CSAE WPS/2010-01

Jobs, Skills and Incomes in Ghana: How was poverty halved?

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January 2010

Abstract

Poverty has halved in Ghana over the period from 1991 to 2005. Our objective in this paper is to assess how far this fall was linked to the creation of better paying jobs and the increase in education. We find that earnings rose rapidly in the period from 1998 to 2005, by 64% for men and by 55% for women. While education, particularly at the post secondary level, is associated with far higher earnings there is no evidence that the increase in earnings that occurred over the period from1998 to 2005 is due to increased returns to education or increased levels of education. In contrast there is very strong evidence, for all levels of education, that the probability of having a public sector job approximately halved over the period from 1991 while the probability of having a job in a small firm increased very substantially. In 1991/92 a male worker with secondary education had a 7 per cent probability of being employed in a small firm, by 2005/06 this had increased to 20 per cent which was higher than the probability of being employed by the public sector. Employment in small firms, which is the low paying occupation within the urban sector, increased from 2.7 to 6.7 percent of the population, an increase from 225,000 to 886,000 employees. Jobs in total have been increasing in line with the population but the proportion of relatively low paying ones increased markedly from 1998/99 to 2005/06. The rises in income that occurred over this period were due almost entirely to increases in earnings rates, for given levels of education, across all job types particularly among the unskilled. Why unskilled earnings rates rose so rapidly is unclear.

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This work was funded by DfID and the ESRC in the UK and by the IDRC in Canada. The work forms part of an IDRC project to look at the impact of skills on job creation and poverty. We are greatly indebted to these organisations for funding and supporting the network which has enabled us to use and present the data on which this paper is based. The funding from DfID is part of its work on assessing the outcomes of education (the Research Consortium on Educational Outcomes and Poverty (RECOUP)).

1 Introduction

Jobs and skill creation have become a major preoccupation of African governments and Ghana is no exception. While poverty levels have fallen dramatically over the period from 1991 to 2005, GSS (2007), there has been an increasing concern with both the extent and quality of job creation. Recent reviews of the evidence of labour market developments in sub-Saharan Africa have pointed to a pattern by which job growth appears to have been most rapid in urban self-employment, not wage employment, Kingdon, Sandefur and Teal (2006) and Fox and Gail (2008). Much of the data on which these studies were based only cover the period up to 2000. In this paper we will be using data from Ghana for 2005/06 so can assess if there has been any change in this pattern. This apparent failure to create wage jobs relative to self-employment ones is of particular importance for the rising number of secondary school students who aspire not simply to any kind of job but a "good" one.

Our first purpose in this paper is to address the question as to what types of jobs have been created in the economy. We show, by gender, how the workforce in Ghana has changed over this period between the rural and the urban areas, the small and the large firm, wage and self-employment and between being in and out of the labour force. Our second purpose is to provide evidence as to how the halving of poverty in Ghana was effected and to assess how much this was related to growth and the type of jobs created. Most analysis of the process of growth is based on macro data, given the scarcity of comparable micro data over long periods of time. This literature has focused on the role of factor accumulation relative to technical progress. The consensus appears to be that factor accumulation, even when human capital is included, cannot explain most of the growth in per capita income that we see in economies which have achieved long run sustained rises in their incomes, see Easterly and Levine (2001) for an overview although Bond, Leblebicioglu and Schiantarelli (2007) provide more recent evidence that investment does affect long run growth. The existence of repeated household surveys, which measure incomes, ensures we can address this question at the micro level. Given comparative data on incomes and its correlates we can ask how far any rise in incomes accrued to the poor, how much was due to switches between "bad" and "good" jobs, and how much due to human capital in the form of increases in education. Such analysis informs our knowledge as to what drives poverty reduction. Ghana is of particular interest as we are not investigating *whether* poverty can be reduced we are investigating *how* it was done.

The paper is organised as follows. In Section 2 we set out how we have sought to define and measure the number of jobs in the Ghana economy. It is far from obvious what is meant by a job in the context of an economy where wage employment is a small part of total employment and in Section 2 we justify the categories we have used and how we can link those categories to the data from the Ghana Living Standard Surveys (GLSS). The history of job creation over the period from 1991/92 to 2005/06 is set out in Section 3. We show in Section 4 that, over the latter part of this period, from 1998/99 to 2004/05, rises in incomes have occurred across all the job types we have identified and we ask how far skills and job creation can explain the substantial rises in incomes which occurred. A final section concludes.

2 Measuring the number of jobs and unemployment in Ghana

In seeking to understand how many jobs there are in Ghana we will consider wage and self-employment activities, unpaid family employees and apprentices. Jobs in Africa are not easy to define and it is often argued that in economies with no unemployment assistance the distinction between being employed and being unemployed is not a useful one. In his seminal discussion of the concept of employment Sen (1975) made the distinction between the income aspect of a job

(what the person doing the job receives in income either as payment or in-kind) and its output aspect (what the labour input produces). This distinction is of importance as most apprentices are not paid so while they have a job using the output criterion they do not have one by the income criterion.

In understanding how employment links to household income we need to understand both what gets produced in terms of output and training and what income accrues to those so employed. Monk, Sandefur and Teal (2008) investigate the links from urban apprenticeship to incomes later in life. In this paper we will focus on the incomes that accrue to those in jobs other than apprenticeships. However in setting out the types of jobs available in the economy we will include both apprenticeships and family jobs which are unpaid. This will provide an overview of what jobs are being created and will inform our discussion of the policy issues that arise in understanding the process by which job creation has been linked to poverty reduction.

This paper uses rounds three to five of the GLSS which cover the periods1991/92, 1998/99 and 2005/06. Most employment is self-employment and the main distinction we draw is between rural based activity, farmers, and that located in urban areas. Within urban self-employment we make a distinction between those with employees and those without, where this is possible from the data. Within wage employment we identify those in the public sector either as working for the government as civil servants or as employed in a state firm. For those with wage employment in the private sector we identify those in small, medium and large firms or as working on a farm. The remaining categories of those classified as within the labour force are unpaid family workers, apprentices and the unemployed. As most apprentices are unpaid the last three categories do not appear in the earnings function although the unpaid are producing output and the apprentices are being trained so it is not that these economic activities have no marketable value.

In much labour market analysis attention is confined to those in the labour market and unemployment is defined for those who seek a job as distinct from those outside the labour market who are assumed not to want one. We will not use such a search criterion as we will show, even without it, that the measured rates of unemployment are very low.

How the concepts of unemployment and joblessness can be turned into empirical measures will depend on the nature of the survey data available. In the case of Ghana two of the GLSS surveys that have been conducted since the 1980s asked very similar labour market questions. These are GLSS3 carried out in 1991/92 and GLSS4 which covers the period 1998/99. Both surveys asked a series of questions designed to identify which was the main activity of the individual. The questions were addressed to all individuals in the survey aged seven and above. The first four questions of section 4 of the questionnaire were:

1. During the past 12 months have you done work for which you received a wage or any other payment?
If the individual answered yes to that question they were then asked about the kind of work undertaken. We use those follow-up questions to identify the type of wage work the individual undertook. They were not asked, at this point in the questionnaire, any other questions about their occupational status. If the answer was no they were then asked:

2. During the last 12 months have you made money including payment in kind through self-employment (for example trading)?
We use this question to identify the self-employed. Again if they answered yes they move to type of activity and if they answered no they were asked:

3. During the past 12 months have you worked on a farm, in a field or herding livestock?
We use the answer to this question to identify the rural self-employed. If the answer was again no the final question related to occupational status was:

4. During the past 12 months have you worked unpaid for an enterprise belonging to a member of your household.
This provides the basis for identifying family labour.

If the individual answered no to all these four questions they skipped to the part of the questionnaire dealing with employment search. In GLSS3 Section H there was a question asking "In the past 7 days did you want to work" (question 6). In GLSS4 Section G there was a very similar question "Were you available for work during the last 7 days" (question 6). In only using this type of question to identify the unemployed we are using a broad definition where we do not apply a search criterion. In the context of some labour markets in Africa there has been an important distinction between such a broad definition and a narrow one which applies the search criterion, see Kingdon and Knight (2006) on unemployment in South Africa.

The manner in which these questions were asked shows the ambiguities which can arise in seeking to establish the occupational status of an individual in this labour market. The first problem is that the first question refers to wage *or any other payment* so we cannot be sure that those answering yes are wage employees. It is also clear from the wording that it is possible that those answering yes to questions 2 and 3 may receive payment in kind rather than a monetary income. A second problem relates to the status of apprentices. In Ghana, particularly in urban areas, apprenticeship is a common activity for young workers. Many of these apprentices are unpaid so if the individual was an apprentice it is quite possible they would answer no to all the questions posed and end up being classified as out of the labour market when clearly they were not as apprentices work long hours.

To address these issues we need to push the data analysis further in the questionnaire. We first use a question in the education section to identify if the individual is currently an apprentice. We then use another question which allows us to identify if the individual received their remuneration in monetary terms. We can do this in GLSS3 by a question which asks "have you received or will you receive money for this work" (Section 4b question 9) there is then a question which seeks to distinguish between self-employment and other forms of employment and if the individual says no to self-employment there is a question "For whom did you work" which identifies four types of wage employment - government, state-owned company, private company or business and a residual, other, category. In GLSS4 exactly the same question is asked as to whether or not money will be received. However the questions that identify wage and non-wage jobs differ. In GLSS4 question s4bq8 identifies six categories of worker - a paid employee, one in non-agricultural self-employment (with and without employees), unpaid family workers (both in non-agriculture and agriculture) and finally self-employed in agriculture. The following question, section 4b question 9, then asks "for whom did you work" and the options are now far more detailed than was the case in GLSS3. In order to ensure comparability we make these categories as close to those in GLSS3 as possible so we identify government jobs, which refers to those who work in the civil service, those in state firms and those in private ones (there is also a small residual category).

While this classification allows us to make the crucial distinction between the private and the public sector it leaves open the question of what type of wage jobs are on offer. As has been extensively documented firm size is a very important correlate of wages, Söderbom and Teal (2004), so it matters for the job opportunities open to the workers whether the wage jobs that are

expanding are those in the small or large scale sector. We use the answer to the question as to the size of the enterprise in which the individual worked to classify firms by size.

Finally we can investigate if there is an issue as to attending school and work by using the question in section 2 to ask if the individual attend school/college at any time during the last twelve months. An identical question is asked for both GLSS3 and GLSS4.

In summary for GLSS 3 and GLSS4 we proceed in four steps. First we use the four answers documented above and the answer to the unemployment question to define the labour force. Given the way the question have been asked it seems very likely that many of the apprentices have been excluded from the labour force. So we then adjust the numbers to include apprentices. In the third step we make a distinction between those who were given a monetary payment for their activity and those who were not. Finally we confine the sample to all those aged from 15 to 65 and identify those out of the labour force who are in school.

The procedure adopted in the GLSS 5 questionnaire was very different to that followed in GLSS 3 and 4. In GLSS 5 a direct question was asked initially rather than the four screening questions. This question was "Did (name) do any work for pay, profit, family gain or did (name) produce anything for barter or home use during the last 12 months" (Section E question 1). Given this very general wording it is clear that any possible source of income is covered and we defined those that answered yes to this question as being in the labour force. The unemployed were identified from the question in Section 4 Part G as those who had no employment but were available for work for some time in the last twelve months. It was possible to allocate individuals to occupations based on direct questions in Section 4 which allocated workers between the categories we have used in his paper. One of these was apprentices so the indirect method we had to use in GLSS 3 and 4 was not required for GLSS5.

With these procedures we were able to construct a breakdown of occupations and activities and the incomes available for those activities that were paid which we present in the next two sections.

3. How many jobs got created in Ghana from 1991/92 to 2005/06?

The results of these calculations for occupations are shown in Tables 1, 3 and 4. In Table 2 we present data from the Ghana Industrial Census which provides us with a check on one of our major findings which is the changed pattern of wage employment creation over the period for which we have constructed comparative data.

The first rather striking conclusion from Table 1 is that the patterns are very different over the two sub-periods. While in the 1990s the pattern referred to in the introduction of a growth in urban sector self-employment is clear this process was reversed in the period to 2005. In the first sub-period (1991/92-1998/99) urban self-employment expanded from 23.2 to 24.8 per cent of the population aged 15-64, by 2005/06 it had fallen to 18.6 per cent, substantially lower than the level of the early 1990s. The fall in urban self-employment in the second sub-period was matched by a rise in rural self-employment (farmers in the Table) from 35.1 to 37.3 per cent and wage employment in small firms doubled as a percentage of the workforce from 3.4 to 6.7 per cent. In summary over the whole period from 1991/92 to 2005/06 the most striking change in the labour force was the rise in employment in small firms, from 225,000 to 886,000. Quite contrary to the perception that wage jobs are not being created they have been expanding far faster than the growth of the labour force.

In Table 2 we present evidence from a completely independent data source which shows a similar pattern. The two most recent industrial censuses from the GSS are for the years 1987 and 2003. This source shows a tripling of employment in small firms (those with less than 11 employees) from 29,000 to 85,000. The proportion of employment in small firms within manufacturing doubled from 18 to 35 per cent of employment while the proportion for firms that were small increased from 75 to 85 per cent. At the other end of the scale spectrum the proportion of firms that were large (defined as having more than 100 employees) decreased from 3 to 1 per cent. Indeed the number of large firms scarcely changed over this period. Thus the evidence from the Industrial Census is wholly consistent with that from the household surveys in that where wage employment has expanded it has been in the small firm sector.

Table 3 provides a breakdown by gender. The patterns observed in Table 1 hold for both men and women. However the breakdown in Table 3 does show that urban self-employment is dominated by women. For women urban self-employment has decreased from 32.7 to 26.1 per cent of the population aged 15 to 64, for men the percentages fell from 12.1 to 10.2. While apprenticeship is more important for men than women it has become increasing important for women where it has risen from 4.3 to 5.1 of population aged 15 to 64.

Table 4 provides an occupational breakdown by gender for young people, those aged 15 to 24. Three important findings emerge from the data. The first is the increasing proportion of this age group which continue in full time education. For women that proportion has increased from 16.5 to 32.3 per cent and for men from 25.4 to 40.0 per cent. The second is for these young men the increasing proportion who now work in small firms. Over the period from 1998/99 to 2005/06 it has increased from less than 2 to over 5 per cent while the proportion working in medium or large firms has contracted sharply. Thirdly if we use the terminology from the UK to identify those not in education, employment or training (NEETS) as those who are either unemployed, out of the labour force or engaged in family unpaid activities we get for women that this group is 24 per cent of the population and for men 16 per cent.

4. Incomes, jobs and education

Clearly there have been major changes in the pattern of job creation over this period. How have the incomes from these jobs changed for both men and women? Tables 5(a) and (b) provide the answer to that question. The finding is that over the first sub-period, from 1991/92 to 1998/99, there were in some occupations some gains but they were modest and where most Ghanaians work, in self-employment, there were falls. In contrast over the second sub-period, from 1998/99 to 2005/06, there were uniform and substantial gains. In fact for both men and women for all the job categories we have been able to identify from the data there were rises between 1998/99 and 2005/06, sometimes very substantial. Figure 1 presents this data graphically showing both the clear differences in earnings across occupations and the uniform rises which occurred from 1998/99 to 2005/06.

It is of interest to ask how far education can explain these outcomes, both in terms of changes in occupation and of incomes within occupations. There are three possible direct ways in which education may impact these outcomes. First, the value of education may be increasing so that for *given education levels* incomes are higher. Second, education may be acting to shift workers into occupations which pay more for given levels of education. Thirdly, the proportion of the educated in the population may be rising and, for a *given return* on education, incomes would rise. In addition to these direct mechanisms, by which the effects of education could be identified, it is possible education has an indirect effect. By improving the efficiency with which farms and firms operate it is possible education acts to lower costs thus enabling an expansion of output.

We begin investigating the evidence for both the direct and indirect effects in Tables 6(a) and (b) by presenting regressions for the pooled data on earnings by gender. The first column of Table 6 shows the average changes in incomes over the two sub-periods. For men there was a fall of 6% over the period 1991/92 to 1998/99 while for women there was a fall of 13%. In rather dramatic contrast, over the period from 1998/99 to 2005/06 the earnings of men increased by 64% and for women by 55%. If this increase was due to either the direct or the indirect effects of education then we should find these time effects are eliminated, or much reduced, once we control for education which we do in the second column of Table (6). We find that there is some decrease in the time effect, but it is modest. The underlying rise in earnings for men is now 60% and that for women 45%. While education has a powerful effect on the level of income it appears only rather weakly correlated with the factors causing this very substantial underlying increase in incomes.

Did the returns to education rise over this period? To assess if the value of education has increased *for given education levels* we interact these educational levels with year dummies and show the results at the bottom of Table 6. We find that there is no evidence that the returns to education increased for women but they did for men. However this increase for men was entirely confined to the period from 1991/92 to 1998/99, there was, if anything, a fall in the return to education between 1998/99 and 2005/06. While education has a powerful role in affecting the levels of income it has played no role in explaining the rises in incomes after 1998/99.

Does education act to shift workers into occupations which pay more for given levels of education? We first ask, in Table 6 Column (3), how large the differences are across occupations once we control for education. The occupational structure modeled in Table 6 reflects that of the breakdown given above. We identify workers in the private sector across firms of different size, workers in the public sector (which combines civil servants and those working in state owned firms), the urban self-employed (both with and without employees) and finally rural labour (which combines self-employed farmers and wage labour). As is shown in the breakdown of occupations in Table 1 by far the most important sources of employment are rural self-employment (farmers) and urban self-employment without employees. We see from Table 6 that there is a clear pattern by which some occupations pay substantially more than others even after we condition on education. The data suggest a hierarchy of occupations with those working in the rural sector earning some 30-40% of those in small firms, which are mostly urban based, while men in large firms or civil servants earn 23-40% more than those in small firms and women between 63-100%. The resulting gap between rural based incomes and high urban based ones is very large. A male worker in a large firm can expect to earn two and a half times as much as a farmer, a female worker six times as much.

In Columns (1) – (3) of Table 6 we have modeled incomes, making so distinction between the labour supply decision and the earnings rate. To see if what we have been finding continues to hold once we control for hours worked we report in Table 6 Column (4) the results with a control for the natural log of hours. For both men and women the time effects are reduced to 50% for men (they were 57% with no controls for hours) and for women of 38% (they were 42% with no controls for hours). Thus some of the gains in income have been due to increased hours but, so far, we have no effects from education.

Two points need to be emphasized about these results. The first is that we have controlled for education so these differences across occupations are not simply explained by education. The second is that the results do not have any causal interpretation. There are many reasons, other than their level of education, why a farmer would not be productively employed in a large firm. Our purpose here is not to interpret how far these earnings differentials are due to market

segmentation or the role of unobserved skills, it is to assess if part of the pattern of rising incomes has been associated with a shift into higher paying occupations. By comparing Tables 3 and 6 we see this is not part of the explanation.

Table 3 shows for both men and women a shift into wage work in small firms and rural farm work. As Table 6 has shown working in small firms is the low paying occupation in urban areas and those working in rural employment are by far the lowest earners. For men the shift into rural employment was particularly large. The proportion of the male population employed in the rural sector increased from 37 to 40% between 1998/99 and 2005/06.

To further assess if this underlying rise in incomes that we have identified was confined to one occupation we show in Table 7, again for both men and women, a breakdown of the earnings functions by occupation. Such a breakdown allows the time effect to differ by occupation and we find, rather remarkably, that not only is there a time effect across all occupations but the rise is large for both men and women in the rural sector which is the poorest, at just over 50%. There are important differences across gender. Men working in urban self-employment with no employees saw a rise of 60 per cent while that for women was half of this. Policy over his period has clearly engineered a growth pattern that benefits the poorest and this pattern of rising incomes occurred in a context where low paying employment opportunities have expanded rapidly, but the returns on these opportunities have increased substantially.

The results from Tables 3, 6 and 7 do not show how education acts to move workers across occupation. That is the subject of Tables 8 (a) and (b) which report the results of a multinomial logit across seven occupational outcomes. These are the six categories shown in Table 7 to which we add not being employed. Has education been acting to shift workers into occupations which pay more for given levels of education? We find here a similar pattern to that which we have observed in the impact of education on earnings. While education does act to move both men and women into higher paying occupations over time education has become less important in enabling people to move into higher paying occupations. This is particularly true of access public sector employment.

In 1991/92 while a male worker with primary education, or less, had a five per cent probability of having a public sector job one with secondary education had a 30 per cent probability and one with post secondary a 72 per cent probability. For women while the probability of having a public sector job with primary education or less was negligible, ones with secondary education had a 42 per cent probability of having one, while a woman with post secondary education had an 80 per cent probability of having a public sector job. For women the other major shift was between rural and urban self-employment. In 1991/92 women with no education had a 60 per cent probability of working in the rural sector, those with middle or junior school had a 31 per cent probability. By far the most important alternative was urban self employment where the probability of having a job was 36 per cent with no education and 49 per with middle or junior school.

However over the period from 1991/92 to 2005/06 this pattern has changed dramatically. For both men and women the probability of having a public sector job has approximately halved, for all levels of education. By far the most important offsetting rise was the increased probability of being employed as a wage worker in a small firm. In 1991/92 a male worker with secondary education had a 7 per cent probability of being employed in a small firm; by 2005/06 this had increase to 20 per cent which was higher than the probability of being employed by the public sector which for that year was 17 per cent. The figures are very similar for women, a rise from 6 to 19% in the probability of working in a small firms and a fall from 42 to 16 per cent in the

probability of being in the public sector. Over this period education has shifted from being an entry into the high paying public sector to being an entry into a low paying private firm sector.

The earnings function reported in Table 6 show the by now familiar picture with OLS of a strongly convex return to education. So is it possible that by shifting education toward the more educated that this is one aspect by which earnings have been able to rise. Table 9 gives the breakdown of education by gender for each of the waves of the GLSS we are using. Over the whole period from 1991/92 to 2005/06 for both men and women the proportion of the population aged 15 to 64 in senior secondary and higher has increased. However this increase was concentrated in the first sub-period from1991/92 to 1998/99, in the period when incomes rose rapidly there was an *increase* in the proportion of both men and women with no education. There were increases at the senior secondary level and beyond but they were much too modest to be an important part of the explanation for increased incomes.

5 Overview

Our objective in this paper has been to assess if we can explain the fall in poverty over this period by changes in the return to, or level of, education and to ask how it links to the pattern of job creation. As we noted in the introduction the issue of jobs, particularly for the secondarily educated young, has become an important policy issue not simply in Ghana but in Africa more generally. We have been able to provide evidence on these questions as a series of household surveys have been conducted over this period which have sought to measure the incomes of the members of the households. We have proceeded by seeking to make comparable both job categories, education and earnings across three of those surveys for 1991/92 (GLSS3), 1998/99 (GLSS4) and 2005/06 (GLSS5).

We have investigated three possible ways in which education may impact on earnings. First, the value of education may be increasing so that for *given education levels* incomes are higher. We have found this is not the case. Second, education may be acting to shift workers into occupations which pay more for given levels of education. We have found the opposite. Education has gone from an entry point into a highly paid public sector to being an entry point to the much lower paying small firm sector. Thirdly, the proportion of the educated in the population may be rising and, for a *given return* on education, incomes would rise. We have found that over the period from 1998/99 to 2005/06 the gains at the post secondary level have been modest and the proportion of both men and women with no education has increased.

The pattern of job creation has been very different over the two sub-periods. From 1991/92 to 1998/99, for both men and women, there were modest falls in the proportion of the labour force that was in farming and, for men, an increase in urban self-employment. In the second sub-period, again for both men and women, the change has been dominated by the expansion of wage jobs in small firms (increased from 3.4 to 6.7 per cent of the work force) and an increase in farming employment, up from 35.1 to 37.3 per cent of the population. While jobs overall have expanded in line with the population it is the lowest paying jobs which have expanded in relative importance in the period since 1998/99.

We noted in the introduction that with repeated household surveys, which measure incomes, we can address the question at a micro level as to what drives any increase in income. We have found that the time trend in earnings appears by far the most important factor explaining rises in incomes. It is, at present, unclear what can explain this.

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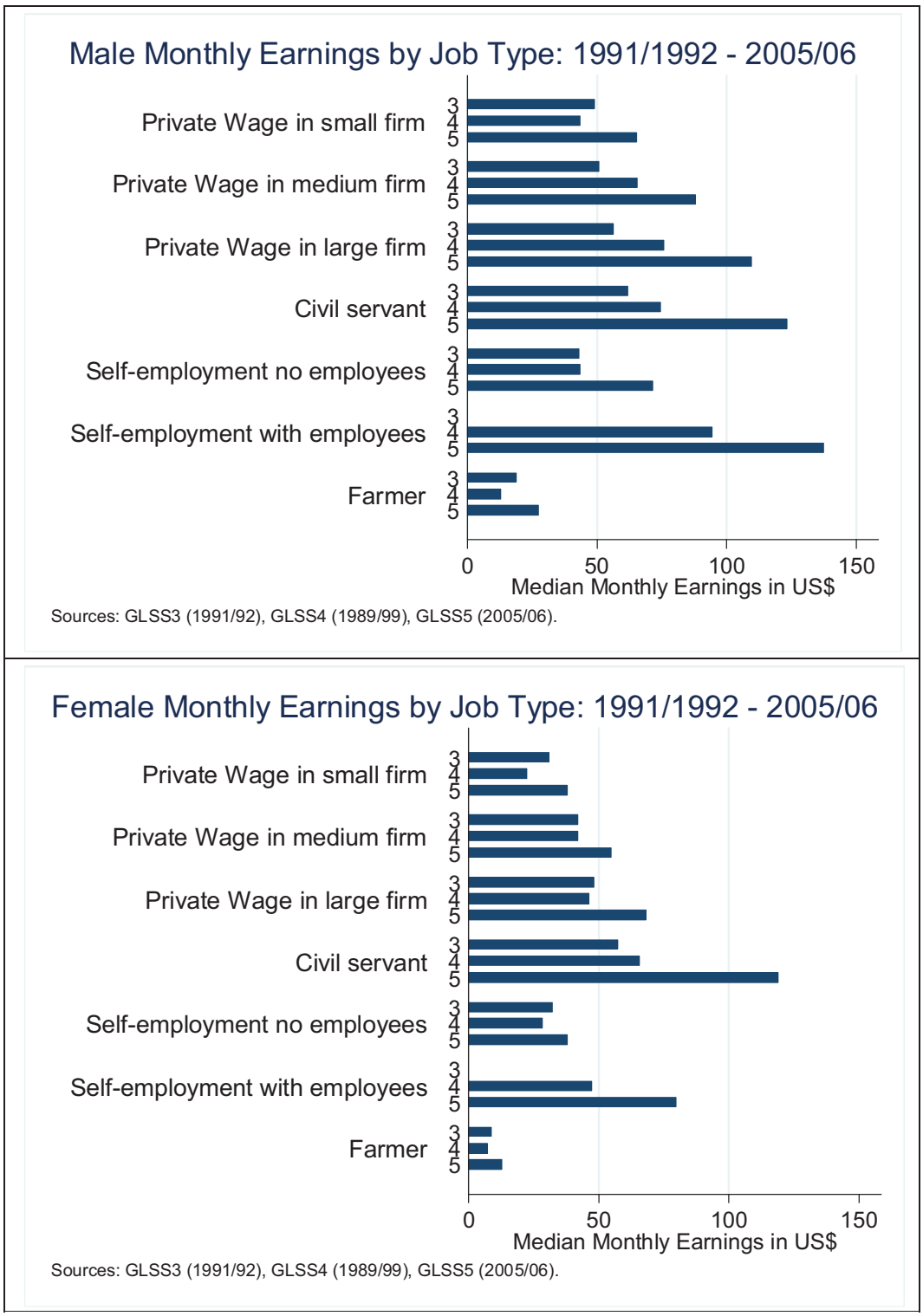
Figure 1 Median Earnings (Monthly) in Principal Job for Population aged 15 to 64



The numbers 3, 4 and 5 in the Figure refer to the rounds of the GLSS. GLSS3 is 1991/92, GLSS4 is 1998/99 and GLSS5 is 2005/06.

Table 1 Occupational Breakdown for Population aged 15 to 64

	1991/92		1998/99		2005/06	
	Percentages	No. of workers	Percentages	No. of workers	Percentages	No. of workers
Private Wage in small firm	2.7	224,903	3.4	352,401	6.7	886,391
Private Wage in medium firm	1.1	96,751	1.7	175,675	1.9	254,128
Private Wage in large firm	0.3	28,007	0.7	68,376	0.3	38,995
Civil servant	6.1	521,097	4.5	475,479	4.3	566,306
State firm	0.9	78,080	0.7	70,480	0.2	23,409
Other wage job	0.3	26,309	0.3	29,454	0.1	9,597
Wage in Agriculture	1.1	92,507	1.3	131,493	0.3	33,347
Self-employment no employees	23.2	1,968,964	24.1	2,532,030	16.6	2,204,060
Self-employment with employees			0.7	73,636	2.0	259,764
Farmer	41.7	3,537,346	35.1	3,689,169	37.3	4,951,174
Family	1.2	104,389	3.4	355,557	3.4	448,993
Unemployed	2.5	209,627	3.2	334,518	3.5	458,379
Apprentices	5.3	445,563	5.3	560,686	5.5	728,470
Out of the labour force (a)	6.0	505,820	5.6	585,933	5.7	760,394
Students	7.6	645,854	10.3	1,085,607	12.4	1,645,095
Total	100	8,486,914	100	10,519,443	100	13,268,502

(a) Out of the Labour Force excludes Students

A small firm is defined as one employing less that 11, a medium size is defined as one employing from 11 to 99 and a large firm as one employing 100 or more. Other wage jobs are a residual category.

Source: GSS, GLSS surveys (see Appendix 1 for Population numbers used to input the number of employees).

Table 2 Firms and Employment in Ghana's Manufacturing Sector

	1987				2003			
Size	Firms	%	Emp.	%	Firms	%	emp	%
Small	6,275	75	28,664	18	22,181	85	84,816	35
Medium	1,834	22	43,251	28	3,656	14	75,997	31
Large	240	3	85,169	54	251	1	82,703	34
Total	8,349	100	157,084	100	26,088	100	243,516	100

A small firm is defined as one employing less that 11, a medium size is defined as one employing from 11 to 99 and a large firm as one employing 100 or more.

Source: Ghana Statistical Service, National Industrial Census, 1987, Phase 1 Report, and 2005 National Industrial Census Bulletin No. 1.

Table 3 Occupational Breakdown for Population aged 15 to 64 by Gender

	1991/92		1998/99		2005/06	
	Percentages	Numbers	Percentages	Numbers	Percentages	Numbers
Female						
Private Wage in small firm	1.4	62,381	2.4	130,525	3.8	266,793
Private Wage in medium firm	0.4	15,704	0.6	35,547	0.9	59,946
Private Wage in large firm	0.1	3,926	0.3	16,107	0.1	7,998
Civil servant	3.6	155,297	2.2	121,638	2.4	167,118
State firm	0.2	9,161	0.1	3,333	0.1	6,472
Other wage job	0.2	7,416	0.1	3,333	0.04	2,962
Wage in Agriculture	0.5	19,630	0.7	37,214	0.1	5,892
Self-employment no employees	32.7	1,428,209	32.8	1,819,578	24.2	1,694,829
Self-employment with employees	NA	NA	0.3	16,107	1.9	129,617
Farm	39.6	1,728,769	33.4	1,856,791	34.9	2,442,332
Family	1.5	64,998	4.1	226,059	4.7	326,030
Unemployed	2.8	122,144	3.8	211,618	3.6	254,811
Apprentice	4.3	186,269	4.8	266,605	5.1	354,888
Out of the labour force	7.3	319,318	7.0	386,577	7.8	545,658
Student	5.5	239,053	7.6	423,790	10.5	732,036
Total	100	4,362,274	100	5,554,266	100	6,997,382
Male						
Private Wage in small firm	4.1	167,873	4.5	220,950	9.9	619,598
Private Wage in medium firm	2.1	84,968	2.8	139,025	3.1	194,182
Private Wage in large firm	0.6	25,160	1.1	52,134	0.5	30,997
Civil servant	9.1	376,580	7.1	351,535	6.4	399,188
State firm	1.8	72,181	1.3	66,037	0.3	16,937
Other wage job	0.5	19,798	0.5	26,315	0.1	6,635
Wage in Agriculture	1.8	75,893	1.9	93,842	0.4	27,455
Self-employment no employees	12.1	498,669	14.5	718,958	8.1	509,231
Self-employment with employees			1.2	57,596	2.1	130,147
Farmers	44.1	1,817,729	36.9	1,830,661	40.0	2,508,842
Family	0.9	37,947	2.6	130,584	2.0	122,963
Unemployed	2.1	85,793	2.5	123,633	3.3	203,568
Apprentice	6.4	263,977	5.9	293,938	6.0	373,582
Out of the labour force (a)	4.4	180,659	4.0	200,097	3.4	214,736
Students	10.1	416,589	13.3	659,376	14.6	913,059
Total	100	4,124,640	100	4,965,177	100	6,271,120

(a) Out of the Labour Force excludes Students

A small firm is defined as one employing less that 11, a medium size is defined as one employing from 11 to 99 and a large firm as one employing 100 or more. Other wage jobs are a residual category.

Source: GSS, GLSS surveys (see Appendix 1 for Population numbers used to input the number of employees).

Table 4 Occupational Breakdown for Young People: Population aged 15 to 24 by Gender

	1991/92		1998/99		2005/06	
	Percentages	Numbers	Percentages	Numbers	Percentages	Numbers
Female						
Private Wage in small firm	1.5	20,557	3.4	58,353	3.7	85,305
Private Wage in medium firm	0.2	3,261	0.3	5,320	0.9	21,969
Private Wage in large firm	0.1	1,701	0	0	0.1	2,103
Civil servant	0.8	11,484	0	0	0.5	11,452
State firm	0.0	0	0	0	0.0	701
Other wage job	0.1	851	0	0		0
Wage in Agriculture	0.4	4,962	0.4	7,037	0.1	1,402
Self-employment no employees	18.2	257,603	12.4	212,131	8.3	194,683
Self-employment with employees	0	0	0	0	0.4	10,050
Farm	35.1	497,059	21.7	372,945	19.7	461,349
Family	2.8	40,264	7.6	130,780	7.0	163,599
Unemployed	3.8	54,299	5.9	100,745	5.2	121,297
Apprentice	9.1	129,156	12.6	215,563	9.9	232,310
Out of the labour force	11.4	162,048	11.1	190,849	11.8	276,716
Student	16.5	234,494	24.6	422,374	32.3	753,957
Total	100.0	1,417,739	100	1,716,268	100	2,337,126
Male						
Private Wage in small firm	1.9	29,777	1.5	27,517	5.42	127,800
Private Wage in medium firm	0.6	9,978	2.2	40,432	0.92	21,693
Private Wage in large firm	0.2	2,693	0.1	1,872	0.07	1,651
Civil servant	0.9	13,463	0.3	5,428	0.53	12,497
State firm	0.3	4,435		0		0
Other wage job	0.1	1,742	0.1	1,872		0
Wage in Agriculture	1.6	25,342	0.3	5,428	0.27	6,366
Self-employment no employees	5.2	82,202	3.0	56,905	2.43	57,298
Self-employment with employees	0	0	0	0	0.43	10,139
Farm	42.2	667,914	29.6	554,823	25.6	603,633
Family	2.1	33,419	6.6	123,169	4.61	108,701
Unemployed	2.5	39,755	2.5	45,861	4.29	101,156
Apprentice	9.4	148,883	10.8	201,975	8.82	207,970
Out of the labour force	7.8	122,749	7.8	145,070	6.59	155,388
Student	25.4	401,667	35.3	661,332	40.03	943,884
Total	100	1,583,861	100	1,871,872	100	2,357,941

(a) Out of the Labour Force excludes Students

A small firm is defined as one employing less that 11, a medium size is defined as one employing from 11 to 99 and a large firm as one employing 100 or more. Other wage jobs are a residual category.

Source: GSS, GLSS surveys (see Appendix 1 for Population numbers used to input the number of employees).

Table 5 (a) Male Median Earnings (Monthly) in Principal Job for Population aged 15 to 64

	1991/92		1998/99		2005/06	
	US$	Cedis 1998	US$	Cedis 1998	US$	Cedis 1998
Private wage in small firm	49	1,522,158 (182)	44	1,316,223 (221)	65	1,910,279 (719)
Private wage in medium firm	51	1,579,604 (94)	65	2,054,701 (138)	88	2,779,386 (238)
Private wage in large firm	57	1,746,729 (28)	76	2,205,899 (66)	110	3,474,233 (41)
Civil servant	62	1,932,650 (415)	75	2,265,999 (410)	123	3,697,966 (493)
State firm	58	1,702,899 (79)	102	2,854,233 (43)	87	2,753,330 (22)
Other	30	930,440 (21)	59	1,831,958 (27)	154	4,863,926 (11)
Wage in agriculture	16	515,158 (62)	12	392,302 (85)	57	1,620,097 (25)
Self-employment no employees	43	1,288,724 (513)	44	1,321,514 (796)	71	2,084,540 (641)
Self-employment with employees	Not available		95	2,919,248 (35)	137	3,998,975 (155)
Farmers	19	561,167 (1348)	13	424,167 (1,690)	27	769,034 (2,190)
Apprentices	32	1,081,239 (111)	24	759,494 (95)	44	1,245,834 (217)
Total	32	972,898 (2853)	29	910,077 (3,606)	48	1,505,501 (4,752)

Figures in ( ) parentheses are numbers of observations. The Cedis 1998 numbers are nominal earnings deflated to 1998 prices, the US$ numbers are nominal cedi rates converted at the exchange rate.

Table 5 (b) Female Median Earnings (Monthly) in Principal Job for Population aged 15 to 64

	1991/92		1998/99		2005/06	
	US$	Cedis 1998	US$	Cedis 1998	US$	Cedis 1998
Private wage in small firm	31	944,262	22	705,492	38	1,066,393
		(73)		(82)		(329)
Private wage in medium firm	42	1,224,378	42	1,259,705	55	1,650,261
		(16)		(27)		(72)
Private wage in large firm	48	1,528,053	46	1,436,585	68	2,084,540
		(5)		(16)		(8)
Civil servant	57	1,860,907	65	1,931,078	119	3,691,361
		(189)		(170)		(214)
State firm	62	1,912,046	46	1,396,754	143	4,516,503
		(11)		(10)		(7)
Other	30	950,147	65	1,857,394	220	6,948,466
		(9)		(7)		(5)
Wage in agriculture	7	229,446	8	248,666	33	933,094
		(11)		(37)		(7)
Self-employment no employees	32	950,147	28	874,048	38	1,129,126
		(1,437)		(2,057)		(2,009)
Self-employment with employees	Not available		47	1,315,257	80	2,431,963
				(21)		(148)
Farmers	9	261,628	7	226,552	13	369,136
		(807)		(1,300)		(1,341)
Apprentices	27	870,181	15	500,563	30	922,840
		(48)		(59)		(121)
Total	22	699,746	19	594,989	30	922,840
		(2,606)		(3,786)		(4,261)

Figures in ( ) parentheses are numbers of observations. The Cedis 1998 numbers are nominal earnings deflated to 1998 prices, the US$ numbers are nominal cedi rates converted at the exchange rate.

Table 6(a) Male Earnings Regressions: Dependent Variable (Ln Real (1998 prices) Monthly Earnings)

	(1)	(2)	(3)	(4)
Ln (Weekly Hours worked)				0.375***
				(0.0210)
Primary Complete		0.192***	0.0937**	0.117***
		(0.0416)	(0.0387)	(0.0380)
Middle/ Junior Secondary Complete		0.461***	0.209***	0.228***
		(0.0286)	(0.0273)	(0.0269)
Senior Secondary Complete		0.984***	0.407***	0.428***
		(0.0445)	(0.0428)	(0.0421)
Post Secondary Education		1.313***	0.584***	0.648***
		(0.0442)	(0.0450)	(0.0446)
University Complete		2.194***	1.341***	1.378***
		(0.0880)	(0.0886)	(0.0885)
Technical-Vocational College		0.119**	0.0369	0.0338
		(0.0528)	(0.0481)	(0.0460)
Has undertaken an Apprenticeship		0.115***	-0.0540**	-0.0492**
		(0.0258)	(0.0242)	(0.0236)
Age in years		0.0907***	0.0828***	0.0730***
		(0.00677)	(0.00625)	(0.00613)
(Age in years)^2/100		-0.0999***	-0.0885***	-0.0766***
		(0.00837)	(0.00774)	(0.00760)
Private Firm – Medium			0.233***	0.235***
			(0.0452)	(0.0452)
Private Firm - Large			0.324***	0.328***
			(0.0805)	(0.0810)
Public Sector (Civil servants and State Enterprise)			0.211***	0.268***
			(0.0364)	(0.0363)
Self-employment (no employees)			0.0108	0.0532
			(0.0381)	(0.0374)
Self-employment (with employees)			0.576***	0.585***
			(0.0858)	(0.0842)
Rural Labour			-0.926***	-0.785***
			(0.0321)	(0.0331)
Wave4	-0.0604*	-0.167***	-0.125***	-0.144***
	(0.0314)	(0.0292)	(0.0270)	(0.0262)
Wave5	0.436***	0.300***	0.325***	0.262***
	(0.0295)	(0.0273)	(0.0259)	(0.0256)
Constant	13.70***	11.45***	12.24***	11.00***
	(0.0219)	(0.130)	(0.120)	(0.140)
R-squared	0.033	0.182	0.312	0.338
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1				
Tests for shifts in education returns	Prob > F = 0.007 (Wave 4)		Prob > F = 0.009 (Wave 5)	

A small firm is defined as one employing less that 11, a medium size is defined as one employing from 11 to 99 and a large firm as one employing 100 or more. Number of Observations=10,455

Table 6(b) Female Earnings Regressions: Dependent Variable (Ln Real (1998 prices) Monthly Earnings)

	(1)	(2)	(3)	(4)
Ln (Weekly Hours worked)				0.391***
				(0.0187)
Primary Complete		0.341***	0.215***	0.212***
		(0.0404)	(0.0368)	(0.0358)
Middle/ Junior Secondary Complete		0.650***	0.327***	0.316***
		(0.0314)	(0.0294)	(0.0286)
Senior Secondary Complete		1.342***	0.761***	0.692***
		(0.0593)	(0.0614)	(0.0603)
Post Secondary Education		1.511***	0.768***	0.754***
		(0.0606)	(0.0673)	(0.0674)
University Complete		2.551***	1.747***	1.697***
		(0.139)	(0.144)	(0.144)
Technical-Vocational College		0.0771	0.00499	-0.00440
		(0.0578)	(0.0540)	(0.0526)
Has undertaken an Apprenticeship		0.0525*	-0.0555*	-0.0514*
		(0.0312)	(0.0289)	(0.0281)
Age in years		0.0806***	0.0731***	0.0650***
		(0.00734)	(0.00667)	(0.00645)
(Age in years)^2/100		-0.0976***	-0.0808***	-0.0722***
		(0.00920)	(0.00838)	(0.00811)
Private Firm – Medium			0.285***	0.292***
			(0.0919)	(0.0903)
Private Firm - Large			0.730***	0.687***
			(0.108)	(0.111)
Public Sector (Civil servants and State Enterprise)			0.491***	0.543***
			(0.0585)	(0.0581)
Self-employment (no employees)			0.147***	0.154***
			(0.0480)	(0.0468)
Self-employment (with employees)			0.705***	0.661***
			(0.0869)	(0.0860)
Rural Labour			-1.070***	-0.897***
			(0.0506)	(0.0501)
Wave4	-0.123***	-0.167***	-0.107***	-0.132***
	(0.0352)	(0.0336)	(0.0301)	(0.0288)
Wave5	0.318***	0.204***	0.242***	0.189***
	(0.0342)	(0.0325)	(0.0302)	(0.0297)
Constant	13.37***	11.56***	11.96***	10.75***
	(0.0269)	(0.140)	(0.129)	(0.139)
R-squared	0.021	0.138	0.304	0.336
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1				
Tests for shifts in education returns	Prob > F = 0.38 (Wave 4)		Prob > F = 0.78 (Wave 5)	

A small firm is defined as one employing less that 11, a medium size is defined as one employing from 11 to 99 and a large firm as one employing 100 or more. Number of Observations=10,115

Table 7(a) Male Earnings Regressions: Dependent Variable (Ln Real (1998 prices) Monthly Earnings)

	Small Firm	Medium/ Large firm	Public Sector	Self-employed NO employees	Self-employed WITH employees	Rural
Ln (Weekly Hours worked)	0.167***	0.179**	0.212***	0.630***	0.374**	0.328***
	(0.0516)	(0.0697)	(0.0512)	(0.0498)	(0.182)	(0.0297)
Primary Complete	0.141	0.144	0.100	0.259***	0.124	0.0746
	(0.106)	(0.146)	(0.0978)	(0.0879)	(0.305)	(0.0514)
Middle/ Junior Complete	0.247***	0.0943	0.384***	0.388***	0.133	0.173***
	(0.0804)	(0.0926)	(0.0630)	(0.0695)	(0.263)	(0.0359)
Senior Secondary Complete	0.442***	0.383***	0.597***	0.672***	0.470	0.161
	(0.0961)	(0.111)	(0.0727)	(0.106)	(0.299)	(0.101)
Post Secondary Education	0.556***	0.612***	0.794***	0.449***	0.973**	0.442***
	(0.122)	(0.137)	(0.0704)	(0.144)	(0.448)	(0.153)
University Complete	1.639***	1.091*	1.463***	1.776***	2.466**	-0.0323
	(0.273)	(0.573)	(0.0938)	(0.383)	(1.067)	(0.775)
Technical-Vocational College	0.188**	0.126	-0.108	0.308**	-0.0508	-0.151
	(0.0926)	(0.106)	(0.0876)	(0.124)	(0.281)	(0.118)
Has undertaken an Apprenticeship	-0.0991*	0.0574	-0.0940*	0.0257	-0.187	-0.0621*
	(0.0530)	(0.0707)	(0.0480)	(0.0549)	(0.189)	(0.0373)
Age in years	0.0843***	0.0852***	0.0473***	0.0629***	0.0259	0.0827***
	(0.0150)	(0.0192)	(0.0181)	(0.0154)	(0.0639)	(0.00877)
(Age in years)^2/100	-0.094***	-0.089***	-0.0393*	-0.073***	-0.0117	-0.088***
	(0.0198)	(0.0244)	(0.0217)	(0.0196)	(0.0778)	(0.0107)
wave4	-0.224***	0.0822	-0.0267	-0.100		-0.217***
	(0.0849)	(0.0761)	(0.0520)	(0.0684)		(0.0371)
wave5	0.202***	0.409***	0.292***	0.370***	0.331*	0.210***
	(0.0667)	(0.0773)	(0.0560)	(0.0715)	(0.172)	(0.0368)
Constant	11.69***	11.62***	12.10***	10.21***	12.35***	10.26***
	(0.312)	(0.416)	(0.425)	(0.353)	(1.415)	(0.190)
Observations	1095	591	1421	1888	183	5277
R-squared	0.188	0.214	0.275	0.194	0.236	0.089

Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

A small firm is defined as one employing less that 11, a medium/large size is defined as one employing 11 or more. The public sector combines civil servants and those in state firms. Rural combines the self-employed and wage employees in the rural sector. As Table 1 shows the numbers employed in state firms and as wage employees in the rural sector are a very small part of the population in 2005/06.

Table 7(b) Female Earnings Regressions: Dependent Variable (Ln Real (1998 prices) Monthly Earnings)

	Small Firm	Medium/ Large firm	Public Sector	Self-employed NO employees	Self-employed WITH employees	Rural
Ln (Weekly Hours worked)	0.318***	0.222	0.0797	0.463***	0.230	0.309***
	(0.0636)	(0.160)	(0.0615)	(0.0258)	(0.149)	(0.0321)
Primary Complete	0.244*	-0.195	0.0624	0.126**	0.166	0.325***
	(0.139)	(0.195)	(0.172)	(0.0494)	(0.278)	(0.0579)
Middle/ Junior Secondary Complete	0.269**	-0.00928	0.366**	0.280***	0.574***	0.346***
	(0.104)	(0.171)	(0.145)	(0.0376)	(0.202)	(0.0578)
Senior Secondary Complete	0.548***	0.312*	0.769***	0.749***	1.019**	1.075**
	(0.130)	(0.170)	(0.153)	(0.105)	(0.394)	(0.442)
Post Secondary Education	1.085***	0.196	0.895***	0.456***	0.627*	1.339***
	(0.161)	(0.497)	(0.162)	(0.141)	(0.318)	(0.256)
University Complete	2.371***	0.895*	1.550***	1.943**	1.919***	0
	(0.553)	(0.537)	(0.183)	(0.781)	(0.470)	(0)
Technical-Vocational College	0.0440	0.314	0.0535	0.00327	0.136	0.0200
	(0.133)	(0.233)	(0.0976)	(0.0800)	(0.323)	(0.224)
	(0.133)	(0.233)	(0.0976)	(0.0800)	(0.323)	(0.224)
Has undertaken an Apprenticeship	-0.0787	-0.138	-0.132*	-0.093***	-0.183	0.0694
	(0.126)	(0.143)	(0.0755)	(0.0358)	(0.203)	(0.0627)
Age in years	0.0371*	0.125**	0.0515***	0.0726***	-0.0183	0.0688***
	(0.0217)	(0.0523)	(0.0197)	(0.00939)	(0.0685)	(0.0113)
(Age in years)^2/100	-0.0369	-0.147**	-0.0397	-0.087***	0.0316	-0.073***
	(0.0300)	(0.0677)	(0.0249)	(0.0120)	(0.0830)	(0.0137)
wave4	-0.280	0.589	-0.236***	-0.127***		-0.150***
	(0.170)	(0.393)	(0.0771)	(0.0397)		(0.0489)
wave5	0.140	0.725*	0.312***	0.125***	0.225	0.279***
	(0.124)	(0.418)	(0.0950)	(0.0416)	(0.288)	(0.0501)
Constant	11.57***	10.45***	12.32***	10.64***	13.46***	9.913***
	(0.433)	(0.943)	(0.471)	(0.191)	(1.489)	(0.239)
Observations	469	138	574	5343	164	3427
R-squared	0.241	0.268	0.303	0.108	0.178	0.092

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

A small firm is defined as one employing less that 11, a medium/large size is defined as one employing 11 or more. The public sector combines civil servants and those in state firms. Rural combines the self-employed and wage employees in the rural sector. As Table 1 shows the numbers employed in state firms and as wage employees in the rural sector are a very small part of the population in 2005/06.

Table 8 (a) Male Occupational Choices

	Small Firm	Medium/ Large Firm	Public Sector	Self-employed WITH Employees	Self-employed WITHOUT Employees	Rural	Not Employed
None							
1991/92	0.025294	0.010278	0.045668	NA	0.120683	0.78822	0.009858
1998/99	0.023851	0.017801	0.012347	0.002851	0.112699	0.801445	0.029007
2005/06	0.043289	0.009837	0.007209	0.00333	0.045357	0.853496	0.037482
Primary complete							
1991/92	0.030621	0.015342	0.048423	NA	0.135467	0.754089	0.016059
1998/99	0.03574	0.020458	0.019838	0.003758	0.13415	0.746321	0.039735
2005/06	0.077106	0.029137	0.02207	0.010606	0.070005	0.745074	0.046002
Middle/Junior school							
1991/92	0.041993	0.035818	0.123037	NA	0.135552	0.625404	0.038196
1998/99	0.043691	0.046864	0.065317	0.00168	0.150255	0.631632	0.060562
2005/06	0.140922	0.053541	0.043627	0.017346	0.078514	0.601455	0.064595
Senior Secondary school							
1991/92	0.073369	0.083361	0.298875	NA	0.137438	0.325262	0.081695
1998/99	0.082862	0.112298	0.186352	0.011057	0.186517	0.335054	0.085861
2005/06	0.200996	0.087631	0.172132	0.02615	0.100866	0.275087	0.137138
Post-secondary education							
1991/92	0.02774	0.058075	0.720797	NA	0.053332	0.132902	0.007154
1998/99	0.082601	0.079868	0.492654	0.009659	0.09476	0.163768	0.07669
2005/06	0.162936	0.083414	0.423703	0.027182	0.094058	0.121875	0.086832
Technical/Vocational Education							
1991/92	0.089214	0.026643	0.093536	NA	0.199884	0.566971	0.023751
1998/99	0.023741	0.036876	0.00452	0.003308	0.189087	0.699077	0.043391
2005/06	0.048587	0.016775	0.00397	0.00643	0.069519	0.769226	0.085493
Past Apprenticeship							
1991/92	0.066383	0.025876	0.047281	NA	0.273576	0.573323	0.013561
1998/99	0.047017	0.020938	0.008265	0.008135	0.272697	0.621119	0.021831
2005/06	0.100374	0.013184	0.007469	0.014171	0.162271	0.684694	0.017838

These numbers are obtained from the multinomial logit reported in Appendix Table 2. Each row shows the probability of being in an occupation for the given level of education where this probability is evaluated at the average age of individuals in the sample. The only control included in the equation apart from education is age.

Table 8 (b) Female Occupational Choices

	Small Firm	Medium/ Large Firm	Public Sector	Self-Employed WITH Employees	Self-employed WITHOUT Employees	Rural	Not Employed
None							
1991/92	0.007151	0.000755	0.002839	NA	0.361925	0.596111	0.031219
1998/99	0.007114	0.003784	0.000926	0.002552	0.306485	0.624465	0.054675
2005/06	0.028928	0.003277	0.001242	0.006879	0.198694	0.636385	0.124595
Primary complete							
1991/92	0.014518	0.001906	0.010867	NA	0.385062	0.54922	0.038427
1998/99	0.011357	0.006993	0.004725	0.002378	0.425994	0.471415	0.077138
2005/06	0.031902	0.001859	0.00759	0.015593	0.312716	0.527227	0.103113
Middle/Junior school							
1991/92	0.025835	0.018113	0.08692	NA	0.488957	0.312565	0.06761
1998/99	0.026607	0.009329	0.038204	0.004779	0.468093	0.360753	0.092235
2005/06	0.069015	0.013877	0.028136	0.027576	0.371295	0.348071	0.14203
Secondary School							
1991/92	0.061921	0.075854	0.423445	NA	0.217898	0.081669	0.139214
1998/99	0.061345	0.016467	0.136378	0.007254	0.446534	0.174398	0.157624
2005/06	0.189728	0.066135	0.158408	0.048316	0.232611	0.11272	0.192082
Post Secondary Education							
1991/92	0.014649	0.024719	0.807258	NA	0.06368	0.045153	0.04454
1998/99	1.17E-26	0.060698	0.670385	6.46E-25	0.148442	0.103323	0.017151
2005/06	0.116038	0.045836	0.46151	0.049524	0.206713	0.032441	0.087938
Technical/Vocational Education							
1991/92	0.01583	0.001364	0.013096	NA	0.544878	0.370545	0.054287
1998/99	0.020153	0.014215	0.001238	0.005514	0.51282	0.379113	0.066947
2005/06	0.036649	0.003329	0.000734	0.00626	0.297427	0.459754	0.195846
Past Apprenticeship							
1991/92	0.015985	0.000521	0.001656	NA	0.537462	0.409525	0.034852
1998/99	0.005071	0.004392	0.000759	0.003547	0.475654	0.474514	0.036063
2005/06	0.030594	0.0049	0.000911	0.017607	0.379252	0.469541	0.097197

These numbers are obtained from the multinomial logit reported in Appendix Table 2. Each row shows the probability of being in an occupation for the given level of education where this probability is evaluated at the average age of individuals in the sample. The only control included in the equation apart from education is age.

Table 9 (a) Male Education Outcomes for Population aged 15-64 (Not currently in school)

	None	Primary complete	Middle/ Junior	Senior secondary	Post secondary	University	Technical/ Vocation	Apprent-iceship
1991/92 (3585)	0.391	0.167	0.347	0.050	0.034	0.011	0.059	0.257
1998/99 (4500)	0.313	0.127	0.401	0.090	0.062	0.007	0.054	0.277
2005/06 (6904)	0.411	0.109	0.310	0.082	0.070	0.018	0.055	0.229
Total (14,989)	0.377	0.128	0.346	0.077	0.059	0.013	0.056	0.250

Table 9 (b) Female Education Outcomes for Population aged 15-64 (Not currently in school)

	None	Primary complete	Middle/ Junior	Senior secondary	Post secondary	University	Technical/ Vocation	Apprent-iceship
1991/92 (4,394)	0.615	0.144	0.206	0.023	0.010	0.002	0.035	0.125
1998/99 (5,588)	0.543	0.140	0.271	0.028	0.017	0.001	0.023	0.179
2005/06 (7,868)	0.601	0.111	0.210	0.031	0.042	0.004	0.035	0.161
Total (17,850)	0.586	0.129	0.228	0.028	0.026	0.003	0.031	0.158

Source: GSS GLSS surveys. Education up to and including University is modeled by dummies for the highest level of education completed. None refers to those with less than primary completed. Technical/Vocational education is modeled as an additional element to the educational outcome, ie the dummy takes a value 1 if the individual in addition to completing say secondary education then went on to a technical or vocational school. A similar procedure applies to those who undertook an apprenticeship in the past. The figures in ( ) are the number of observations.

Appendix 1: Population Numbers

These are the population numbers that have been used to scale up the proportions available from the surveys.

Year	% Population aged 15-64	Total population	Population aged 15-64
1991	52.49	15,919,815	8,356,337
1992	52.64	16,370,808	8,617,491
1993	52.82	16,826,813	8,887,480
1994	53.04	17,280,080	9,166,056
1995	53.33	17,725,205	9,452,926
1996	53.68	18,159,859	9,747,948
1997	54.08	18,586,190	10,050,878
1998	54.51	19,008,696	10,361,092
1999	54.94	19,434,064	10,677,793
2000	55.37	19,866,984	11,000,198
2001	55.78	20,309,104	11,327,929
2002	56.17	20,758,472	11,660,423
2003	56.56	21,211,861	11,996,473
2004	56.93	21,664,441	12,334,643
2005	57.31	22,112,805	12,673,786

These population numbers are taken from the World Development Indicators. The figures for number of employees shown in Tables 1, 3 and 4 are obtained by taking the shares from the GLSS surveys and multiplying those shares by the population aged 15-64 for the relevant years.

Appendix 2 (a): Multinomial Logit for Men

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The occupations identified are: 1 "Wage small firm" 2 "Wage medium/large firm"  3 "Public"
4 "Self-employment WITH employees" 5 "Self-employment without employees" 6 "Rural" 7 "Not
employed" [Base used is Rural]

. mlogit occ4b_num /*none*/ primary middle second postsec univ tecvoc apprpast
 primary_w4 middle_w4 second_w4 postsec_w4 univ_w4 tecvoc_w4 apprpast_w4
 primary_w5 middle_w5 second_w5 postsec_w5 univ_w5 tecvoc_w5 apprpast_w5
 agey agey_w4 agey_w5 agey_sq agey_sq_w4 agey_sq_w5  wave4 wave5 if male==1,robust;

Multinomial logistic regression                 Number of obs   =      14989
                                                Wald chi2(163)  =          .
                                                Prob > chi2     =          .
Log pseudolikelihood = -16980.153               Pseudo R2       =     0.1867
------------------------------------------------------------------------------
             |               Robust
   occ4b_num |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
Wage Small Firm
     primary |   .2353629   .2688091     0.88   0.381    -.2914932     .762219
      middle |   .7382973   .2075131     3.56   0.000     .3315791    1.145015
      second |   1.950075   .3428627     5.69   0.000     1.278077    2.622074
     postsec |   1.872468    .610406     3.07   0.002     .6760939    3.068841
        univ |   2.866838   .8125963     3.53   0.000     1.274178    4.459497
      tecvoc |   1.589936   .2738168     5.81   0.000     1.053265    2.126608
    apprpast |   1.283192   .1742159     7.37   0.000     .9417354    1.624649
  primary_w4 |   .2403466   .3809917     0.63   0.528    -.5063834    .9870766
   middle_w4 |   .1051185   .2940727     0.36   0.721    -.4712534    .6814905
   second_w4 |   .1673991   .4315757     0.39   0.698    -.6784738    1.013272
  postsec_w4 |   .9577038   .7051767     1.36   0.174    -.4244172    2.339825
     univ_w4 |   22.59512   1.803754    12.53   0.000     19.05982    26.13041
   tecvoc_w4 |   -1.45789   .4097743    -3.56   0.000    -2.261033   -.6547467
 apprpast_w4 |  -.3496211   .2352633    -1.49   0.137    -.8107286    .1114865
  primary_w5 |    .477782    .310342     1.54   0.124    -.1304772    1.086041
   middle_w5 |   .7920049   .2354303     3.36   0.001      .33057     1.25344
   second_w5 |   .7175701   .3780714     1.90   0.058    -.0234362    1.458576
  postsec_w5 |   1.399336   .6515732     2.15   0.032     .1222759    2.676396
     univ_w5 |   1.930461   1.126959     1.71   0.087    -.2783385    4.139261
   tecvoc_w5 |  -1.370511   .3479837    -3.94   0.000    -2.052547   -.6884758
 apprpast_w5 |  -.2218198   .1991314    -1.11   0.265    -.6121101    .1684706
        agey |   .2064665   .0425235     4.86   0.000      .123122    .2898111
     agey_w4 |  -.0797342   .0587607    -1.36   0.175    -.1949031    .0354348
     agey_w5 |  -.1237859   .0480322    -2.58   0.010    -.2179274   -.0296445
      agey_sq |  -.0027529   .0005665    -4.86   0.000    -.0038632   -.0016426
  agey_sq_w4 |   .0010135   .0007859     1.29   0.197    -.0005268    .0025538
  agey_sq_w5 |   .0014082   .0006404     2.20   0.028     .0001531    .0026634
       wave4 |   1.305778   1.024578     1.27   0.203    -.7023575    3.313913
       wave5 |   2.840483   .8405011     3.38   0.001     1.193131    4.487835
       _cons |  -6.829993   .7408948    -9.22   0.000     -8.28212   -5.377866
-------------+----------------------------------------------------------------
Wage medium/large firm
     primary |   .4448668   .4032993     1.10   0.270    -.3455852    1.235319
      middle |   1.479856   .2771729     5.34   0.000     .9366075    2.023105
      second |   2.978351   .3848953     7.74   0.000      2.22397    3.732732
     postsec |   3.511922   .5583218     6.29   0.000     2.417632    4.606213
        univ |   2.756264   1.147927     2.40   0.016     .5063695    5.006159
      tecvoc |   1.282013   .3109944     4.12   0.000     .6724749    1.891551
    apprpast |   1.241671   .2062377     6.02   0.000     .8374525    1.645889
  primary_w4 |  -.2344623   .5468817    -0.43   0.668    -1.306331    .8374061
   middle_w4 |  -.2737402   .3646825    -0.75   0.453    -.9885049    .4410244
   second_w4 |  -.2643107   .4788662    -0.55   0.581    -1.202871    .6742497
  postsec_w4 |  -.4228139   .6571013    -0.64   0.520    -1.710709     .865081
     univ_w4 |    22.7163   1.981137    11.47   0.000     18.83334    26.59925
   tecvoc_w4 |  -.4170423   .4034592    -1.03   0.301    -1.207808    .3737232
 apprpast_w4 |  -.8244606     .26735    -3.08   0.002    -1.348457   -.3004643
  primary_w5 |   .7768751   .4971854     1.56   0.118    -.1975903     1.75134
   middle_w5 |   .5644443   .3486533     1.62   0.105    -.1189036    1.247792
   second_w5 |   .3409118   .4627848     0.74   0.461    -.5661298    1.247953
  postsec_w5 |   .5721106   .6380975     0.90   0.370    -.6785374    1.822759
     univ_w5 |    2.83234   1.411561     2.01   0.045     .0657316    5.598948
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   tecvoc_w5 |  -.6443239   .4020546    -1.60   0.109    -1.432336    .1436887
 apprpast_w5 |  -.7284231   .2543818    -2.86   0.004    -1.227002    -.229844
       agey |   .1621802   .0503934     3.22   0.001     .0634109    .2609495
     agey_w4 |   .0065996   .0649475     0.10   0.919    -.1206952    .1338944
     agey_w5 |   .0433723   .0642605     0.67   0.500     -.082576    .1693207
     agey_sq |  -.0018653    .000663    -2.81   0.005    -.0031647   -.0005658
  agey_sq_w4 |  -.0000959   .0008398    -0.11   0.909    -.0017419      .00155
  agey_sq_w5 |   -.000784   .0008422    -0.93   0.352    -.0024348    .0008667
       wave4 |   .4357149   1.202605     0.36   0.717    -1.921347    2.792777
       wave5 |  -.5386848   1.160739    -0.46   0.643    -2.813691    1.736322
       _cons |  -7.432332   .8887629    -8.36   0.000    -9.174275   -5.690389
-------------+----------------------------------------------------------------
Public       |
     primary |   .1028528   .2514395     0.41   0.682    -.3899596    .5956652
      middle |   1.222471   .1484642     8.23   0.000     .9314864    1.513455
      second |   2.763777    .242141    11.41   0.000     2.289189    3.238364
     postsec |    4.53913   .3350174    13.55   0.000     3.882508    5.195751
        univ |   4.142923   .5924323     6.99   0.000     2.981777    5.304069
      tecvoc |   1.046425   .2360717     4.43   0.000     .5837325    1.509117
    apprpast |    .353053   .1361074     2.59   0.009     .0862874    .6198185
  primary_w4 |   .4425868   .4234738     1.05   0.296    -.3874066     1.27258
   middle_w4 |   .6814718   .2538425     2.68   0.007     .1839496    1.178994
   second_w4 |   .8225646   .3407862     2.41   0.016     .1546359    1.490493
  postsec_w4 |   .7352251   .4544871     1.62   0.106    -.1555533    1.626004
     univ_w4 |   23.56595   1.595531    14.77   0.000     20.43877    26.69313
   tecvoc_w4 |  -1.914608   .3989798    -4.80   0.000    -2.696594   -1.132622
 apprpast_w4 |  -.4995236   .2047232    -2.44   0.015    -.9007736   -.0982735
  primary_w5 |   1.151883   .4026617     2.86   0.004     .3626807    1.941085
   middle_w5 |   .9278426   .2629911     3.53   0.000     .4123896    1.443296
   second_w5 |   1.541384   .3378977     4.56   0.000     .8791165    2.203651
  postsec_w5 |   1.480891   .4285096     3.46   0.001     .6410274    2.320754
     univ_w5 |   3.935471   .9444364     4.17   0.000     2.084409    5.786532
   tecvoc_w5 |  -1.539034   .3343329    -4.60   0.000    -2.194314   -.8837534
 apprpast_w5 |  -.0973368   .2017786    -0.48   0.630    -.4928155     .298142
       agey |   .3864234    .035061    11.02   0.000     .3177052    .4551416
     agey_w4 |   .0762994   .0530378     1.44   0.150    -.0276528    .1802515
     agey_w5 |  -.0594347   .0511774    -1.16   0.246    -.1597407    .0408712
     agey_sq |  -.0041665   .0004245    -9.82   0.000    -.0049985   -.0033346
  agey_sq_w4 |  -.0007848   .0006487    -1.21   0.226    -.0020563    .0004867
  agey_sq_w5 |   .0005744   .0006229     0.92   0.356    -.0006465    .0017953
       wave4 |  -2.913474    1.06551    -2.73   0.006    -5.001835   -.8251129
       wave5 |  -.6346926   1.034904    -0.61   0.540    -2.663068    1.393683
       _cons |  -10.61803   .6987416   -15.20   0.000    -11.98754   -9.248522
-------------+----------------------------------------------------------------
Self-employment WITH employees
     primary |  -.6178722   .5917666    -1.04   0.296    -1.777713    .5419691
      middle |  -1.260676   .4800384    -2.63   0.009    -2.201534   -.3198177
      second |   .4846664   .5149648     0.94   0.347     -.524646    1.493979
     postsec |  -4.144209   .5659532    -7.32   0.000    -5.253457   -3.034961
        univ |  -.3269691   .9663353    -0.34   0.735    -2.220951    1.567013
      tecvoc |   .4651637   .5462542     0.85   0.394    -.6054747    1.535802
    apprpast |    .351418   .3922394     0.90   0.370    -.4173571    1.120193
  primary_w4 |   .9652517          .        .       .           .           .
   middle_w4 |   .9699193          .        .       .           .           .
   second_w4 |   1.742841          .        .       .           .           .
  postsec_w4 |   6.952393          .        .       .           .           .
     univ_w4 |   26.27682          .        .       .           .           .
   tecvoc_w4 |  -.1798192          .        .       .           .           .
 apprpast_w4 |   .9519525          .        .       .           .           .
  primary_w5 |   1.912059   .7023435     2.72   0.006     .5354906    3.288627
   middle_w5 |   3.260942   .5637289     5.78   0.000     2.156053     4.36583
   second_w5 |    2.70833   .6262172     4.32   0.000     1.480967    3.935693
  postsec_w5 |   8.190017   .6983159    11.73   0.000     6.821343    9.558691
     univ_w5 |   5.671147          .        .       .           .           .
   tecvoc_w5 |   .2966619   .6289274     0.47   0.637    -.9360132    1.529337
 apprpast_w5 |   1.317034   .4312548     3.05   0.002     .4717901    2.162278
       agey |   .0563628   .0583113     0.97   0.334    -.0579252    .1706508
     agey_w4 |   .3474961   .1240215     2.80   0.005     .1044185    .5905737
     agey_w5 |    .189236          .        .       .           .           .
     agey_sq |  -.0010096   .0012808    -0.79   0.431    -.0035199    .0015007
  agey_sq_w4 |  -.0032924          .        .       .           .           .
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  agey_sq_w5 |  -.0019247   .0014793    -1.30   0.193     -.004824    .0009747
       wave4 |   11.50879          .        .       .            .           .
       wave5 |   15.27241    2.58867     5.90   0.000     10.19871    20.34611
       _cons |  -25.34369   2.332007   -10.87   0.000    -29.91434   -20.77304
-------------+----------------------------------------------------------------
Self-employment without employees
     primary |   .1598286   .1558289     1.03   0.305    -.1455904    .4652475
      middle |   .3475699   .1222289     2.84   0.004     .1080056    .5871341
      second |   1.015152   .2667195     3.81   0.000     .4923914    1.537913
     postsec |   .9635388   .5081955     1.90   0.058     -.032506    1.959584
        univ |   1.416563   .7699681     1.84   0.066     -.092547    2.925672
      tecvoc |   .8340423   .2334841     3.57   0.000     .3764219    1.291663
    apprpast |   1.136741   .1117686    10.17   0.000     .9176783    1.355803
  primary_w4 |   .0856764   .2135433     0.40   0.688    -.3328609    .5042137
   middle_w4 |   .1781593    .161467     1.10   0.270    -.1383103    .4946289
   second_w4 |   .3607752   .3159101     1.14   0.253    -.2583973    .9799476
  postsec_w4 |   .4510635     .58458     0.77   0.440    -.6946923    1.596819
     univ_w4 |   22.29422   1.775952    12.55   0.000     18.81342    25.77503
   tecvoc_w4 |  -.1798976   .3079823    -0.58   0.559    -.7835318    .4237366
 apprpast_w4 |   .0017973   .1453361     0.01   0.990    -.2830563    .2866509
  primary_w5 |   .4100283   .2167966     1.89   0.059    -.0148852    .8349417
   middle_w5 |   .5511261    .164604     3.35   0.001     .2285083     .873744
   second_w5 |   .9163237   .3183907     2.88   0.004     .2922894    1.540358
  postsec_w5 |   1.712149   .5609697     3.05   0.002     .6126687     2.81163
     univ_w5 |   .5126992   1.456677     0.35   0.725    -2.342335    3.367733
   tecvoc_w5 |    -.30305   .3189552    -0.95   0.342    -.9281908    .3220907
 apprpast_w5 |   .3583254   .1481875     2.42   0.016     .0678833    .6487676
        agey |   .1682346   .0239089     7.04   0.000      .121374    .2150952
     agey_w4 |  -.0168212   .0327909    -0.51   0.608    -.0810903    .0474479
     agey_w5 |   .0112457   .0353616     0.32   0.750    -.0580618    .0805533
     agey_sq |  -.0020545   .0003102    -6.62   0.000    -.0026624   -.0014465
  agey_sq_w4 |   .0001352   .0004245     0.32   0.750    -.0006967    .0009672
  agey_sq_w5 |  -.0002641    .000461    -0.57   0.567    -.0011677    .0006395
       wave4 |   .3197837   .5907656     0.54   0.588    -.8380956    1.477663
       wave5 |  -1.078042   .6347289    -1.70   0.089    -2.322088    .1660038
       _cons |  -4.911965   .4285129   -11.46   0.000    -5.751835   -4.072095
-------------+----------------------------------------------------------------
Not employed |
     primary |   .5322402   .3151075     1.69   0.091    -.0853592     1.14984
      middle |   1.585833   .2730185     5.81   0.000     1.050727     2.12094
      second |   2.999863   .3734827     8.03   0.000     2.267851    3.731876
     postsec |    1.45958   1.096937     1.33   0.183    -.6903774    3.609537
        univ |   4.807605    .658769     7.30   0.000     3.516441    6.098768
      tecvoc |   1.208832   .3386457     3.57   0.000     .5450985    1.872565
    apprpast |   .6372541   .2603628     2.45   0.014     .1269524    1.147556
  primary_w4 |   -.146282   .3787002    -0.39   0.699    -.8885207    .5959567
   middle_w4 |  -.6115908   .3224304    -1.90   0.058    -1.243543    .0203612
   second_w4 |  -1.042547   .4395919    -2.37   0.018    -1.904131   -.1809624
  postsec_w4 |   1.100628    1.16543     0.94   0.345    -1.183572    3.384829
     univ_w4 |  -20.18852   1.597548   -12.64   0.000    -23.31966   -17.05738
   tecvoc_w4 |  -.6694594   .4759129    -1.41   0.160    -1.602232    .2633128
 apprpast_w4 |  -.6665855   .3239882    -2.06   0.040    -1.301591   -.0315804
  primary_w5 |  -.1915581   .3541076    -0.54   0.589    -.8855963    .5024802
   middle_w5 |   -.691561   .3026463    -2.29   0.022    -1.284737   -.0983851
   second_w5 |  -.5704794   .4116584    -1.39   0.166    -1.377315    .2363563
  postsec_w5 |   1.326876   1.130608     1.17   0.241    -.8890745    3.542827
     univ_w5 |  -.1248582   1.081135    -0.12   0.908    -2.243845    1.994128
   tecvoc_w5 |  -.2803035   .4159086    -0.67   0.500    -1.095469    .5348624
 apprpast_w5 |  -1.159409   .3204699    -3.62   0.000    -1.787519     -.5313
        agey |  -.1937715   .0452861    -4.28   0.000    -.2825306   -.1050124
     agey_w4 |  -.0713307   .0555616    -1.28   0.199    -.1802295    .0375682
     agey_w5 |  -.0438753   .0522849    -0.84   0.401    -.1463519    .0586013
     agey_sq |   .0019951   .0006413     3.11   0.002     .0007382    .0032521
  agey_sq_w4 |   .0007534   .0007868     0.96   0.338    -.0007887    .0022955
  agey_sq_w5 |   .0002013   .0007455     0.27   0.787    -.0012598    .0016624
       wave4 |   2.519541    .836536     3.01   0.003     .8799606    4.159121
       wave5 |    2.53059    .785642     3.22   0.001     .9907596    4.070419
       _cons |  -.3494868   .6892726    -0.51   0.612    -1.700436    1.001463
------------------------------------------------------------------------------
(occ4b_num==Rural is the base outcome)
```

Appendix 2 (b): Multinomial Logit for Women

```
mlogit occ4b_num primary middle second postsec univ tecvoc apprpast
primary_w4 middle_w4 second_w4 postsec_w4 univ_w4 tecvoc_w4 apprpast_w4
primary_w5 middle_w5 second_w5 postsec_w5 univ_w5 tecvoc_w5 apprpast_w5
agey agey_w4 agey_w5 agey_sq agey_sq_w4 agey_sq_w5  wave4 wave5 if male==0,robust;

Multinomial logistic regression                 Number of obs   =      17850
                                                Wald chi2(150)  =          .
                                                Prob > chi2     =          .
Log pseudolikelihood = -18908.551               Pseudo R2       =     0.1538

------------------------------------------------------------------------------
             |               Robust
   occ4b_num |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
Wage small firm
     primary |   .7900273   .3810582     2.07   0.038      .043167    1.536888
      middle |   1.930052   .3321551     5.81   0.000     1.279039    2.581064
      second |   4.146322   .6053109     6.85   0.000     2.959935     5.33271
     postsec |   3.297448   1.207921     2.73   0.006     .9299669     5.66493
        univ |   8.054645    1.09174     7.38   0.000     5.914874    10.19441
      tecvoc |   1.270091   .4889944     2.60   0.009     .3116795    2.228502
    apprpast |   1.179807   .3032934     3.89   0.000     .5853632    1.774252
  primary_w4 |  -.0410364   .5748429    -0.07   0.943    -1.167708    1.085635
   middle_w4 |  -.0621984   .4421268    -0.14   0.888     -.928751    .8043542
   second_w4 |  -.7162734   .7613554    -0.94   0.347    -2.208503    .7759558
  postsec_w4 |  -56.25897          .        .       .            .           .
     univ_w4 |  -10.28219          .        .       .            .           .
   tecvoc_w4 |   .2703319   .7071855     0.38   0.702    -1.115726     1.65639
 apprpast_w4 |  -1.243705   .4369669    -2.85   0.004    -2.100144   -.3872652
  primary_w5 |  -.5039894   .4353119    -1.16   0.247    -1.357185    .3492063
   middle_w5 |  -.4571478    .364518    -1.25   0.210     -1.17159    .2572944
   second_w5 |  -.5346508   .6665344    -0.80   0.422    -1.841034    .7717326
  postsec_w5 |   1.068032   1.282991     0.83   0.405    -1.446584    3.582648
     univ_w5 |   17.66272          .        .       .            .           .
   tecvoc_w5 |  -.7084008   .6079346    -1.17   0.244    -1.899931    .4831291
 apprpast_w5 |  -.8197839   .3451569    -2.38   0.018    -1.496279   -.1432888
        agey |   .0465329   .0726522     0.64   0.522    -.0958627    .1889285
     agey_w4 |  -.1122021   .0910297    -1.23   0.218     -.290617    .0662129
     agey_w5 |   .0077175   .0783086     0.10   0.921    -.1457646    .1611996
     agey_sq |  -.0009582   .0010794    -0.89   0.375    -.0030738    .0011574
  agey_sq_w4 |    .001437   .0013552     1.06   0.289     -.001219    .0040931
  agey_sq_w5 |  -.0001284   .0011489    -0.11   0.911    -.0023803    .0021234
       wave4 |   1.902411   1.433628     1.33   0.185    -.9074479    4.712271
       wave5 |    1.23979   1.261956     0.98   0.326    -1.233599     3.71318
       _cons |  -4.719257   1.155327    -4.08   0.000    -6.983658   -2.454857
-------------+----------------------------------------------------------------
Wage medium/large firm
     primary |   1.008364   1.447304     0.70   0.486      -1.8283    3.845028
      middle |   3.823625   .9484258     4.03   0.000     1.964745    5.682506
      second |   6.597923   1.067569     6.18   0.000     4.505527     8.69032
     postsec |   6.069318   1.494173     4.06   0.000     3.140793    8.997843
        univ |   9.847008    1.23045     8.00   0.000     7.435371    12.25865
      tecvoc |   1.066996   .6786231     1.57   0.116    -.2630804    2.397073
    apprpast |   .0042608   .6679794     0.01   0.995    -1.304955    1.313476
  primary_w4 |  -.1128892   1.543654    -0.07   0.942    -3.138395    2.912617
   middle_w4 |  -2.372413    1.04029    -2.28   0.023    -4.411343    -.333482
   second_w4 |  -3.851637   1.294392    -2.98   0.003    -6.388599   -1.314675
  postsec_w4 |   -1.49502   1.666114    -0.90   0.370    -4.760544    1.770505
     univ_w4 |  -11.89752          .        .       .            .           .
   tecvoc_w4 |   .7556766   .9068501     0.83   0.405    -1.021717     2.53307
 apprpast_w4 |   .4194845   .7706801     0.54   0.586    -1.091021     1.92999
  primary_w5 |  -1.386972   1.628219    -0.85   0.394    -4.578223    1.804278
   middle_w5 |  -1.777038   1.008407    -1.76   0.078    -3.753479    .1994029
   second_w5 |  -1.862382   1.149462    -1.62   0.105    -4.115286    .3905216
  postsec_w5 |   -.454934    1.59823    -0.28   0.776    -3.587407    2.677539
     univ_w5 |   17.00422          .        .       .            .           .
   tecvoc_w5 |  -.7261738    .842573    -0.86   0.389    -2.377587    .9252389
```

apprpast_w5	.7018613	.7269292	0.97	0.334	-.7228939	2.126616
agey	.1317772	.1166565	1.13	0.259	-.0968653	.3604197
agey_w4	-.0592432	.1394052	-0.42	0.671	-.3324724	.213986
agey_w5	-.0686628	.1352391	-0.51	0.612	-.3337266	.1964011
agey_sq	-.0015941	.0017632	-0.90	0.366	-.0050498	.0018616
agey_sq_w4	.0002374	.0020578	0.12	0.908	-.0037959	.0042707
agey_sq_w5	.0002957	.001979	0.15	0.881	-.0035831	.0041745
wave4	3.337657	2.473391	1.35	0.177	-1.5101	8.185414
wave5	3.427786	2.373743	1.44	0.149	-1.224666	8.080237
_cons	-9.099825	1.973191	-4.61	0.000	-12.96721	-5.232441
Public						
primary	1.424048	.5160243	2.76	0.006	.4126584	2.435437
middle	4.067017	.3413218	11.92	0.000	3.398039	4.735996
second	6.992592	.5323812	13.13	0.000	5.949144	8.03604
postsec	8.230427	.7550765	10.90	0.000	6.750504	9.71035
univ	33.89627	.8774988	38.63	0.000	32.1764	35.61614
tecvoc	2.004208	.3417473	5.86	0.000	1.334395	2.67402
apprpast	-.1638687	.2838163	-0.58	0.564	-.7201384	.392401
primary_w4	.4863957	.8366367	0.58	0.561	-1.153382	2.126174
middle_w4	.2010514	.5869647	0.34	0.732	-.9493784	1.351481
second_w4	-.7251895	.7718322	-0.94	0.347	-2.237953	.7875738
postsec_w4	.1528767	.9817958	0.16	0.876	-1.771408	2.077161
univ_w4	10.09776	.	.	.	.	.
tecvoc_w4	-1.215539	.5743929	-2.12	0.034	-2.341329	-.0897497
apprpast_w4	.2395056	.375192	0.64	0.523	-.4958572	.9748684
primary_w5	.5743109	.7581203	0.76	0.449	-.9115777	2.060199
middle_w5	-.3432325	.5398497	-0.64	0.525	-1.401319	.7148535
second_w5	-.4131896	.7153582	-0.58	0.564	-1.815266	.9888868
postsec_w5	.6637876	.9336869	0.71	0.477	-1.166205	2.49378
univ_w5	-3.747568	.	.	.	.	.
tecvoc_w5	-2.204464	.5067893	-4.35	0.000	-3.197753	-1.211175
apprpast_w5	.1578621	.3861657	0.41	0.683	-.5990087	.914733
agey	.4882757	.0698697	6.99	0.000	.3513337	.6252177
agey_w4	.0018673	.109003	0.02	0.986	-.2117747	.2155093
agey_w5	-.2356077	.0864372	-2.73	0.006	-.4050215	-.0661939
agey_sq	-.0055279	.0009467	-5.84	0.000	-.0073835	-.0036724
agey_sq_w4	.0000913	.00143	0.06	0.949	-.0027115	.0028941
agey_sq_w5	.0026979	.0011512	2.34	0.019	.0004416	.0049542
wave4	-1.362589	2.074229	-0.66	0.511	-5.428003	2.702825
wave5	3.665047	1.664553	2.20	0.028	.4025826	6.927512
_cons	-14.88124	1.281791	-11.61	0.000	-17.39351	-12.36898
Self-employment WITH employees						
primary	-1.470689	.8163909	-1.80	0.072	-3.070785	.1294082
middle	.5666462	.5425686	1.04	0.296	-.4967687	1.630061
second	-12.15828	1.188928	-10.23	0.000	-14.48854	-9.828024
postsec	-10.67729	.4893954	-21.82	0.000	-11.63649	-9.718092
univ	10.8846	1.159738	9.39	0.000	8.611558	13.15765
tecvoc	-6.440767	1.075494	-5.99	0.000	-8.548697	-4.332837
apprpast	.3583858	.503778	0.71	0.477	-.629001	1.345773
primary_w4	1.681304	.	.	.	.	.
middle_w4	.6095449	.	.	.	.	.
second_w4	14.47855	.	.	.	.	.
postsec_w4	-37.25222	.	.	.	.	.
univ_w4	-12.53518	.	.	.	.	.
tecvoc_w4	7.710264	.	.	.	.	.
apprpast_w4	.2454564	.	.	.	.	.
primary_w5	2.477248	.8650803	2.86	0.004	.7817222	4.172775
middle_w5	1.425265	.5824453	2.45	0.014	.2836933	2.566837
second_w5	15.83852	1.254222	12.63	0.000	13.38029	18.29675
postsec_w5	15.6277	.	.	.	.	.
univ_w5	15.4164	.	.	.	.	.
tecvoc_w5	6.671632	1.162843	5.74	0.000	4.392502	8.950763
apprpast_w5	.8855182	.537282	1.65	0.099	-.1675353	1.938572
agey	.0606641	.0515652	1.18	0.239	-.0404017	.16173
agey_w4	.1513227	.159315	0.95	0.342	-.1609289	.4635743
agey_w5	.230927	.	.	.	.	.
agey_sq	-.0012735	.0018299	-0.70	0.486	-.00486	.002313
agey_sq_w4	-.000992	.	.	.	.	.
agey_sq_w5	-.0022024	.0019469	-1.13	0.258	-.0060183	.0016134

```
       wave4 |   16.03096          .       .       .            .           .
       wave5 |   15.88842   3.169563     5.01   0.000     9.676189    22.10065
       _cons |   -25.8614   3.015253    -8.58   0.000    -31.77119   -19.95162
-------------+----------------------------------------------------------------
Self-employment without employees
     primary |   .1438926   .1002722     1.44   0.151    -.0526374    .3404225
      middle |   .9464484   .0974544     9.71   0.000     .7554413    1.137456
      second |   1.480335   .4596676     3.22   0.001     .5794029    2.381267
     postsec |   .8428012   .8874806     0.95   0.342    -.8966288    2.582231
        univ |   5.026622   1.234713     4.07   0.000     2.606629    7.446615
      tecvoc |   .8845752     .29363     3.01   0.003     .3090711    1.460079
    apprpast |   .7708499   .1077669     7.15   0.000     .5596306    .9820692
  primary_w4 |   .4665192    .134861     3.46   0.001     .2021965    .7308418
   middle_w4 |   .0257524   .1243806     0.21   0.836    -.2180292    .2695339
   second_w4 |   .1715655   .5208518     0.33   0.742    -.8492852    1.192416
  postsec_w4 |   .2312575    1.02918     0.22   0.822    -1.785899    2.248414
     univ_w4 |  -11.84916          .       .       .            .           .
   tecvoc_w4 |   .1292421   .4048239     0.32   0.750    -.6641982    .9226825
 apprpast_w4 |  -.0567229   .1349574    -0.42   0.674    -.3212346    .2077888
  primary_w5 |   .4978073    .134516     3.70   0.000     .2341608    .7614538
   middle_w5 |   .2821803   .1228252     2.30   0.022     .0414473    .5229133
   second_w5 |   .4081622   .5270938     0.77   0.439    -.6249227    1.441247
  postsec_w5 |   2.173142   .9688988     2.24   0.025     .2741357    4.072149
     univ_w5 |   17.46296          .       .       .            .           .
   tecvoc_w5 |   -.156062   .4075165    -0.38   0.702    -.9547796    .6426556
 apprpast_w5 |   .1796329   .1346358     1.33   0.182    -.0842484    .4435142
        agey |   .1658752   .0169533     9.78   0.000     .1326474    .1991031
     agey_w4 |   -.017407   .0230833    -0.75   0.451    -.0626495    .0278356
     agey_w5 |   .0063096   .0226891     0.28   0.781    -.0381602    .0507795
     agey_sq |  -.0021261   .0002282    -9.32   0.000    -.0025733   -.0016789
  agey_sq_w4 |   .0002311    .000305     0.76   0.449    -.0003667    .0008288
  agey_sq_w5 |   .0000304   .0003021     0.10   0.920    -.0005616    .0006225
       wave4 |   .0788741   .4129305     0.19   0.849    -.7304548     .888203
       wave5 |  -.9329027   .4033538    -2.31   0.021    -1.723462   -.1423438
       _cons |  -3.385611   .2956517   -11.45   0.000    -3.965078   -2.806145
-------------+----------------------------------------------------------------
Not employed |
     primary |   .2896837   .2150127     1.35   0.178    -.1317334    .7111008
      middle |    1.41836   .1863893     7.61   0.000     1.053044    1.783676
      second |   3.482741   .5058655     6.88   0.000     2.491263    4.474219
     postsec |   2.935723   .9318032     3.15   0.002     1.109422    4.762023
        univ |   30.75513          .       .       .            .           .
      tecvoc |   1.028721   .3907323     2.63   0.008     .2628995    1.794542
    apprpast |   .4855115   .2251584     2.16   0.031     .0442091     .926814
  primary_w4 |   .3356509   .2657499     1.26   0.207    -.1852093    .8565112
   middle_w4 |  -.3467296   .2267727    -1.53   0.126    -.7911959    .0977366
   second_w4 |   -1.14839   .5879983    -1.95   0.051    -2.300846    .0040651
  postsec_w4 |  -2.296043   1.439731    -1.59   0.111    -5.117863    .5257769
     univ_w4 |  -35.60532          .       .       .            .           .
   tecvoc_w4 |  -.3271687   .5712001    -0.57   0.567      -1.4467     .792363
 apprpast_w4 |  -.6270464   .2786145    -2.25   0.024    -1.173121    -.080972
  primary_w5 |   -.290753   .2447506    -1.19   0.235    -.7704554    .1889493
   middle_w5 |  -.6839874   .2101268    -3.26   0.001    -1.095828   -.2721465
   second_w5 |  -1.318991   .5706399    -2.31   0.021    -2.437425   -.2005575
  postsec_w5 |  -.3077783   1.020651    -0.30   0.763    -2.308218    1.692661
     univ_w5 |  -52.49944          .       .       .            .           .
   tecvoc_w5 |  -.2513447    .498412    -0.50   0.614    -1.228214     .725525
 apprpast_w5 |  -.4297943   .2529788    -1.70   0.089    -.9256237    .0660351
        agey |  -.0907816     .03533    -2.57   0.010    -.1600271    -.021536
     agey_w4 |  -.1193362   .0426474    -2.80   0.005    -.2029235   -.0357489
     agey_w5 |  -.0339837   .0390553    -0.87   0.384    -.1105306    .0425632
     agey_sq |   .0007723   .0005005     1.54   0.123    -.0002087    .0017534
  agey_sq_w4 |    .001287   .0005974     2.15   0.031      .000116    .0024579
  agey_sq_w5 |   .0003982   .0005485     0.73   0.468    -.0006768    .0014731
       wave4 |   2.935164   .6899624     4.25   0.000     1.582862    4.287465
       wave5 |    1.96317   .6360832     3.09   0.002     .7164699     3.20987
       _cons |  -.8140491   .5721007    -1.42   0.155    -1.935346    .3072477
------------------------------------------------------------------------------
(occ4b_num==Rural is the base outcome)
```