UNDERSTANDING UNEMPLOYMENT IN BOTSWANA

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THE IMPRESSIVE PERFORMANCE that Botswana has achieved since gaining independence in 1966 is one of the few success stories of economic development in sub-Saharan Africa. For the period 1965-1990, growth in per capita averaged 8.4 per cent per annum. In the 1990's the country has however experienced lower average annual growth rates of about 1.7 per cent (Freeman and Lindaur, 1999). The fast growth in the 1970s and 1980s enabled the country to move from a position of severe poverty to being one of the richest in the region, and is one of the few in sub-Saharan Africa now classified as a middle-income country. Unemployment is however one of the most serious problems that the country is facing. This paper explores the issues of unemployment and employment in Botswana' economy.

This paper looks at both the supply and demand side of the labour market. Our supply side analysis involves using the original 1995/96 Labour Force Survey data to understand the unemployed. Part of the process involves specifying a probit function to determine precisely the factors determining unemployment. The paper also looks at the demand for labour by various key sectors of the economy, and tries to determine the quantitative relationship between employment and its major determinants.

1. DETAILED BACKGROUND OF UNEMPLOYMENT IN BOTSWANA

Between 1991 and 1996, the labour force was growing at 3.4 per

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cent per annum, while the growth rate of formal sector employment was much lower, at one per cent per annum. As a result of this mismatch between the supply of labour and its demand, unemployment has generally been on the rise in the 1990s. The 1991 Population and Housing Census reported an unemployment rate of 13.9 per cent. This increased to 21.6 per cent in 1994, where it remained almost stable at 21.5 per cent in 1996 (CSO, 1997, 1998). Later estimates have however shown unemployment to be decreasing since 1998. A Botswana Demographic Survey of 1998 estimates unemployment to have declined to about 19.6 per cent in 1998. The 2001 budget speech reports a further fall in unemployment to approximately 15.8 per cent in the year 2000. A Botswana Aids Impact survey estimated unemployment to have risen slightly to 16.8 per cent in 2001 (CSO, 2002). The decline in unemployment from about 22 per cent in the mid-nineties was achieved despite the slower growth of non-mining GDP.

Presently the most comprehensive data source for unemployment is still the 1995/96 Labour Force Survey. The survey shows that 182,703 of the total labour force or 34.6 per cent were unemployed. Of these unemployed persons, 88,175 or 48 per cent were discouraged job seekers.

Disregarding those who were not actively looking for a job is what gives an unemployment rate of 21.5 per cent. The most affected age groups are the 15-19 and the 20-24, who recorded unemployment rates of 35 per cent and 39 per cent respectively among the actively seeking for work. When discouraged job seekers are included, the estimates are 58 and 50 per cent respectively (CSO, 1998). The youth, *i.e.* those aged between 12 and 34 years of age, were reported to be the major proportion of the unemployed, accounting for 69 per cent of the unemployed in 1995/96. The survey also reveals that 55 per cent of the unemployed were in the rural areas. Among those who were actively seeking employment, 59 per cent of them were in the urban areas, whereas among the discouraged, 71 per cent of them were found in the rural centres. What this indicates is that most of

those who are unsuccessful in their job hunt usually go back to the rural areas and perhaps end up engaging in subsistent agricultural activities.

The problem in the labour market of Botswana is not only that of open unemployment, but there is also significant underemployment. The 1995/96 Labour Force survey shows that a significant number of those who were employed during the survey period were classified as having been underemployed. Underemployment was defined in the survey as persons who worked for less than 35 hours in the reference survey week for an economic reason and who said they were available for more work (CSO, 1998). The total number of those who were underemployed stood at 28,789 or 8.3 per cent of those employed. Amongst these, approximately 60 per cent were female workers. Under-employment was found to be more prevalent among persons in rural areas, who made up 68 per cent of the total underemployed. Most of the underemployed (80 per cent) indicated that they were underemployed because they could not find more work (CSO, 1998).

2. SUPPLY SIDE ANALYSIS

To understand the supply side, we analysed data from the 1995/96 Labour Force Survey carried out by the Central Statistics Office. The 1995/96 survey was a standard sample of households across the country. It was a relatively large household survey, covering 45,016 individuals with a sampling ratio of 1/31 for households. For the data to be usable for our purposes, we created a file of the labour force, made of those between 15 and 65 who were active during the time of the survey. This group comprises those individuals aged 15-65 who were either employed or were actively looking for employment during the survey period. We disregard those who were not actively looking for employment during the survey period. This group includes students, the sick, old, and those who are simply discouraged from looking for work for one reason or another. The 15-65 age is a deviation from CSO's own definition of labour force that includes anybody aged 12 and

above. We also report results of an analysis of a number of key questions asked the unemployed in the survey. We estimated a probit function, to determine the major variables determining the probability of being employed as opposed to being unemployed. The general function is as follows:

$$\text{Pr (employment} = 1) = \varnothing(\beta_1 + \beta_2\text{Age} + \beta_3\text{Gender} + \beta_4\text{Education} + \beta_5\text{Marrital Status} + \beta_6\text{Urban dweller)} \quad [1]$$

We run the probit for those fully employed, who were either fulltime or part-time and those who indicated that they were underemployed, which is defined as those who worked less than 35 hours a week. Results for these two groups are reported separately. Those unemployed (employment=0) consist of only those who were actively looking for employment during the survey period, which is a conventional way of defining unemployment.

(a) Probit Results

Table 1 shows probit results from the data for those who were fully employed, *i.e* those who reported working more than 35 hours a week. The most important determinants of employment are age, gender, and training. Being male increases your chances of being employed compared to being female. The probability increases by about 0.082 if you are male as against being female. One plausible explanation is that there are less employment opportunities for females than males given the past division of labour. Most of the employment opportunities for the less educated are in the construction, manufacturing, and other labour intensive industries and most occupations in these industries have previously being classified as "male" jobs. Females have however, been breaking this occupational segregation by entering into the so-called male jobs category.

Age generally influences the probability of employment in a positive manner. As age increases, the chances of being unemployed decreases. The probability increases by 0.00556 for a small change in age as indicated by DF/dx in the last column of

Table 1. The behaviour of the variable age conforms to the human capital theory in the sense that the employability of workers increases with age. Increasing age is usually associated with more on-the-job experience and more skills in general.

As expected, education significantly enhances the chances of being employed. An infinitesimal change in education increases the probability of being employed by 0.0027. Less education is usually associated with lower-skilled and less permanent jobs. The results on education are reflective of the fact that Botswana's unemployment is largely structural. Most of the unemployed have less education and/or no useful skills. Whether the person was resident in an urban centre increases the chances of him being unemployed as compared to the person who was residing in the rural area but the variable is not significantly different from zero. Since most formal sector jobs are located in the urban areas, it is very likely that those seeking for jobs will be found in the urban areas, where the jobs are also located. Those in the rural areas will normally be those who have given up looking for a job, i.e. those who are discouraged. That is to be expected when jobs are concentrated in the urban centre.

Despite the continued pronouncement of Government to pursue a policy of balanced growth, employment creation is concentrated in the urban areas. Most good jobs are still found in the urban areas with the effect that those jobs act as magnets to the labour force, but the jobs created are not adequate for the growing labour force. A number of economic factors account for the lack of attractiveness of the rural areas for business. One is that the infrastructure and facilities in general are not as developed as the ones in the urban areas. Secondly, the market is limited and may not be as good as the urban market, given that people in the rural areas are the worst affected by poverty. There are relatively few rural persons who have sufficient incomes to make up a worthwhile market for profitable business.

The results in Table 1 show that marital status significantly matters for employment. Being married significantly increases the probability of being employed as compared to being single. Part

of the reason could be that married people are relatively stable and therefore employers would prefer them to a single person. The explanation could also run the other way, *i.e.* people with employment may also be able to afford marriage because they have the resources from their employment. This is likely to be the case especially in Botswana where marriages are still very expensive because of such requirements as payment of the dowry, a need to have big wedding festival, *etc.*

Table 1.   Probit regression of employment probabilities-full employment

Variables	Coefficient	Z-Value	DF/dX[1]
Constant	-0.135	-2.08	-
Age	0.025	16.3	0.00556
Urban dweller	0.019	0.634	0.0042
Gender	0.376	12.57	0.082
Married	0.16	3.924	0.033
Education	0.012	3.9	.0027
Pseudo R-square	0.0776		
N	11525		

Table 2 shows the results of the probit model with age grouped into age groups ranging from 15-15 to the oldest age group of 56-65. The age group of 26-35 is used as a reference point for the other age groups in the analysis. The age group 15-25 has a negative co-efficient compared to 26-35 years of age showing that being younger than the reference age group reduces the chances of being employed compared to the reference group. This is likely since this group has less skills and labour market experience to make them marketable in the labour market compared to those aged 26-35. They are also likely to have fewer years of education compared to the reference group (since most of them would already have dropped out of school). All the other age groups have positive significant coefficients compared to the reference age group, showing that they are more likely to be employed than the reference group. Since they are older they are more likely to

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[1]   DF/dx measures the change in the probability for an infinitesimal change in each independent, continuous variable, and by default, the discrete change in the probability for dummy variables.

have more labour market experience than the 26-35 age group. This confirms the results obtained in Table 1 that an increase in age increases the ability of workers to find jobs in general. Adding training to the probit equation produces the wrong sign for the education coefficient. This is partly a result of the strong correlation between education and training. Those with training are more likely to be the ones with education. Training however influences the probability of employment much more significantly than education. The rest of the variables, *i.e.* gender, marital status, and whether the person was in an urban or rural area have the same effect on the probability of being employment as found in Table 1.

Table 2.   Probit regression of employment probabilities - age groups and training

Variables	Coefficient	Z-Value
Constant	0,813	19.9
Age 15-25	-0.413	-10.9
Age 36-45	0.17	3.7
Age 46-55	0.3008	4.8
Age 56-65	0.407	5.8
Urban dweller	0.12	2.05
Gender	0.375	12.4
Married	0.138	3.3
Has training	0.45	9.07
Education	-0.008	-2.3
Pseudo R-square	0.0806	
N	11525	

Table 3 presents probit results for males and females separately.

Table 3.   Probit regression of employment probabilities - full employment

Variables	A. Males		B. Females	
	Coefficient	Z-Value	Coefficient	Z-Value
Constant	0.648	7.3	-0.84	-16.34
Age	0.15	6.45	0.14	3.9
Urban dweller	0.077	1.6	0.38	7.4
Married	0.34	4.9	0.025	6.2
Training	0.399	5.6	0.1	2.34
Pseudo R-square	0.0630		0.0330	
N	6074		5451	

The age variable, training, and marital status have similar results to those obtained from the combined group. Residence however

gives different results for males and females even though the signs of the coefficients are not changed. For males, residing in the urban area insignificantly makes them less likely to be employed compared to being in the rural areas. For women, residing in the urban centre significantly increases the chances of them being employed compared to being in the rural areas.

Table 4 presents results for employment for those who reported working less than 35 hours a week at the time of the survey. The results show a generally similar trend to the ones for those working more than 35 hours a week, *i.e.* those not underemployed. The variable age behaves the same way as in the model predicting the chances of employment for those who worked more than 35 hours a week. Being in the age 15-25 reduces the chances of being employed significantly compared to the age group of 26-35. Being in the age group older than 26-35 increases the probability of being employed compared to the age group 26-35. For those underemployed, being in the rural areas increases their chances of being underemployed compared to residing in the urban areas. This is to be expected since most of the underemployed were located in the rural areas.

Table 4.   Probit regression of employment probabilities for the underemployed

Variables	Coefficient	Z-Value
Constant	0,517	10.8
Age 15-25	-0.289	-6.098
Age 36-45	0.17	2.97
Age 46-55	0.386	5.2
Age 56-65	0.65	8.4
Urban dweller	-0.36	-8.6
Gender	0.22	6.1
Married	0.12	2.4
Has training	0.35	5.4
Education	-0.015	-3.45
Pseudo R-square	0.0902	
N	5803	

Being male and having training significantly increase the chances of being underemployed as compared to being openly unemployed. Education has a negative and significant coefficient, implying that those who are more educated are more likely to be

openly unemployed than to be underemployed. It is more likely that the more educated have some family support to allow them to remain openly unemployed while searching for employment that matches their education and skills, while the less educated, who are also less likely to have family support, cannot afford to be openly unemployed. Jobs in which underemployment is likely to occur are more likely to pay lower wages as well, for example, agricultural activities and some informal sector activities. Given that the more educated are also more likely to have higher reservation wages, they would prefer to be openly unemployed than choose to be underemployed in a job that pays little.

(b) Other Major Results from LFS Data

To further investigate the issue about the unemployed, data on the unemployed were selected and further analysed (see Tables 5-7). Of the sample of unemployed who were 4152 in number, 2302 or 55 per cent of them had made an effort to look for a job. This means that 45 per cent had not made an effort to look for a job. For those who looked for a job, 2221 or 97 per cent of them were looking for a paid wage job. Only three per cent of them were looking for self-employment in either small-scale business or agriculture. Asked how long they had been available for work, about 51 per cent of them indicated that they had been available for more than 1 year; 31 per cent of them were available for more than two years. For most of these people, therefore, unemployment was prolonged. For those who did not look for work in the last 30 days prior to the survey, about 55 per cent thought no work was available, while 28 per cent were waiting to start in new jobs, or with some business or agricultural activity.

Table 5.   What sort of work were you looking for?

Response	Frequency (%)
Paid wage employment	2221(97)
Self employment-small business	52(2)
Self employment-agriculture	9(1)
Total	2282 (100)

Source: CSO 1998, 1995/96 Labour Force Survey data

Table 6.   For how long were you available for work?

Response	Frequency (%)
Less than 1 month	149(7)
1 month but less than 3 months	277(12)
3 months but less than 6 months	262(11)
6 months than less than 1 year	380 (17)
1 year but less than 2 years	493 (22)
More than 2 years	721 (31)
Total	2282(100)

Source: CSO 1998, 1995/96 Labour Force Survey data

Table 7.   Why did you not look for work during the last 30 days?

Response	Frequency (%)
Thought no work available	990(55)
Awaiting reply	153(8)
Waiting to start arranged job	67(4)
Occupied with household duties	513(28)
Other Reasons	88(5)
Total	1811(100)

Source: CSO 1998, 1995/96 Labour Force Survey data

3.   DEMAND SIDE ANALYSIS

According to the 1995/96 Labour Force Survey, the largest sector of employment was government with 33 per cent of total employment. This was followed by the private sector with 32 per cent, and the informal sector with 17 per cent. Traditional agriculture and parastatals absorbed 14 and 5 per cent respectively. At the level of industry, the major industrial employers are public administration (17 per cent), wholesale, hotels, restaurants and trade (16 per cent), agriculture (16 per cent), and construction (12 per cent). Manufacturing had a share of 9 per cent to employment.

An understanding of the determinants of employment from a demand side ideally requires survey data of industrial enterprises. Unfortunately such data are not available to estimate such a production function. One would therefore be able to decompose the actual change in employment over a period into those parts due to output growth, structural change and technical change. Due to data limitations, this paper estimates employment functions for the various sectors in the economy. The sectors chosen are: agriculture, construction, wholesale and retail, and

manufacturing. Except for manufacturing, these sectors make relatively larger contributions to employment in Botswana. Manufacturing is included because this is one of the major sectors in which government would like to diversify the economy into.

The demand function used is a simple log model specified as follows:

$$\ln E_i = a + b \ln Y_i + c \ln Wi + d \text{ Min.Wage} \qquad [2]$$

where E is employment, Y is output (at constant prices), W is monthly wage, Min.Wage is minimum wage and i denotes the sector. Specifying the function in log form allows us to interpret the coefficients as elasticities. Using Stata, we also checked for the suitability of the log transformation, and found that the distribution of all the variables more closely approximated the normal distribution.

Using data for years 1984-1998, the following results are obtained. Table 8 presents the results for four sectors which, except for agriculture, appear to be satisfactory with so few degrees of freedom. For all the other three sectors, the adjusted R squared is more than 90 per cent, implying that the model explains more than 90 per cent of the variation in employment.

Table 8. Regression results by different sectors-1984-1998.
(Dependent variable = log of employment).

Variable	Agriculture	Commerce	Manufacturing	Construction
Constant	0.78(0.28)	0.596(0.43)	-2.19(0.946)	0.038(0.068)
Logwage	-0.69(-2.446)*	0.0015(0.01)	-0.09(-0.43)	0.4(1.36)
Log nmgdp	0.010(1.276)	0.35(4.7)*	0.26(3.9)*	0.25(4.32)*
Logminwage	_____	-0.015(-0.69)	-0.43(-1.1)	-5.8(-1.8)
Share of output	4.63(0.78)	-1.06(-0.7)	2.77(0.37)	6.08(0.68)
Adjusted R²	0.53	0.95	0.94	0.95
Sample Size	15	15	15	15
Durbin Watson	2.05	1.248	1.77	2.25

Note: t-values are reported in brackets.
* Significant at 5 per cent level or better.

Employment is responsive to real non-mining output in all the four sectors except agriculture. The biggest elasticity is found in commerce, where a 10 per cent increase in non-mining GDP

increases employment by 3.5 per cent. A ten per cent increase in non-mining GDP increases employment by 2.6 and 2.5 per cent for manufacturing and construction, respectively. For the agricultural sector, changes in non-mining GDP have no significant impact on employment in that sector.

The wage rate is not a significant determinant of employment in all the other sectors, except in the agricultural sector. In fact in the commerce and construction sectors, the relationship between employment and real wages, even though insignificant, is positive. In the agricultural sector, however, wages and employment are related negatively, suggesting that increasing the wage by 10 per cent is likely to significantly reduce employment by about 6.9 per cent. These results could be very worrying for those who have been advocating for extending the coverage of minimum wages to the commercial agricultural sector. For the other sectors, the results indicate that wages were set at appropriate levels not to hurt employment creation.

The minimum wage applied to the three sectors, even though having the right signs, is insignificant at the 5 per cent level for all the three sectors where it applies. This suggests that the minimum wage is not set at too high a level to act as a deterrent to employment creation by the private sector. In fact studies done using the 1995/96 LFS suggest that compliance to the minimum wage was not a major problem. Scoville and Nyamadzabo (1988) also show that firms did not find the paying of a minimum wage a particular deterrent to their employment creation initiatives, suggesting that minimum wages in Botswana are set at a level low enough not to deter employment creation and retention of existing workers.

For the other 3 sectors, except Commerce, the change in their share of total output positively leads to an increase in employment, even though the variable is not significant at the 5 per cent level of significance.

4. CONCLUSIONS

Unemployment is still quite high in Botswana, especially if one

considers the discouraged and underemployed sections of the society. Using the probit analysis, we have shown that women are more likely to be unemployed than men in Botswana's labour market. This could be a result of previous occupational segregation that leaves women with fewer job opportunities in the "women" jobs. Very little could be done about occupational segregation since most of it is shaped at the "socialisation" level. However, more could be done in terms of increasing job opportunities in general, which should reduce unemployment for both men and women.

The paper also shows that education, training and age significantly determine the probability of being employed. The unemployed are more likely to be the youth, those with no or little education and those with no training. A policy of investing in education and training of the youth would therefore be in the right direction. The reality about Botswana's unemployment is that it co-exists side by side with vacant posts, which are only mostly filled by expatriate personnel. The government policy of investing in education and training is therefore along the right route. Unfortunately, due to shortage of space in the upper education levels (Cambridge and tertiary) a significant proportion of students are not able to proceed to those levels. These are the people who are likely to be unemployed.

There are two major issues about the limitations of space at higher levels of education. One is that not allowing people to proceed to higher levels because of space and not because people are not capable is itself a total waste of resources. Secondly, as we continue to have an excess supply of workers with education certificates, the labour market is responding by escalating the minimum requirement for jobs. Workers are also accepting jobs that were previously occupied by people who had lower education levels than them[2]. In order words, education qualifications are devalued in the labour market. As educational qualifications

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[2]   Siphambe, (2000) shows that filtering down of workers as the labour market tightens is major characteristic of Botswana's labour market.

continue to be devalued in the labour market, there is likely to be (as is already evident) increased pressure for more places at the upper secondary and tertiary education levels. Some governments normally respond to such pressures by expanding those levels of education as well. A fact that must be reckoned with is that such an approach just postpones the real problem. As Kann *et al* (1988:127) observe, giving people additional education does not itself create jobs directly (except for the teaching staff and those who choose to be self employed); jobs are created by investment and by government job-creation policies, not by expanding schools alone. This therefore means that employment creation has to be pursued vigorously, and perhaps one ought to encourage it through the learning process, teaching persons about the concept of self-employment.

Given that the unemployment exists side by side with vacant posts, there are issues about the appropriateness of the education system*, i.e.* whether it is producing the right skills for the labour market. Training institutions in Botswana run the risk of training graduates that are not appropriate for the labour market because they do not make any tracer studies of their graduates. Kelly (1999) for instance shows that firms prefer to do on-the-job training for their artisans rather than employ graduates from the vocational training schools. As a result, graduates of vocational schools face higher unemployment than those trained in general education, even though there are indications that their demand by local firms is quite high. The issue therefore is not just about increasing intakes into the institutions but getting to know the skills needed by the different sectors and producing those right skills. After suspending the production of manpower plans since 1986, the Botswana Government has responded to this problem and other related ones by coming up with a manpower plan, which it has suggested should be done on a regular basis in future. This should go a long way in solving the unemployment problem, especially unemployment that results from the fact that there is a mismatch between the available skills and the skills demanded by firms. Training institutions should make regular trace studies to

check the relevance of their programmes for the labour market.

On the demand side, the study has shown that the responses of employment to changes in output are quite significant. These results indicate that increasing non-mining GDP is a good way to generate employment. Most of these sectors are labour intensive and therefore have significant employment elasticities *vis-vis* output. The highest response of employment to output is commerce, which is one of the potential sectors for economic diversification, especially tourism. In recognition of employment and other problems associated with the dominance of diamond mining, economic diversification has always been in the forefront of the Botswana government's development strategy, as indicated by the successive themes of the National development Plans. Economic diversification has however not progressed as fast as was anticipated. There is therefore need to emphasise and support investment projects that are more labour intensive and have relatively strong linkages with the rest of the economy.

The policy of wage restraint followed by government for most of the years has left wages at levels low enough not to be a significant deterrent to employment creation. What these results indicate at the very least is that Botswana has high levels of unemployment not because wages are set too high in most of the sectors but because of other factors. The problem is mainly that demand for labour has not been able to keep pace with an increasing labour force. Dealing with this particular problem is a general problem not only for Botswana but also for other developing countries.

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