

**Table 9 Earnings Functions for Unskilled Male Workers:
Dependent Variable: Log (Real earnings)**

	GLSS and RPED data: 1988-1998		RPED data:1992-1998	
Constant	2.96**	3.26**	3.17**	2.92**
Age	0.062**	0.062**	0.060**	0.063**
Age ²	-0.0007**	-0.0006**	-0.0006**	-0.0007**
Tenure	0.015**	0.015**	0.015**	0.011**
Tenure ²	-0.0002**	-0.0002**	-0.0002**	-0.0001**
Education (in years)	-0.003	-0.003	-0.005	0.008
Education ²	0.002**	0.002**	0.002**	0.001**
Lagged Inflation		-0.006**	-0.005**	-0.0065**
Rate of Growth of GDP		-0.034	0.017	0.041
Investment/Capital				0.029**
Round 2	0.03			
Round 3	0.12**			
Round 4	0.09*	-0.11		
Round 5	0.11**	0.04		
Round 6	0.09*	-0.045		
Round 7	-0.14**	-0.04		
Round 8	-0.08	0.01		
Round 9	-0.12**	-0.19**		
Adjusted R ²	0.13	0.13	0.12	0.13
N	3493	3493	3493	2806
White χ^2	199 (80)	199 (86)	121 (42)	105 (49)

N is the number of observations. * indicates significance at the 5 per cent level, ** at the 1 per cent.

The standard errors which have been used to assess the significance of the variables are the robust t statistics available in STATA where time average are used in the regressions.

Appendix: The Data

Definitions of Employment Status from the GLSS data

In rounds 1 and 2 the questionnaire used was identical so exactly the same variables can be extracted from both questionnaires. It is possible to establish the labour force status of the individual from two different sections in the questionnaire. One approach is to use the answers to the questions in section 5a which classify individuals into three categories; (1) wage employee, (2) self-employed in agriculture and (3) self-employed in non-agricultural activities. In contrast to the way these questions were asked in the third round of the survey these categories are not mutually exclusive. The respondents could identify themselves as having more than one occupation. If the respondents did not identify themselves as either employees or self-employed then they were asked a series of questions about whether they looked for paid work and, if they did not, the reasons for this. In this paper an individual is defined as unemployed if either of two conditions is met. If they looked for work in the last seven days but did not find it they are classified as unemployed. They are also classified as unemployed, if they did not look for work, but, when asked why, they answered either that they were awaiting a reply from an employer or they believed that no work existed.

The second route by which the occupational status of the respondent can be identified in rounds 1 and 2 is from the questions asked about their main occupation. This set of questions was asked twice. First, in section 5b, about their main job in the last seven days and secondly, in section 5e, about their main job in the last 12 months. In fact the questions in 5e were only asked if their main job in the last 12 months differed from their main job in the last seven days. One of the questions asked of the respondents was whether they were employees or self-employed. They were also asked their industry and occupation so it is possible from these questions to divide the sample between the agricultural and non-agricultural self employed on the basis of the main occupation of the respondent. Four categories of those in the workforce were identified from this part of the questionnaire: (1). Employees with wage jobs either in the private, government or parastatal sector, (2) Farmers, (3) Non-agricultural self employees, (4) Unpaid family workers. To obtain the labour force it is necessary to add the unemployed, which was done using the definition of unemployment given above.

In contrast in the third wave of the survey individuals were asked (section 4a) questions regarding their occupational status sequentially so, for example, if they answered yes to the question “During the last 12 months have you done work for which you received a wage or other payment” (section 4a, question 1) the self-employment questions were skipped. Thus in the round 3 questionnaire the occupational categories were mutually exclusive and the method seems to have been successful in identifying the main occupations of the respondent.

In order to ensure as close a comparability as possible between rounds 1 and 2 with that of 3 the occupational status of the respondent in rounds 1 and 2 was identified using the second of the procedures set out above so individuals were classified as employees or as self-employed in either agricultural or non-agricultural activities on the basis of their answers to sections 5b and 5e. To these respondents was added those defined as unemployed from the answers to questions 5a.

Some inconsistencies were revealed in the data. In round 3 respondents answered no to the question “In this work were you self-employed?” but failed to answer the question as to who they worked for. Further there was an “other” category in the question “For whom did you work” with no indication as to what this category might be. An examination of the data suggested that

both the respondents failing to answer the “For whom did you work?” and who answered with the residual category “other” worked for the private sector. It may be that in many instances the informal nature of the enterprises led the respondents to think they were not employed in firms in the sense that the question suggested. In the analysis it is assumed that both these sets of respondents did work for the private sector. There were 19 observations of earned income in which neither the question regarding self-employment nor the type of employer was answered. These respondents have been deleted from the data.

The Classification of Workers as Skilled and Unskilled

In the GLSS data six occupational classifications were identified: professional, managerial and administrative, clerical, sales, supervisors and production workers. The production and sales workers are identified as the unskilled while all the other occupations are classified as skilled. The detailed rules applied to the classifications was as follows: (occup is the occupational classification code from the GLSS survey handbook.)

if occup gt 0 and occup le 19 then individual classified as professional;
 if (occup gt 19 and occup le 21) or occup=40 or occup=50 or occup=51 then individual classified as administrative which included all except farm managers.
 if occup gt 21 and occup le 39 then individual classified as clerical;
 if occup gt 40 and occup le 49 then individual classified as sales
 if occup = 60 or occup= 70 then individual classified as supervisor
 if occup=61 then individual classified as farmer
 if (occup gt 70 and occup le 99) or (occup gt 51 and occup le 59) or (occup gt 61 and occup le 70) then individual classified as a production worker;

In the RPED data eight occupational classifications were identified: managers, administration, sales, supervisors, all of which were classified as skilled and maintenance, production, masters and apprentices, all of which were classified as unskilled.

Appendix Table 1 Characteristics of the GLSS Sample				
All private sector workers aged over 18				
		1987/88	1988/89	1991/92
Age	Mean	34	35	37
	Std	13	13	12
Education	Mean	7.2	7.8	8.2
	Std	5.0	4.8	4.7
Tenure	Mean	7.4	6.3	8.7
	Std	10.0	8.0	9.4
N		439	395	455

Appendix Table 2 Characteristics of the RPED Sample								
All private sector workers aged over 18: Restricted sample								
		1992	1993	1994	1995	1996	1997	1998
N		461	528	811	744	822	785	867
Age	Mean	35	33	35	36	37	37	37
	Std	10	9	11	11	12	12	12
Education	Mean	10.8	10.7	10.7	11.2	11.0	11.0	11.1
	Std	3.5	3.8	3.7	4.3	4.2	4.2	4.2
Tenure	Mean	7.2	6.6	6.4	6.5	7.0	7.5	7.8
	Std	6.5	6.9	6.3	7.0	7.0	8.3	8.2
N		440	496	781	735	813	782	867
Firm size	Mean	85	67	79	88	86	96	93
	Std	102	75	102	121	109	132	127

N is the number of observations

Appendix Table 3 GLSS Occupational classification (1987/88-1991/92)				
All private sector workers aged over 18				
Occupational classifications		Education	Age	Earnings (US\$ per month)
Skilled Occupations				
Professional N=99	Mean Std	11.2 4.9	3813	6267
Administration N=15	Mean Std	13.6 6.9	417	12167
Clerical N=115	Mean Std	10.5 4.2	3714	6142
Supervisors N=17	Mean Std	9.9 3.4	4912	9357
Skilled Workers N=246	Mean Std	10.9 4.7	3813	6758
Unskilled Occupations				
Production N=906	Mean Std	6.8 4.6	3513	5151
Sales N=137	Mean Std	8.2 4.3	3110	4340
Unskilled Workers N=1043	Mean Std	6.9 4.6	3512	5049
All Workers N=1289	Mean Std	7.7 4.9	3513	5352
Proportion of workers skilled		19%		

Appendix Table 4 RPED Occupational classification (1992-1998)				
All private manufacturing sector workers aged over 18: Restricted sample				
Occupational classifications		Education	Age	Earnings (US\$ per month)
Skilled Occupations				
Management N=297	Mean	14.6	45	204
	Std	3.9	12	148
Administration N=393	Mean	14.0	39	136
	Std	3.2	11	126
Sales N=555	Mean	13.7	36	84
	Std	3.0	11	75
Supervisors N=548	Mean	11.5	39	95
	Std	3.0	10	61
Skilled Workers N=1793	Mean	13.2	39	119
	Std	3.4	11	108
Unskilled Occupations				
Maintenance N=463	Mean	10.4	36	60
	Std	3.5	11	46
Production, support N=2131	Mean	9.7	33	50
	Std	3.9	10	29
Masters N=631	Mean	9.2	32	50
	Std	3.6	10	37
Unskilled Workers N=3225	Mean	9.7	34	51
	Std	3.8	10	34
All Workers N=5018	Mean	10.9	36	75
	Std	4.1	11	77
Proportion of workers skilled 36%				