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Determinants of Unemployment in Ghana

William Baah-Boateng*

***Abstract*:** Unemployment is often cited as a measure of the low employment content of Ghana's strong growth performance over the past three decades. The paper presents evidence to suggest that employment growth in Ghana continues to trail economic growth due to high growth of low employment generating sectors against sluggish growth of high labour absorption sectors. A cross-sectional estimation of a probit regression model also indicates a strong effect of demand factors on unemployment, indicating a weak employment generating impact of economic growth. Empirical analysis also confirms higher vulnerability of youth and urban dwellers to unemployment with education and gender explaining unemployment in some instances. Reservation wage is also observed to have an increasing effect of unemployment. The paper recommends policies that promote investment in agriculture and manufacturing which is associated with higher employment elasticity of output. High incidence of unemployment among the youth and secondary school leavers in the most recent period requires targeted intervention including support for entrepreneurial training and start-up capital to attract young school leavers to become 'creators' rather than 'seekers' of jobs. A downward review of expectations on the part of jobseekers in terms of their reservation wage could help reduce unemployment in Ghana.

1. Introduction

Ghana's growth performance has been quite impressive since 1984, prompting Leechor (1994) to describe the country's economy as a frontrunner in the economic reform process. Ghana recorded about 5.2 per cent annual average growth between 1984 and 2010 and became a lower middle income country after the rebasing of its national accounts in 2006, which pushed the country's annual average growth to 8.5 per cent between 2006 and 2011. Ghana's real GDP growth reached about 15.2 per cent when the country began its commercial oil production in 2011. In spite of this strong growth performance, employment generation remains a challenge. Ghana recorded a decline in employment elasticity of output from 0.64 in the 1990s to 0.4 during 2005–2008 (ILO, 2008). The country continues to battle with high incidence of joblessness and job-seeking particularly in recent times. Estimates from the 2010 Population and Housing Census indicate that 14 per cent of the country's working age population was inactive outside the school system while 633,994 people, representing 5.8 per cent of the labour force, were unemployed.

Unemployment constitutes one of the key labour market challenges in Ghana. It reflects the willingness and desire of jobless individuals to work and an indication of the health of an economy. Limited job openings available to the labour force suggest policy failure with socio-political and economic implications. The inability of jobseekers to secure gainful employment tends to create disaffection among these people and causes some of them, especially the youth, to resort to social vices such as robbery, prostitution and political unrest. Indeed, unemployment constitutes underutilization of human resources and the failure to prevent these resources going to waste does not only make them vulnerable to poverty but is also a loss of potential income tax revenue to the nation.

The main purpose of this paper is to analyse the determinants of unemployment in Ghana by drawing on data from national accounts, population and housing censuses and nationally representative household surveys. The paper provides an overview of unemployment overtime and examines the sources of the phenomenon. It also applies a binary regression estimation technique to three different cross-sectional nationally representative household survey datasets in 1991/92, 1998/99 and 2005/06 to analyse determinants of unemployment from the perspective of both demand for and supply of labour. Many studies on unemployment in

*Department of Economics, University of Ghana, Legon, Accra, Ghana. Tel: +233-302-501485; Fax: +233-302-501486; e-mail: wbaahboat@post.harvard.edu or wbboateng@ug.edu.gh

Ghana and Africa have often adopted a descriptive approach (e.g. Boateng, 1994) in examining the phenomenon while a few that apply a quantitative approach tend to focus on the supply-side of the market (e.g. Naudé and Sermaga-Zake, 2001; Sackey and Osei, 2006). The combination of demand and supply factors in a cross-sectional analysis of the determinants of unemployment, augmented by a comprehensive overview of the demand and supply causes of unemployment overtime at the national and sectoral levels indicate the strength of the paper. The descriptive and empirical analysis shows a strong influence of demand factors on unemployment in Ghana.

The paper is structured into five sections with the theoretical and empirical literature discussed in Section 2. Section 3 focuses on the overview of unemployment in Ghana followed by econometric analysis of unemployment from a cross-sectional perspective in Section 4 while Section 5 presents the conclusion and policy recommendations.

2. Theoretical Framework and Empirical Literature

2.1 The Concept of Unemployment in Brief

Unemployment is a phenomenon of job-seeking resulting out of joblessness. The International Conference of Labour Statisticians (ICLS) of the ILO considers a person of working age (e.g. 15+ years in Ghana) to be unemployed if during a specified reference period (either a day or a week), that person had been:

- 'without work', not even for one hour in paid employment or self-employment of the type covered by the international definition of employment;
- 'currently available for work', whether for paid employment or self-employment; and
- 'seeking work', by taking active steps in a specified recent period to seek paid employment or self-employment.

In effect, a jobless person who is available for work but fails to make an effort to seek work is described as a 'discouraged worker' rather than unemployed. Additionally, a person who is working but engages in job-seeking for the purpose of obtaining additional income or diversifying his/her job portfolio among other reasons as a moonlighter (Baah-Boateng *et al*., 2013) cannot be described as unemployed.

2.2 Theoretical Explanation of Unemployment

The phenomenon of unemployment has been explained from different perspectives in the economic literature. Within the neoclassical framework, the labour market is deemed to always clear on the basis of the assumption of flexible wages and perfect information. If this rule is distorted by wage rigidity due to institutional factors (e.g. minimum wage legislation) the labour market may not clear, causing classical involuntary unemployment to occur. Involuntary unemployment is said to exist if individuals cannot obtain work even if they are prepared to accept lower real wages or poorer conditions than similar qualified workers who are currently in employment (Shackleton, 1985). Clearly, holding wages above the market clearing wage in compliance with minimum wage legislation has the effect of creating surplus labour in the market.

Unemployment also arises when firms decide to pay higher wages above the equilibrium wage as incentive to increase efficiency of employees. According to the efficiency wage model, wages are kept higher above the market clearing wage with the view to averting shirking behaviour of employees (see Shapiro and Stiglitz, 1984) or reducing labour turnover (see Salop, 1979 and Stiglitz, 1974). Efficiency wage is also paid by firms to avoid adverse selection of job applicants (see Akerlof, 1970) or as a gift of exchange for high productivity from workers (see Akerlof, 1982). Within the efficiency wage framework, it becomes difficult for jobseekers to secure employment since the increased wage bills and workers' high productivity would not make it appealing for firms to engage more hands, thus creating unemployment.

The insider-outsider model of wage-setting behaviour of firms also provides institutional explanation of involuntary unemployment (Lindbeck and Snower, 1988). The model argues that unemployment arises when wages are determined by taking into account only the interests of those employed (insiders), without regard to the interests of those seeking to be employed referred to as the outsiders (see e.g. Bentolila *et al*., 2011). The effort of firms to reduce cost of labour turnover which

prevents them from hiring outsiders gives some kind of protection to insiders even in the midst of their higher wage demands, creating limited avenues for outsiders to get employed. Besides, insiders may resist competition with outsiders by refusing to cooperate with or by harassing outsiders who try to underbid the wages of incumbent workers to escape unemployment.

From the Keynesian perspective, unemployment largely arises from deficiencies in aggregate demand over certain periods in the business cycle such that jobs created are not enough for everyone who wants to work (Keynes, 1936). This type of unemployment is cyclical and involuntary because the unemployed are constrained by limited job availability. Related to demand deficient unemployment is seasonal unemployment, created by predictable seasonal variation in demand associated with climatic seasons.

Unemployment could also occur when the labour market clears. This is referred to as voluntary unemployment resulting from the time it takes the individual to find and move into a new job or the time and resources it takes an employer to identify and recruit suitable workers to fill vacancies. This type of unemployment is called frictional search unemployment which is of short duration. Search theory has been used to analyse frictional unemployment resulting from job hunting by workers (see Stigler, 1962; Phelps, 1970). In contrast to the neoclassical claim of perfect market information, jobseekers invest in job search due to imperfect information over one's best job opportunity while employers also search for availability of desired skill. Structural unemployment resulting from a mismatch between demand for labour and the skills and location of jobseekers is another type of voluntary unemployment. It is generally related to unemployment created by technological advancement that makes skills of some workers obsolete.

Unemployment has also been explained under the implicit contract framework. The theory argues that a rational worker will choose an unstable job (i.e. a job with a higher probability of layoff), if that job offers higher wages than choose a job which offers stable but lower wages, in a situation where unemployment insurance benefits or other forms of social security exist so as to maximize lifetime earnings. Consequently, unemployment may be created in an unstable labour market if such benefits (social safety nets for the unemployed) are increased (see Azariadis, 1975; Burdett and Hool, 1983). The underlying cause of unemployment according to the implicit contract theory is the relative risk aversion of employees. Rational jobseekers would prefer immediate high and certain wages over the short-run to low but stable income spread well into the future.

2.3 Brief Empirical Literature Survey

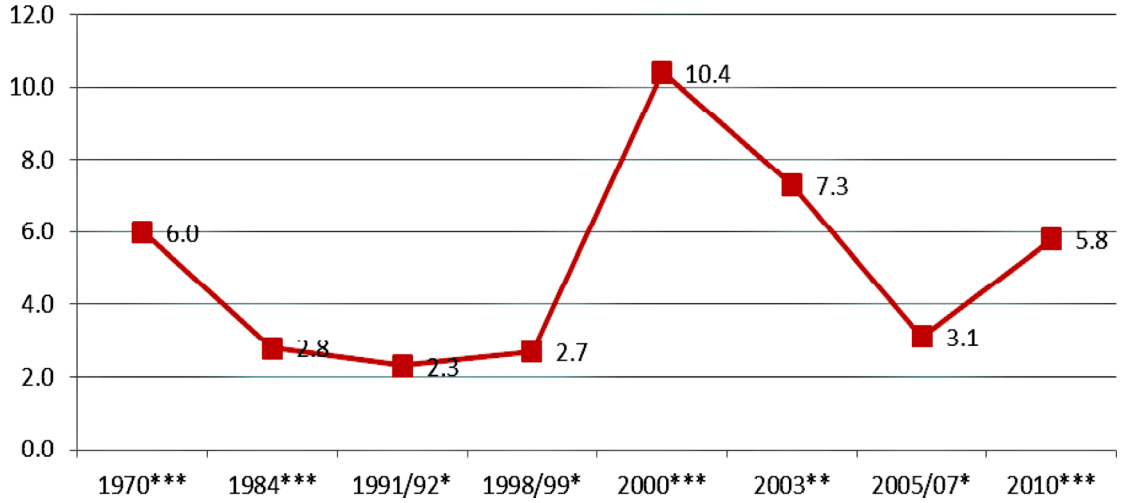
Empirical research on the sources of unemployment has often focused on the supply-side of the market. Some of the empirical literature has shown that unemployment tends to be higher for the young than the old (see e.g. Johnson and Layard, 1993, AfDB *et al*., 2012, UNECA, 2005). This may reflect job shopping by younger workers and the lack of job opportunities as workers approach retiring age (Blackaby *et al*., 1999). Sackey and Osei (2006) argued that younger people are more likely to be unemployed due to the fact that they have lower labour market skills relative to older cohorts. Anyanwu (2013) cited a number of reasons that accounts for the labour market bias against young people including the fact that younger workers tend to be easier and less expensive to dismiss than older ones; they are likely to face the brunt of layoffs due to the perceived lower cost to establishments of releasing them relative to their older counterparts.

Unemployment is also identified to be an urban phenomenon (see e.g. Dickens and Lang, 1995; Boateng, 1994). According to AfDB *et al*. (2012), in some countries in Africa, the urban youth unemployment rate is estimated to be more than six times higher than the rate in rural areas. Generally, residing in an urban area relative to rural localities increases the probability of being unemployed in Ghana (Sackey and Osei, 2006). Kingdom and Knight (2004) observed an increase in the probability of an urban dweller becoming unemployed by 8.6 percentage points in South Africa.

Gender differences of unemployment have also been established in Sri Lanka by Dickens and Lang (1995) who found higher unemployment rates among women than men. In Ghana, however, Baah-Boateng (2012) found unemployment to be a bigger labour market challenge for men than women from 1960, until 2000 when the reverse occurred. He attributed the higher unemployment rate among women than men since 2000, to the increasing participation of women in market work on account of the improved education of women. Naudé and Serumaga-Zake (2001) found gender as one of the significant determinants of unemployment in South Africa's North-West province.

Another emerging concern about unemployment is the increasing unemployment rate among the educated than uneducated. For example, Dickens and Lang (1995) found unemployment to be highest among the highly educated Sri Lankan youth (aged 15–24) and declining rapidly thereafter. In addition, AfDB *et al*. (2012) found unemployment to be high among educated than the

Figure 1: Rates of unemployment in Ghana, 1970–2010 (%)



* Ghana Living Standards Survey 3, 4 and 5; ** Core Welafre Indicators Questionnaire; *** Population and Housing Census.
Source: Computed/Constructed from GLSS, CWIQ and Population and Housing Census.

uneducated particularly in middle income countries than low income countries. However, they contend that the educated unemployed are more likely to eventually escape unemployment than those with lower levels of qualification. Sackey and Osei (2006) also observed that basic and senior secondary levels of education are associated with relatively more unemployment in Ghana due to the relatively lower levels of such education compared to those with tertiary education.

At the macro level, Okun's argument of linking unemployment to changes in the difference between potential and GDP provides some empirical understanding of the demand-side explanation to unemployment. There is a direct correlation between a percentage GDP gap (i.e. difference between potential and actual GDP) and unemployment rate in excess of natural rate of unemployment (Okun, 1962). However, the slow response of employment to GDP growth in some countries has rendered Okun's argument somewhat outdated since growth, driven by high capital and technologically minded sectors of mining and oil might not cause employment growth in line with GDP growth.

Anyanwu (2013) used available cross-sectional data over a period of 1991–2009 in Africa to show an increasing effect of a nation's domestic investment rate on youth employment and by implication a decreasing effect on youth unemployment in sub-Saharan Africa (SSA) with the reverse reported in North Africa. He further found a statistically significant positive effect of real GDP growth on youth employment in SSA and North Africa suggesting a decreasing effect of economic growth on youth unemployment in Africa.

Using the data from the Current Population Survey (CPS), Valletta and Kuang (2011) came out with results that strongly suggest that weak labour demand plays a key role in prolonged unemployment duration. While mismatches may cause available jobs to go unfilled and thereby hold down employment growth, Valletta and Kuang (2011) could not directly disprove explanations related to the supply of labour, such as mismatches between worker skills and employer skill needs.

3. Overview of Unemployment in Ghana

3.1 The Situation Analysis

The unemployment rate in Ghana has remained generally low over the years ranging from 2.8 per cent in 1984 to 10.4 per cent in 2010 based on population and housing census data and within the range of 2.3 per cent in 1991/92 and 3.1 per cent in 2005/06 based on Ghana Living Standards Survey (GLSS) dataset (Figure 1). A 7.3 per cent unemployment rate was also recorded in 2003 from Core Welfare Indicators Questionnaires (CWIQ). The 5.8 per cent rate recorded in Ghana in 2010 is lower than

Table 1: Unemployment rate by sex, location and education (%)

Demographic group	1991/92	1998/99	2005/06
Sex			
Male	2.2	3.4	3.2
Female	2.4	2.2	3.0
Location			
Rural	0.5	1.2	1.3
Urban	6.7	5.8	6.1
Age			
15–24	5.2	5.0	6.6
25–35	2.3	3.9	3.7
36–50	1.2	1.4	1.4
51–64	1.4	1.5	1.3
65+	0.7	1.5	1.0
Education			
No education	0.7	1.1	1.4
Basic education	3.6	4.0	3.3
Secondary+ education	4.3	4.6	7.2
Tertiary	8.0	6.5	5.6

Source: Computed by author from GLSS3, 4 and 5, Ghana Statistical Service.

the world average of 6.1 per cent and SSA and North Africa's averages of 8.2 per cent and 9.6 per cent respectively (ILO, 2012).

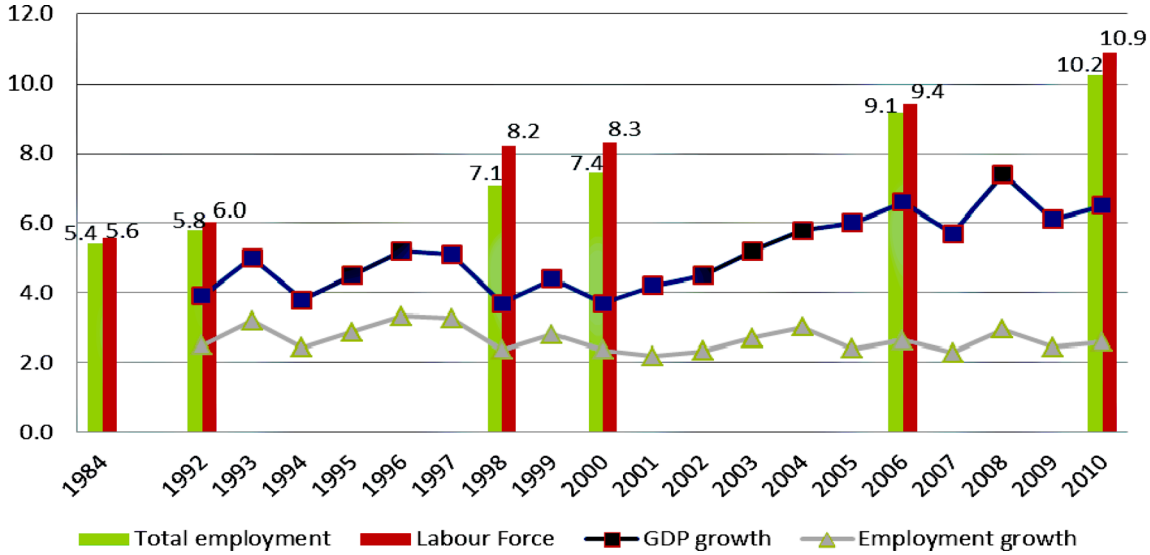
Unemployment rates in Ghana decline with age, with the highest rate among the youth ranging from 5.0 per cent in 1998/99 to 6.6 per cent in 2005/06 compared with less than 4 per cent for other age groups (Table 1). This observation is explained by the fact that the youth are more vulnerable in times of economic challenges than their older counterparts as a result of their limited labour market experience. In addition, they also lack job search experience and labour market information to facilitate their job acquisition. Even in times of economic upturn, lack of work experience combined with lack of social capital puts the youth at the disadvantage for new job opportunities.

The gender dimension of unemployment in Ghana does not show a clear pattern of difference between the two sexes. The rate is higher for women than men in 1991/92 while the reverse is the case in 1998/99 and 2005/06 (Table 1). Estimates from the 2000 and 2010 Population and Housing censuses indicate a rate of 10.7 per cent and 6.3 per cent respectively for females compared with 10.1 per cent and 5.4 per cent for males. The higher unemployment rate among women than men in recent times have been attributed to the increasing desire of women to participate in market work reflecting in the consistent increase in the labour force participation rate of women against the backdrop of fewer employment opportunities (Baah-Boateng, 2012).

Ghana's unemployment is also found to be more prevalent in urban than rural areas. The rate is thirteen times higher in urban areas in 1991/92 and more than four times higher in 1998/99 and 2005/06 than in rural areas. The regular migration of people, particularly the youth, from rural areas to the urban centres in search of better economic prospects which are not easy to come by, largely explains the phenomenon of the high urban unemployment rate in Ghana. The non-attraction of rural life due to the absence of amenities such as electricity and water among other things and the low income associated with rural economic activity, dominated by farming, also tend to push many rural youth into the cities.

The education dimension of unemployment in Ghana points to a higher rate among the educated than the uneducated. As reported in Table 1, the highest unemployment rates in 1991/92 and 1998/99 were reported among those with tertiary education followed by secondary school leavers while those with no formal education have the lowest rate. In 2005/06, those with secondary education experienced the highest unemployment rate followed by tertiary graduates while non-educated people experienced the lowest rate. The low unemployment rate among the uneducated and those with basic education is largely explained by the fact that, with limited or no access to formal employment, these people clearly have no option than to settle with informal agriculture and non-technical jobs which do not require any formal education. On the other hand, limited formal sector job openings for those

Figure 2: Labour force, employment and economic growth 1984–2010



Note: Labour force and total employment are in millions while employment and GDP growth are in percentages.
Source: Constructed and computed from National Accounts, Ghana Living Standards Survey (GLSS) Dataset and Population and Housing Census.

with secondary and tertiary education coupled with the non-attractiveness of informal sector employment also explain the higher unemployment rates among these people.

3.2 Accounting for the Sources of Ghana's Unemployment Problem

Unemployment (or employment) is the outcome of interaction between demand for and supply of labour. Labour demand emanates from the desire of firms to hire labour to produce output which translates into growth of national output. Thus a slow economic growth and low employment content of growth could result in an increased rate of unemployment. On the other hand, the supply of labour is also a function of the growth and quality of the labour force, driven largely by the expansion of the working age population and quality of human resources respectively. A higher rate of unemployment may also arise if higher growth of the labour force is not accompanied by sufficient job openings. Additionally, an economy also suffers from structural unemployment if the quality of labour does not meet firms' hiring requirement.

Figure 2 provides evidence to show a divergence between growth of real GDP and employment. Total employment in Ghana increased from 5.4 million in 1984 to 10.2 million in 2010 representing annual average growth of 2.5 per cent as against annual average growth of real GDP of 5.2 per cent over the period. This translates into average employment elasticity of output of about 0.47 per cent. According to ILO (2008), Ghana recorded a decline in average employment elasticity of national output from 0.64 in 1992–2000 to 0.52 in 2001–2004 and further down to 0.4 in 2005–2008 indicating low employment content of economic growth.

The divergence between economic growth and employment generation is largely explained by the slow growth of the high labour absorption sectors of agriculture and manufacturing on one hand and higher growth of low employment generating sectors such as mining and finance. As reported in Table 2, the agricultural sector which until 2010 accounted for more than 50 per cent of total employment recorded an average of 3.3 per cent output growth. Similarly, the manufacturing sector which employs about 10 per cent of the country's workforce managed to record 5.2 per cent annual average output growth between 1984 and 2010. In contrast, mining, which employs just about 1 per cent of the Ghanaian workforce, experienced average annual growth of 6.6 per cent between 1984 and 2010 and in 2011, the sector together with oil (which directly employs less than 100 Ghanaians) accounted for half of the 15.2 per cent growth. The finance, insurance and real estate subsector has been one of the two drivers of remarkable

Table 2: Employment and economic growth, 1984–2010 (%)

	Average annual GDP growth			Growth and employment by sector		
Sector	1984–2000	2001–2010	1984–2010	1984	2000	2010
Agriculture	2.2	4.9	3.3	53.5	39.6	36.5
	(61.1)	(53.1)	(42.1)			
Manufacturing	5.7	3.7	5.2	8.8	10.1	8.3
	(10.9)	(10.7)	(10.9)			
Mining	6.7	5.8	6.6	4.7	6.1	6.1
	(0.5)	(1.4)	(1.1)			
Service	6.2	6.6	6.6	24.6	32.7	35.1
	(26.1)	(31.5)	(43.6)			
Finance	5.2	8.5	6.3	2.4	4.7	5.8
	(0.51)	(0.54)	(0.74)			
Trade	8.8	7.9	8.3	4.0	7.5	8.8
	(14.6)	(15.1)	(18.9)			
All sectors	4.9	5.8	5.2	—	—	—

Note: Figures in parentheses are distribution of employment by institutional sector.
Source: Constructed and computed from National Accounts, Ghana Living Standards Survey (GLSS) Dataset and Population and Housing Census.

Table 3: Level of educational attainment of working age population (%)

Level of education	1991/92	1998/99	2005/2006	2010
No education	46.5	35.3	31.0	28.5
Basic education	42.3	53.4	52.9	47.8
Secondary education	6.6	7.7	10.1	13.7
Secondary+	4.0	3.2	4.6	7.2
University education	0.6	0.5	1.3	3.0
Total	100.0	100.0	100.0	100.0
Total (in millions)	7.91	10.3	13.5	15.2

Source: Computed from Population and Housing Census and GLSS5.

growth of the services sector but it employs only 0.7 per cent of total workforce in the country. The strong improvement in employment in the services sector from 26 per cent to 44 per cent of total employment between 1984 and 2010 emanated largely from trade employment which also reported strong GDP growth. Indeed, the limited output expansion of high labour absorption sectors as against higher growth of sectors with low job creation potential explains one angle of the problem of unemployment in particular and joblessness in general in Ghana.

On the supply-side of the labour market, an increasing labour force relative to lower employment opportunities also explains the problem of unemployment in the country. Between 1984 and 2010, the Ghanaian labour force almost doubled from 5.6 million to 10.9 million (see Figure 2) representing average annual growth of 2.6 per cent compared with an average annual increase in employment of 2.48 per cent over the same period. The resulting average annual shortfall of 0.12 percentage points is a measure of unemployment. The number of jobseekers surged from 157,624 in 1984 to 863,740 in 2000 before dropping subsequently to 632,994 in 2010 suggesting 5.5 per cent annual growth of unemployment on average between 1984 and 2010.

In addition, the low quality of the labour force or lack of it in relation to the skill requirement in the labour market also explains the phenomenon of unemployment in Ghana. Table 3 reports that less than a quarter of the working age population in 2010 has acquired secondary education or better compared with more than a quarter with no formal education. Additionally, about half of the working age population have acquired just basic education which only enables them to read and write with no employable skills to secure employment in the formal segment of the labour market. The decline in the proportion of the working age population with no formal

education from 47 per cent in 1991/92 to 29 per cent in 2010 as against an increase in the proportion of working age population with basic education from 42 per cent to 48 per cent and those with secondary education or better from 11 per cent to 24 per cent (Table 3) indicates an improvement in the quality of the labour force over the years. This requires faster expansion of formal sector employment, which averaged about 1.8 per cent annually since 1984, to absorb the increasing labour force with higher education and skill whose main employment target is the formal sector, to be able to avoid higher unemployment in the formal sector.

4. Econometric Analysis

4.1 Data and Model Formulation

Econometrics analysis of the determinants of unemployment in Ghana is carried out using three different nationally representative cross-sectional datasets from the last three rounds of the Ghana Living Standards Surveys (GLSS). These nationally representative household surveys were conducted over a period of twelve months beginning in September. The surveys collected detailed information on demographic characteristics of the population, education, health, employment and time use, migration, housing conditions, household agriculture and household income and expenditure patterns to evaluate the poverty status of households.

The third round of GLSS conducted in 1991/92 (i.e. GLSS 3) covered a nationally representative sample of 4,552 households containing 20,403 members yielding household size of 4.5. A sample of 5,998 households and 26,411 individuals yielding average household size of 4.4 were covered by the GLSS 4 conducted in 1998/99 while the GLSS 5 of 2005/06 captured a total sample of 37,128 individuals in 8,687 households yielding an average household size of 4.3. The sampling frame of the GLSS 3 and GLSS 4 were based on the 1984 Population and Housing census, while that of the GLSS 5 was based on the 2000 Population and Housing census.

The estimation focused on members of the labour force (i.e. those employed and unemployed) aged 15 years and older. Conceptually, unemployment (or employment) is the outcome of interaction between demand for and supply of labour. In this regard, a model of determinants of unemployment is specified as:

$$U_i = \alpha + S_i^{'}\beta + D_i^{'}\delta + Z_i^{'}\phi + \varepsilon \tag{1}$$

where U_i is unemployment; S_i is a vector of explanatory variables of supply factors; D_i denotes a vector of explanatory variables underscoring demand factors; and Z_i represents a vector of other control variables that affect the individual's labour market status as employed or unemployed. β, δ and ϕ are vectors of parameters of explanatory variables, α is the intercept terms, and ε is the standard vector representing the stochastic error term.

4.2 Estimation Strategy and Descriptive Statistics

The dependent variable, U_i is measured in dichotomous form with a value 1 assigned if the individual is unemployed and 0 if the individual is employed. In this context, an individual is unemployed if he or she has attained the age of 15 and during the last 7 days prior to the survey was jobless, but available for work and made effort to seek work. On the basis of the binary measure of the dependent variable, a probit regression estimation technique is adopted to explore how each of the explanatory variables influences the probability of an individual becoming unemployed as:

$$\Pr(U_i = 1|X_i) = \Pr(U_i = 1|S_i, D_i, .Z_i) \tag{2}$$

where U_i is the dependent variable and X_i represents different set of explanatory variables that capture supply factors, S_i; demand factors, D_i; and other control variables, Z_i on the probability of the individual becoming unemployed. Assuming that the model is linear in the set of parameters, the estimated model of determinants of unemployment is specified as:

$$\Pr(U_i = 1|X_i) = G(\alpha + S_i^{'}\beta + D^{'}\delta + Z_i^{'}\phi) = \alpha + S_i^{'}\beta + D_i^{'}\delta + Z_i^{'}\phi + \varepsilon_i \tag{3}$$

Table 4: Measurement and expected *a priori* signs of the variables

Variable	Measurement	Expected sign
Unemployed	Unemployed 1: employed 0	—
Female	Female 1: male 0	+/−
Married (incl. informal union)	Married 1: single 0	+/−
Accra	Accra 1: otherwise 0	+
Other urban	Other urban 1: otherwise 0	+
Rural as reference dummy		
Coastal belt	Coastal 1: otherwise 0	+/−
Forest zone	Forest 1: otherwise 0	+/−
Savannah belt as reference dummy		
Poor	Poor 1: non-poor 0	+
Log of monthly reservation wage	Monthly reservation wage in logs	+
Youth (15–24)	Youth 1: Old 0	+
Basic education	Basic education 1: otherwise 0	−
Secondary+	Secondary 1: otherwise 0	−
Tertiary	Tertiary 1: otherwise 0	−
No education as reference dummy		
Full-time	Full-time l: part-time 0	+/−
Government	Government 1: otherwise 0	+/−
Large-scale enterprise	Large scale ent. 1: otherwise 0	+/−
SMEs	SMEs 1: otherwise 0	+/−
Wage employment	Wage employment 1: otherwise 0	+/−
Self-employment	Self-employment 1: otherwise 0	+/−
Any job as reference dummy		

Source: Constructed by author.

where G is a function taking on values strictly between 0 and 1; and ε_i denotes the disturbance term with mean zero and variance σ_ε^2. The disturbance term captures measurement errors and all unobserved factors.

An alternative estimation technique appropriate for estimating the determinants of unemployment is logit. The choice between logit and probit is usually with regards to the assumptions about the distribution of the error term. Though both yield similar results, the probit model assumes a normal distribution for the error term whereas the logit estimation technique assumes a logistic distribution. The probit model is chosen over the logit because it is fairly simple to understand in terms of interpreting its marginal effects.

4.3 Descriptive Statistics of Explanatory Variables

Table 4 reports the measurement and expected signs of the coefficients of explanatory variables. The variables are categorized into supply-side factors, demand-side factors and other factors.

Supply-side Factors

The supply effect of unemployment is captured by dummies of age and education. Education and age represent individual capability of becoming or remaining employed or unemployed.

- *Age*: The age variable is measured in a form of a dummy (youth 1: old, 0). The paper applies the United Nations definition of youth which comprises individuals aged 15–24. A positive marginal effect is expected for the youth dummy, signifying higher youth unemployment rates than adults (Sackey and Osei, 2006).
- *Education:* Education is measured by three categorical dummies of basic, secondary and tertiary education with no education as reference dummy. Based on human capital theory, the quality of labour force measured by education and skills acquired over time and their relevance to the needs of the labour market determine the probability of an individual being employed or

unemployed. The inclusion of schooling dummies to capture the human capital effect on unemployment follows similar approaches by Osberg *et al*. (1986) and Lindley (2005) among others. With no education as the reference education dummy, a negative marginal effect is expected for each of the education dummy because education is expected to enhance the employability of individuals making them less likely to be unemployed.

Demand-side Factors

The types of job or employment sought by the individual jobseeker are used as a proxy to capture the effect of demand factors on unemployment in a cross-sectional analysis.

- *Employment-type Dummies:* Dummy variables of job-seeking in the government sector, private enterprise, self-employment, wage employment and any available employment (as reference dummy) are used to indicate the ability of the Ghanaian economy to meet the specific job demands of jobseekers. It is expected that with a dummy of 'any job' as reference dummy, jobseekers would not find any difficulty of finding a job of their choice if economic growth is accompanied by sufficient job creation opportunities with the implication of a lower incidence of unemployment. On the other hand, lower job openings relative to demand for it increases the likelihood of individuals who seek a specific type of employment relative to those seeking any type of employment to be unemployed. This suggests that with the low employment content of growth established in Section 3, the dummies representing a specific type of job are expected to assume positive marginal effects.
- *Full-time job dummy:* A dummy of full-time job-seeking as against part-time job-seeking is used as another variable to capture the labour demand effect on unemployment. This is based on the fact that full-time jobseekers relative to part-time jobseekers are less likely to be unemployed if economic growth is accompanied by increased job opportunities while the reverse is the case if economic growth fails to create the needed job openings. In effect, a positive marginal effect is expected for full-time dummy based on the low employment content of Ghana's growth over the years demonstrated in Section 3.

Other Factors

- *Female dummy*: The female dummy (female: 1 and male 0) reflects the gender effect on unemployment and could yield either a positive or negative marginal effect.
- *Married dummy*: The effect of one's marital status on the probability of becoming unemployed is captured by the married dummy (married including consensual union 1: single 0). A positive or negative marginal effect is expected for the married dummy.
- *Location variable* takes the form of categorical dummies as Accra and other urban locations with rural as the reference dummy. The higher unemployment rate among urban dwellers compared to those in rural areas indicates that the dummy representing Accra (the capital city) and other urban dummy as against rural dwellers are expected to produce a positive marginal effect (see e.g. Kingdom and Knight, 2004).
- *Ecological variable* is categorized into dummies of coastal and forest zones with savannah belt as the reference dummy. A positive or negative coefficient is expected for coastal and forest dummies relative to savannah belt.
- *Poverty dummy* assigns a value 1 to individuals living in poor households based on the national poverty line and 0 for those living in non-poor households. The poor dummy captures the poverty status of an individual on the probability of becoming unemployed and is expected to have a positive marginal effect. This signifies that the poor have limited search abilities due partly to financial constraints and limited information on available vacancies and jobs.
- *Reservation wage* is measured by the expected wage or earnings stated by jobseekers and the actual wage or earnings of those in employment with the assumption that any offer below the actual wage would cause them to leave the job. It is measured in logs and is expected to have a positive marginal effect on unemployment because jobseekers who peg their reservation wage or expected earnings higher are more likely to be rejected by prospective employers or discouraged from setting up their own venture.

Table 5: Marginal effect of probit *model* of the determinants of unemployment based on Equation 3

	1991/92		1998/99		2005/06	
Independent variables	*dF/dx*	z-statistic	*dF/dx*	z-statistic	*dF/dx*	z-statistic
Youth, 15–24†	0.0017***	4.57	0.0087***	4.45	0.0029***	4.02
Female†	0.0008***	4.24	0.0002	0.27	0.0002	1.06
Married†	0.0003***	6.22	0.0006***	3.14	–0.0003	–1.58
Basic education†	0.0007***	2.58	0.0005	0.73	0.0002*	1.71
Secondary + †	0.0004	0.99	–0.0009	–1.00	0.0011***	3.05
Tertiary†	0.0012	0.99	–0.0012–	0.72	–0.0001	–0.87
Urban Accra†	0.0041***	4.30	0.0106***	4.70	0.0065**	2.15
Other urban†	0.0030***	5.31	0.0061***	5.34	0.0016***	3.48
Coastal†	0.0006	1.61	0.0020	1.56	–0.0078	–1.09
Forest†	–0.0005*	–1.67	–0.0017*	–1.68	–0.0004	–1.61
Poor†	0.0004**	1.42	0.0007	0.80	0.0010***	2.58
Log of res. wage	0.0003***	7.04	0.0005***	7.30	0.0001***	4.34
Full-time job†	—	—	—	—	0.7591***	15.35
Wage employment†	0.0041***	4.33	0.0073***	3.40	—	—
Self-employment†	0.0263***	9.30	0.1731***	12.44	0.1883***	3.29
Government†	0.0068***	4.09	0.0290***	6.35	0.0836**	1.91
Private enterprise†	0.0073***	6.67	0.0498***	8.64	Dropped	—
Pseudo R^2	0.5548		0.6011		0.8898	
Wald Chi^2	530.39***		747.04***		760.19***	
No. of observations	8,214		9,380		14,765	
Correctly classified	98.09%		97.79%		99.83%	

Note: *z*-statistic corresponds to the test of the underlying coefficient being zero.
***$p < 0.01$; **$p < 0.05$; *$p < 0.10$.
†*dF/dx* for discrete change of dummy variable.

4.4 Empirical Discussion

Table 5 presents the results of marginal effects of the estimated probit model of determinants of unemployment in Ghana based on three different cross-sectional data. A Pseudo R^2 of at least 0.55 reported suggests strong fit of the model and the statistical significance of the Wald Chi^2 underscore the joint significance of the explanatory variables in determining unemployment in Ghana and robustness of the estimated results. In addition, over 97 per cent of the model is correctly classified confirming the predictive power of the model such that only 3 per cent incorrect predictions was recorded.

From the supply side, the empirical results generally confirm the unemployment challenges among the youth based on the statistically significant marginal effect of the youth dummy. In all the three samples, the youth were found to have a significantly higher probability than the old to be unemployed confirming many studies on youth unemployment (see Blackaby *et al*., 1999; AfDB *et al*., 2012) and in line with global patterns. Clearly, the youth face a number of challenges relative to their older counterparts that expose them to the challenges of securing employment. Labour demand barriers facing young people such as observed discriminatory practices of employers in their hiring decision on the grounds of limited or no job experience and lack of exposure to working environment tend to constrain their effort in securing jobs. As pointed out by Sackey and Osei (2006), younger people are more likely to be unemployed due to the fact that they have lower labour market skills relative to older cohorts. In addition, young people might not have attained higher levels of education yet, and therefore are less likely to secure formal sector jobs. The information gap between young jobseekers and potential employers and barriers to gaining access to financial, physical and social capital for the establishment of businesses are also a major factor of the high incidence of youth unemployment. Indeed, lack of experience of the youth in the labour market poses specific barriers to securing decent jobs and this even exacerbates their chances of getting jobs subsequently when they face early unemployment (see Clark and Summers, 1982; Freeman and Wise, 1982).

The effect of education on the probability of an individual becoming unemployed is captured by the statistically significant marginal effect of the basic education dummy in 1991/92 and 2005/06 and the secondary education dummy in 2005/06. This confirms the observation of Sackey and Osei (2006) who found basic and senior secondary levels of education to be associated with relatively more unemployment in Ghana, as well as that of Dickens and Lang (1995) who found similar results. The increasing number of jobseekers with basic and secondary education relative to availability of jobs partly explains high unemployment among such people. Given the slow growth of formal sector employment in Ghana, the unwillingness of the educated jobseeker to accept the readily available agriculture and/or informal employment makes them remain unemployed while looking forward to securing jobs they find acceptable.

The empirical results also show a strong influence of demand-side factors on unemployment in Ghana. As shown in Table 5, there is a higher probability of individuals who are specific on the type of jobs acceptable to them, becoming unemployed relative to being non-selective in job-shopping. Specifically, those seeking self-employment and government jobs in all the three sample periods and those seeking wage employment and private sector jobs in 1991/92 and 1998/99 were more likely to be unemployed relative to those seeking any job. In addition, there is a higher probability of full-time jobseekers becoming unemployed relative to those seeking part-time jobs in 2005/06. These findings are a reflection of limited job opportunities to meet the job desire of jobseekers in the midst of high economic growth over the past three decades. As noted earlier, the 5.2 per cent annual average growth of real GDP between 1984 and 2010 could only translate into a 2.5 per cent annual average employment growth over the same period. This could largely be explained by the slow growth of high labour absorption sectors of the economy such as manufacturing and agriculture as against the remarkable growth of low labour absorption sectors of mining, oil and finance.

The higher value of the marginal effect of the dummy of seeking self-employment compared to that of the dummies of seeking wage employment, government and private sector employment suggests a higher probability of those targeting self-employment to be unemployed compared to the other types of employment. Start-up capital and relevant skill required for one to establish his/her own business tends to constrain many jobseekers to venture into self-employment or entrepreneurship.

The marginal effects of other control variables particularly reservation wage, poverty status of individuals and location on unemployment were in line with expectation. The reservation wage of the jobseeker is found to have an increasing effect on the probability of the individual becoming unemployed based on the positive and statistically significant marginal effect of log of reservation wage in all the three sample periods. The reason is that keeping reservation wage high relative to the ability of the job to pay, reduces one's chance of getting employment and increases unemployment. In self-employment and/or informal employment, holding expected earnings (as a proxy for reservation wage) above the actual average earnings of that activity could be an obstacle to securing a job. This is an indication of the high expectation of jobseekers relative to the reality in the labour market, which tends to cause unemployment. A positive and statistically significant marginal effect of the poverty dummy in 1991/92 and 2005/06 implies that the poor are generally more likely to be unemployed relative to the non-poor. The poor tend to have limited search abilities partly on account of financial constraints and lower information on available vacancies and jobs, thereby restricting their chances of escaping unemployment.

The empirical results also provide evidence to support the long-standing view that unemployment is an urban phenomenon (see e.g. Dickens and Lang, 1995; Sackey and Osei, 2006; Anyanwu, 2013). Indeed, the higher probability of people in Accra and other urban areas than rural folk to be unemployed is observed in all the three samples based on the statistically significant marginal effects of the Accra and other urban dummies. Sackey and Osei (2006) found that for the average individual in the labour force, residing in an urban area, relative to rural localities, increases the probability of being unemployed by 6.5 percentage points. This is also consistent with findings of Kingdom and Knight (2004) that the probability of being unemployed in urban localities in South Africa increased by 8.6 percentage points. The attraction of urban life vis-à-vis low income from agriculture in the rural areas, which draws many people particularly the youth into the cities in search for better-paid jobs that are however often not readily available, accounts for the higher incidence of unemployment in urban than rural areas. Individuals living in the forest zone are reported to be less likely to be unemployed relative to those in the savannah belt in all the three periods while those living along the coast have a lower probability of becoming unemployed in 2005/06. The all-year-round economic activities in the forest and coastal zone relative to the shorter (about 6 months, i.e. May–October) farming period in the savannah belt largely explain this revelation.

The relevance of gender in explaining unemployment in Ghana occurred in 1991/92 with females reported to be more likely to suffer unemployment confirming the findings by Dickens and Lang (1995). Married people were also found to be more likely to be unemployed than unmarried in 1991/92 and 1998/99.

5. Conclusion and Policy Recommendations

The strong evidence of the influence of demand factors on unemployment in Ghana in the midst of strong economic growth is a reflection of the limited employment generation content of growth. The high economic growth driven largely by low labour absorption economic activities of mining and oil extraction in particular as against the slow growth of high employment elasticity sectors of agriculture and manufacturing underscore the strong demand deficient unemployment in Ghana. The higher probability of individuals seeking a specific type of employment as against those seeking any type of job becoming unemployed in the econometric analysis confirms the observation that Ghana's growth has not been accompanied by sufficient job openings. In addition, the greater likelihood of individuals seeking full-time jobs suffering from unemployment is also an indication of limited job opportunities for many jobseekers. A design and implementation of policies to promote investment in the high labour absorption sectors of agriculture and manufacturing to promote employment generation and address the challenge of unemployment is recommended. These sectors would also benefit from continuing high growth in mining and oil extraction which are found to have low direct employment generation capacity if resources generated from these activities are invested in infrastructure to support agriculture and manufacturing activities.

The observation of higher youth unemployment requires the need for targeted policy intervention to remove the constraints facing them particularly at the entry point of the labour market. Although the significant effect of education on unemployment was quite rare, the higher probability of unemployment occurring among those with secondary school education in 2005/06 has rekindled the debate of strengthening vocational and entrepreneurial skill training and start-up support to facilitate youth entry into entrepreneurial business as 'job creators' rather than seekers of jobs. These are mostly young people who could not access tertiary education and at the same time find self-employment and/or the informal sector unattractive. The empirical results that saw individuals seeking self-employment to be more likely to be unemployed relative to seekers of other employment confirms the constraints such as skills and start-up supports that inhibit self-employment or entrepreneurial development. Provision of entrepreneurial training and start-up support would attract these young secondary school leavers into setting up small enterprises and grow them gradually. The Kenya Youth Business Trust which provides start-up capital and training as well as mentorship for zealous and passionate young people who desire to go into entrepreneurial business (see UNECA, 2011) is one example of such initiatives that could encourage young people to take up entrepreneurship. An initiative set up by Synapse Centre, a non-governmental organization in Dakar in 2003 to offer opportunities for young people to undergo highly intensive hands-on youth entrepreneurship training that combines theory with interactive case-based studies and professional business consulting and mentoring with 9 youth participants benefiting from mentorship from 35 business community leaders (UNECA, 2006) is another useful case study.

The strong effect of reservation wage on unemployment is also an indication of high wage or earnings expectations of jobseekers relative to what the labour market is capable of offering. A downward review of expectation on the part of jobseekers in terms of wage or earnings expectation has the effect of improving their chances of securing a job and reduce the incidence of unemployment.

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