ICDD Working Papers | Paper No. 16 | June 2016



ICDD

William Baah-Boateng (PhD)

Economic growth and employment generation nexus: Insight from Ghana

The International Center for Development and Decent Work

Dr. William Baah-Boateng is an economist with specialization in labor economics, industry and development. He is a Senior Lecturer in Economics (on sabbatical) and a Senior Research Fellow at the African Center for Economic Transformation based in Accra. He is also a Fellow of the International Institute for Advanced Studies (IIAS), based in Accra, and Editor of the Ghanaian Journal of Economics (GJE). He has also served as Technical Advisor for the Ghana Labour and Employment Ministry since 2007. He holds a PhD in Economics and is an alumnus of the University of Ghana and Harvard University. Recent teaching courses include labor economics, microeconomic theory, econometrics, and applied quantitative analysis. He held an Ela Bhatt Visiting Professorship at the ICDD, University of Kassel between October 2015 and February 2016.

Editorial Board
Prof. Dr. Scherrer (University of Kassel)
The ICDD Working Papers are peer-reviewed.

Contact Address
Prof. Dr. Christoph Scherrer
ICDD – University of Kassel, Germany
Mailing address: Mönchebergstr. 19, D-34109 Kassel
Visitors' address: Kleine Rosenstr. 3, D-34117 Kassel
Contact: felmeden@icdd.uni-kassel.de

Design / Layout: Nina Sangenstedt, gestaltvoll.de

ICDD Working Papers
ISBN: 978-3-7376-0068-2 (print)
ISBN: 978-3-7376-0069-9 (e-book)
DOI: http://dx.medra.org/10.19211/KUP9783737600699

© International Center for Development and Decent Work. All rights reserved.

The material in this publication may not be reproduced, stored or transmitted without the prior permission of the copyright holder. Short extracts may be quoted, provided the source is fully acknowledged. The views expressed in this publication are not necessarily the ones of the ICDD or of the organization for which the author works.

First published 06/2016 in Kassel, Germany

Publishing House:
kassel university press GmbH
www.upress.uni-kassel.de

kassel university press

William Baah-Boateng (PhD)
Ela Bhatt Visiting Professor, ICDD, University of Kassel

Economic growth and employment generation nexus: Insight from Ghana

Contents

Abstract 3

1 **Introduction** 4

2 **Risk and Mitigation: Findings from the NSSO Survey** 6

2.1 Trend and changing structure of growth 6

2.2 Employment and livelihood 9

3 **Employment-Growth Linkage: Okun's Proposition** 13

4 **Job Creation in Response to Economic Growth** 15

4.1 Graphical analysis of employment-economic growth nexus 15

4.2 Quantitative analysis of employment response to growth 16

Arithmetic computation of elasticity 16

Econometric analysis 18

Model specification and data sources 18

Estimation and discussion of results 19

5 **Conclusion and Policy Thoughts** 21

6 **References** 23

ICDD Working Paper Series 35

Abstract

Ghana is undoubtedly regarded as one of the leading lights in Africa in terms of strong growth performance since the wind of economic reforms blew across Africa in the 1980s. The challenge has, however, been the effect of this remarkable growth story on the creation of sufficient jobs for the increasing working age population. This paper uses arithmetic computation and econometric estimation to measure and assess the employment effect of the level and sources of growth on the employment generation. It further shows the role of education in the job creation debate. The empirical analysis indicates significantly moderate effects of economic growth on employment generation and the extent of employment response to growth has continued to decline since the beginning of the new millennium. The analysis also shows that economic growth impelled largely by higher growth of agriculture and manufacturing relative to other sectors is improving job creation impact. On the supply-side, improved education of the workforce above the basic level has significantly increasing the employment-generating effect. The paper recommends a change in policy direction from a high obsession with growth without paying attention to the source of the growth. Thus, for growth to sufficiently impact job creation requires a policy shift towards employment-focused growth through high productive agriculture and manufacturing. Ghana can also leverage the strong growth performance of the extractive, finance and telecommunication sectors by channelling the returns from these sectors into infrastructure development to support the growth of agriculture and manufacturing.

1 Introduction

Ghana's growth performance has been evidently strong over the past three decades, peaking at 14% in 2011 on the back of commercial production and the export of oil for the first time in the history of the country. The country was plunged into recession in the late 1970s and early 1980s, compelling subscription to Breton Wood's sponsored liberal economic reforms in April 1983. This largely contributed to strong economic recovery with 8.6% economic growth in 1984, averaging at 5.7% over the last six years of the 1980s. The positive growth performance of the country has persisted with annual average growth of 5.6% over 31 years. The country joined the ranks of middle income countries in 2007 after a rebase of the national accounts and managed to achieve the first Millennium Development Goal (MDG) of halving poverty from 51.7% in 1992 to 24.2% in 2013.

The major question, however, has been the source of growth and the extent to which strong growth performance reflects in the generation of productive and decent jobs, improved incomes and livelihood of the majority of the people. Ghana's growth has been driven largely by high growth in mining and financial intermediation, in particular and in recent times by the commercial production of oil and information and technology while growth in agriculture and manufacturing remain weak. The structure of the economy remains highly informal with a shift in the country's national output composition from agriculture to low value service activities in the informal sector. The commencement of the commercial production of oil in 2011 raised the share of the industrial sector in national output above agriculture and improved the country's export earnings. However, the continuous decline in the growth of agriculture and manufacturing reflected in their share in GDP undermines the country's economic transformation effort to promote and secure high incomes and improve the livelihood of the people. Indeed, some have questioned the quality of the country's growth in terms of employment and inequality as well as general improvement in the livelihood of the people (see Alagidede et al., 2013; Aryeetey et al., 2014; Baah-Boateng, 2013).

On the other side of the debate is the availability of the labor force with high quality of education and skills necessary to facilitate sustainable growth and promote economic transformation. Essentially, the low level and quality of human resources not only divert the economy from its structural transformation path of development, but also make it difficult for the benefits of growth to be spread through the creation of gainful and productive employment. The quality of Ghana's human resources has been observed to be low with more than two-thirds having at most basic education. Besides the limited expansion of the formal sector, some researchers have attributed Ghana's flourishing informality to the dominance of the country's labor force with low educated and skilled people who can boast of higher education up to the basic level, but cannot facilitate their entry into better paying jobs in the formal sector (Aryeetey and Baah-Boateng, 2015; Baah-Boateng and Ewusi, 2013).

The main objective of the paper is to find answers to the question of whether or not Ghana's growth is jobless. Specifically, the paper seeks to find out the extent to which Ghana's growth reflects labor market outcomes in terms of job creation and the relevance of the sources of growth in the GDP-employment nexus debate. In addition, the effect of human capital development on employment generation is also explored. The paper adopts descriptive statistics to compare employment and output growth in addition to estimation of employment elasticity based on arithmetic and econometric methodological approaches.

The paper is structured into five sections starting with economic growth and employment overviewed in section two after the introduction in section one. This is followed by a brief review of the theoretical and empirical literature in section three. Section four focuses on the debate of job creation and economic growth using descriptive and elasticity concepts, after which the conclusion and policy recommendations follow in section five.

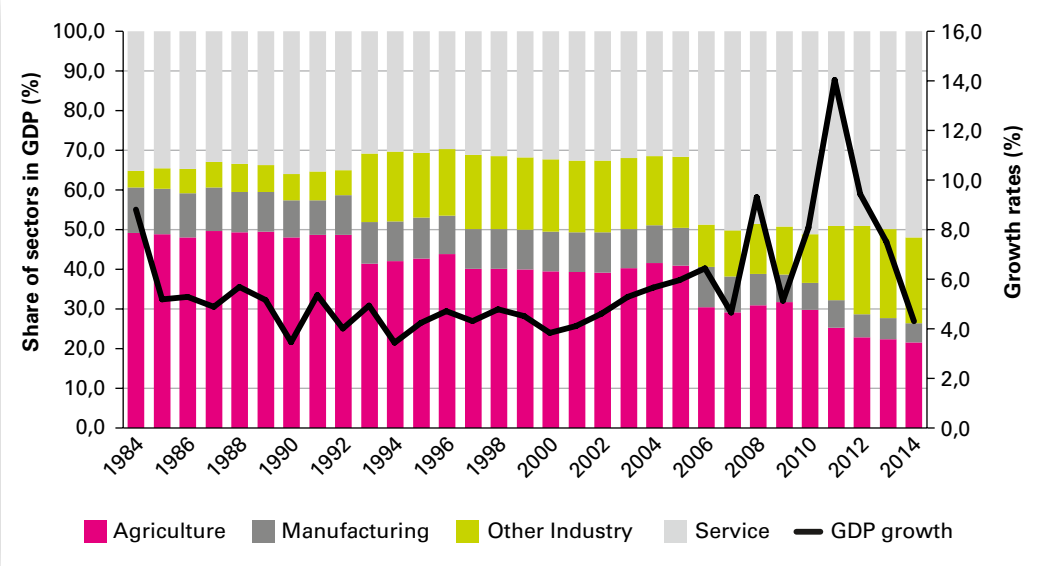
2 Overview of Economic Growth and Employment

2.1 Trend and changing structure of growth

After recovering strongly from recession in the early 1980s, Ghana's economic growth performance has been impressive with annual average growth of 5.6% from 1984 to 2014. Generally, Ghana's economy has experienced faster growth relative to Sub-Saharan Africa, (SSA) particularly after 2007. On average, the Ghanaian economy grew annually by 5.8% compared to 3.7% in SSA in 13 years between 1991 and 2013 (Aryeetey and Baah-Boateng, 2015). From a negative growth rate of –3.4% annually on average between 1979 and 1983, the country recovered strongly to record 8.6% growth in 1984, a year into the Breton Wood's sponsored economic recovery program, and averaged 5.7% between 1984 and 1989. Economic growth slowed down and assumed an unstable pattern in the 1990s with an annual average growth of 4.3% before picking up in the new millennium with an accelerated growth from 3.7% in 2000 to 6.4% in 2006 (Figure 1) culminating in a 5.0% annual average growth. A rebasing of the national accounts from 2006 and commercial production and export of oil, which started in December 2010, accelerated growth further but in an unstable manner to an annual average of 7.6%. This pushed Ghana's per capita GDP beyond US$ 1000 to qualify in the ranks of lower middle-income countries.

Ghana's strong growth over the past three decades has largely been driven by high and robust growth of the extractive (mining and oil) and services sectors. Estimates from national accounts indicate a 6.5% annual growth of the services sector on average and 7.1% in the industrial sector, compared with 3.8% growth in agriculture from 1991 to 2014. The services sector's impressive growth has been propelled mainly by strong growth of trading activities and financial intermediation with average annual growth of 6.9% and 8.9% respectively over the period as well as a fast growing information and communication subsector with a 21.7% growth rate from 2007 to 2014. A resuscitating of the mining industry in the late 1980s coupled with the emergence of the commercial extraction of oil in December 2010, which increased the growth of the sub-sector to an annual average of 14.8% in 25 years from the 1990s, largely accounted for the high growth recorded by the industrial sector. In late 1986, a mining law (PNDC Law 153) as part of the economic reform program and the revised Mineral and Mining Act of 2006 (Act 703) opened up the mining sector to foreign investment. This resulted in expanded mining activities causing the sector to overtake cocoa as the leading foreign exchange earner in the 1990s.

Figure 1: Annual real GDP growth rates and share of sectors in GDP, 1984–2014 (%)



Source: Computed from National Accounts of Ghana Statistical Service

Growth of agriculture and manufacturing, which serves as a major source of livelihood for the Ghanaian workforce, has however been weak, culminating in a dwindling share of GDP by more than half over three decades. From a share of 49.2% in 1984, the share of agriculture in GDP dwindled to a low of 22.4% in 2014 while the manufacturing contribution to GDP also declined from 11.4% to 5.1% over the same period (Figure 1). Indeed, available statistics from national accounts show that agriculture grew annually by 3.8% on average between 1991 and 2014. Compared to faster growth of industry and services sectors, this caused it to lose dominance in national output to the other two sectors. An average annual growth rate of 3.8% in manufacturing relative to higher growth of extractives and manufacturing also pushed it from its position as a leading contributor to industrial output, to the third position behind the construction and extractive (mining and oil) subsectors. Clearly, the high cost of credit, rapid exchange rate depreciation with implications for high cost of imported inputs, and an unstable supply of energy coupled with trade liberalization that exposes manufacturing firms to excessive and sometimes unfair foreign competition could largely be blamed for the low growth performance of the manufacturing sector. The removal of support for agriculture in the form of subsidies as part of economic reforms to address fiscal challenges, a limited number of extension officers and continued reliance on rain-fed agriculture also account for the poor performance of agriculture over the last three decades.

Essentially, the remarkably strong growth of Ghana's economy is not in doubt. However, the high growth of low employment-generating sectors of extractives, financial intermediation and telecommunications as main drivers of growth against weak growth in manufacturing and agriculture which are considered to have a stronger employment-generating effect, raises concern about the quality of growth in the country. The loss of agriculture's dominance to services in the sectoral distribution of national output may be misconstrued as a structural transformation of the economy. However, productivity in agriculture and services is still low and coupled with the declining size of manufacturing, this makes it difficult to equate the sectoral shift in national output to economic transformation.



2.2 Employment and livelihood

The relevance of economic growth is measured by its effect on the quality of life through the creation of sufficient and quality jobs. One key measure of the health of an economy is the availability of productive and decent jobs for the labor force. Employment growth in Ghana has generally been slower than economic growth, raising concerns about the quality of Ghana's growth. Indeed, the inability of a country to translate its solid economic growth performance over three decades into significant improvement in labor market outcomes in the form of sufficient decent job generation constitutes a failure of development.

The size of Ghana's total workforce has more than doubled over three decades from 5.42 million in 1984 to 12.03 million in 2013, representing about 2.7 % annual average growth. Relative to the working age population, however, the country's ability to generate employment has marginally deteriorated and with a fall in the employment-to-population ratio from 80.2 % in 1984 to 75.4 % in 2013. This is still slightly higher than the Sub-Saharan African (SSA) average (Table 1). However, it is worth noting that a low or decreasing ratio is not necessarily bad. Technically, developed economies tend to have lower ratios than developing economies. An excessively high ratio is an indication of an abundance of low productive and low-quality employment, while a lower ratio is a reflection of high productive labor in the developed world which affords less labor to produce for the benefit of all (see ILO, 2009).

The sectoral distribution of employment still shows agriculture as the leading source of employment in Ghana even though its share has been in steady decline from 61.1 % in 1984 to 44.7 % in 2013 (Table 1). This is a trend similar to its dwindling contribution to GDP. In contrast, the size of the services workforce rose substantially from 25 % of total employment to 40.9 % over the same period while industry inched up by about 1 percentage point over the period. The shift in employment from agriculture to services may not reflect a structural and productive transformation since rising services activities mostly occur in the informal sector. This is reflected in the increase in the size of the informal sector workforce relative to total employment from 83.8 % to 88.0 % against the decline in the share of workforce in the formal sector (Table 1). The decline in formal sector employment largely emanated from public sector retrenchment as part of the Structural Adjustment Programme (SAP) implemented in the 1980s. Most of the job losses in the public sector seem to have been absorbed by the informal sector considering the slower expansion of the private formal sector in terms of employment generation.

Table 1: Quantity and quality of employment

Economic Sector	1984	1992	1999	2000	2006	2010	2013
Total Employment, Ghana (million)	5.42	5.77	7.22	7.43	9.14	10.24	12.03
Employment-to-pop ratio, Ghana (%)	80.2	72.9	73.9	66.9	67.7	67.4	75.4
Employment-to-pop ratio, SSA (%)	—	64.3	64.1	64.1	64.9	65.2	65.5
Economic Sector (%)							
Agriculture	61.1	62.2	55.0	53.1	54.9	41.6	44.7
Industry	13.7	10.0	14.0	15.5	14.2	15.4	14.6
Manufacturing (part of industry)	10.9	8.2	11.7	10.7	11.4	10.7	9.1
Service	25.2	27.8	31.0	31.5	30.9	43.0	40.9
Institutional Sector (%)							
Public	10.2	8.4	6.2	7.2	5.7	6.4	5.9
Private	6.0	6.1	7.5	8.9	7.0	7.4	6.1
Informal	83.8	85.5	86.1	83.9	87.3	86.2	88.0
Type of Employment (%)							
Paid employment	16.2	16.8	13.8	16.0	17.5	18.2	22.5
Self-employment	69.6	81.3	68.7	73.4	59.5	60.8	52.6
Contributing family worker	12.5	1.9	17.2	6.8	20.4	11.6	22.3
Other	1.7	—	0.3	3.8	2.6	9.4	2.6
Quality of Employment (%)							
Gainful/productive employment*	20.9	—	—	21.2	22.0	23.1	28.7
Vulnerable employment**	77.4	—	—	74.9	75.4	67.5	68.7
Poverty and inequality (%)							
Working poverty	—	48.7	35.4	—	25.6	—	22.3
Poverty incidence	—	51.7	39.5	—	28.5	—	24.2
Inequality (Gini Coefficient)	—	38.1	40.8	—	41.9	—	42.3
Unemployment (%)							
Unemployment (15+)	2.8	3.3	7.5	10.4	3.1	5.8	5.2
Youth unemployment (15–24)	—	8.6	15.9	16.7	6.6	12.9	10.9

* Gainful/productive employment comprises paid employment & self-employed with employees
** Vulnerable employment comprises own account and contribution family work

Source: Computed from GLSS 3, 4, 5 &6; 1984, 2000 & 2010 Population Census

Paid employment that is anchored on the employer-employee relation accounts for less than a quarter of total employment, improving from 16.2 % in 1984 to 22.5 % in 2013 while self-employment dominated. By own accounts, this type of work constitutes the main type of employment. Thus, enforcement of many labor standards, which is generally applicable to wage employment, is limited in the Ghanaian labor market where over three-fifths of the workforce either work for themselves or only contribute to family work. Essentially, Ghana's labor market is dominated by a high degree of vulnerable employment, which is associated with a high deficit of decent work. Thus, 2 out of every 3 jobs in 2013 were considered to be vulnerable with gainful or productive employment accounting for only 28.7 %, suggesting a high decent work deficit in the labor market. Nonetheless, the quality of employment in Ghana has improved with a decline in the vulnerable employment rate[1] by 9 percentage points between 1984 and 2013 with a corresponding increase in productive and gainful jobs by about 8 percentage points.

The low income associated with vulnerable employment implies high working poverty in such jobs compared to productive and gainful jobs. Aryeetey and Baah-Boateng (2015) estimated a working poverty rate of 10.3 % for productive and gainful employment compared with 29.0 % for vulnerable employment, which is generally not affected by formal labor regulations and noted for a high decent work deficit. Ghana is caught in the trap of a high level of employment but few decent jobs in terms of returns and type of employment. The working poverty rate remains high at 22 % indicating that at least one-fifth of working people live in households considered to be poor even though the rate has seen a continuous decline since 1992 (Table 1). Overall, the country has made progress in reducing overall poverty incidence[2] from 51.7 % of the population in 1992 to 24.2 % in 2013. Nonetheless, inequality continues to increase based on the Gini coefficient from 38.1 % in 1992 to 42.3 % in 2013 (Table 1) implying an unequal distribution of the benefits of strong growth performance over the years.

1 Vulnerable employment is a defined measure of persons employed under relatively precarious circumstances indicated by the status of employment. It consists of own account and contributing family work. Vulnerable jobs are less likely to have formal work arrangements, access to benefits or social protection programs and are more "at risk" to economic cycles (ILO, 2009).

2 Poverty incidence measures the proportion of the population that live below the national poverty line.

Unemployment, as one of the measures of the health of an economy, does not seem to be a major labor market challenge in Ghana, even though the rates generally increased from a low of 2.8 % to 10.4 % between 1984 and 2000, before dropping to 5.2 % in 2013. Like most SSA countries, unemployment is generally low, partly on account of a high degree of informality and vulnerable employment. Indeed, the high degree of informality tends to mask the problem of unemployment given the large number of discouraged workers[3] (Baah-Boateng, 2015). The youth unemployment rate is generally twice as high as the overall unemployment rate and following the same trend as the overall unemployment rate. The gender dimension of unemployment shows lower rates among males than females in most parts of the last three decades (Aryeetey and Baah-Boateng, 2015). This is mainly explained by the improvement in women's education and their desire to participate in market work against the backdrop of fewer employment opportunities available to them (Baah-Boateng, 2012).



3 Discouraged workers refer to those who are jobless and available for work but fail to make the effort to seek work for various reasons.

3 Employment-Growth Linkage: Okun's Proposition

The foundation of the employment-output relationship as a basis for measuring employment response to growth could be drawn from the reverse of Okun's proposition or rule, which investigates the statistical relationship between a country's unemployment rate and the growth rate of its economy. The proposition is founded on Keynesian economics that establish the existence of unemployment when an economy is in equilibrium below full employment. The rule states a correlation between a percentage GDP gap (i.e. a difference between potential and actual GDP) and unemployment rate in excess of the natural rate of unemployment (Okun, 1962). According to the rule, for every 1% decline in cyclical unemployment there exists a corresponding 2% rise in real GDP and vice versa.

A clear inference from Okun's proposition suggests that output depends on the amount of labor engaged in the production process implying a positive relationship between output and employment. Prachowny (1993) tested the GDP-unemployment relationship in the United States to show a 3% decrease in output for every 1% increase in the unemployment rate. However, he attributes a greater proportion of the change in GDP to changes in factors other than unemployment, such as capacity utilization and hours of work to the extent that holding these other factors constant reduces the association between unemployment and GDP to 0.7 for every 1% change in the unemployment rate. Using more recent data, Abel and Bernanke (2005) estimate an approximate 2% decline in output for every 1% increase in unemployment in the United States.

In Europe, Villaverde & Maza (2009) carried out an empirical study of Okun's rule of thumb across 17 Spanish regions and found a much lower value of Okun's coefficient at the national level than those estimated by Okun (1962). This suggests a weaker output-employment relationship than suggested by Okun. However, there were regional differences in the output-unemployment relationship from a low of 0.32 to a high of 1.55 and the regional differences were linked to regional differences in productivity growth. Baker and Schmitt (1999) estimated and found a higher value of Okun coefficients for OECD countries to show higher employment elasticity and emphasized the importance of foreign trade as an important factor for job creation. A computation of the Okun coefficient for all OECD countries by Lee (2000) confirmed a statistically significant output-employment relationship with variation across countries.

In Africa, an estimate of the unemployment-GDP relationship in Namibia by Eita & Ashipala (2010) showed a positive relationship between unemployment and output gap, with unemployment and GDP in the manufacturing sector also exhibiting a positive relationship. A measure of employment intensity of output growth across sectors in Botswana over a period of about two decades between 1990 and 2008 showed a low sectoral employment elasticity over the period (Ajilore & Yinusa, 2011). Estimates of employment-output relationship in Ghana point to declining elasticity from 0.64 from 1992–2000 to 0.52 in 2000-04 and further down to 0.4 in 2004-08 (ILO, 2009). Additionally, Baah-Boateng (2013) estimates an employment elasticity of national output of 0.47 between 1984 and 2010 for Ghana, suggesting that every 1 percent of economic growth produces job growth of 0.47 %. In Asia, Osmani (2006) obtained declining employment elasticity in the manufacturing sector reflecting negative employment growth in the manufacturing sector across Asia in aggregate terms, despite positive employment growth in China and India.

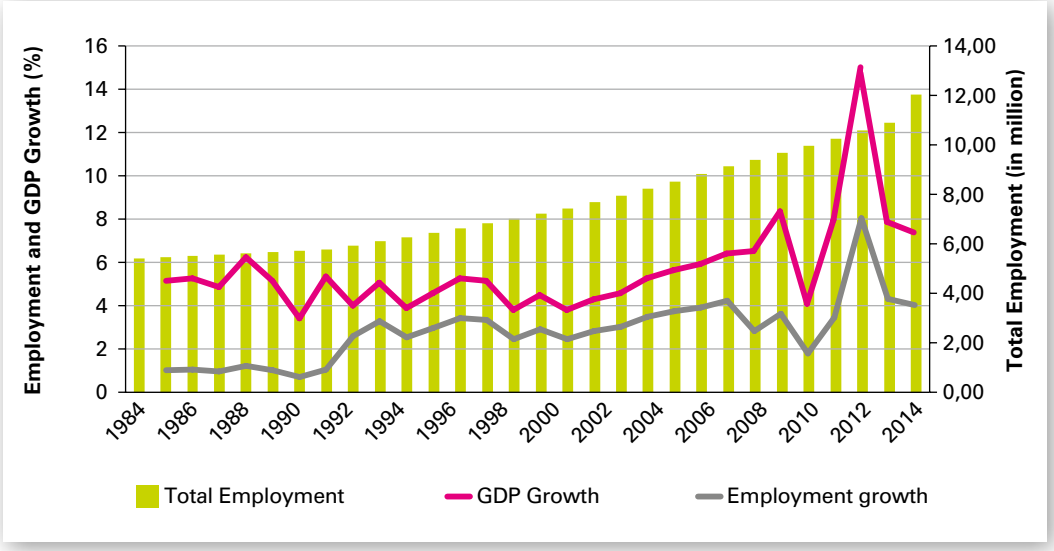


4 Job Creation in Response to Economic Growth

4.1 Graphical analysis of employment-economic growth nexus

Employment growth does not seem to have kept pace with the speed of economic growth over the last three decades. Between 1984 and 2013, Ghana's economy expanded in real terms by an annual average of 5.6 % against growth in total employment of 2.7 % over the same period.This is reflected in the widening gap between growth of GDP and employment (Figure 2) and an indication of the slow growth of jobs relative to economic growth. Stronger and faster growth of Ghana's economy in the second half of the 1980s in response to the economic reform accompanied by job cuts in the public sector largely explains the wider gap between employment and GDP growth from 1984–1992. During the period, annual average growth in GDP of 5.2 % was accompanied by only 0.8 % annual expansion of employment on average.

Figure 2: Pattern of employment and economic growth 1984–2013



Source: Computed from National Accounts, Population census and GLSS 3, 4, 5 & 6

As a consequence of social concerns about economic reform and structural adjustment in the 1980s, Ghana began to review its reform policies to incorporate social interventions[4] (see Baah-Boateng, 2008). This yielded some positive outcome with improved growth of the workforce, which culminated in a narrowing gap between employment and GDP growth Figure 2). Indeed, between 1992 and 1999, 4.3% annual average GDP growth was accompanied by improved annual employment growth of 3.3% on average. The divergence between economic and employment growth resurfaced thereafter with accelerated annual GDP growth of 6.4% compared to a further improved annual employment growth of 3.7% over 1999–2013.

4.2 Quantitative analysis of employment response to growth

A key measure of the employment or job creation effect of economic growth is elasticity. Two estimation techniques of elasticity are employed to measure the employment response to growth in Ghana. In measuring the job creation effect of economic growth, employment elasticity of output is estimated using two main approaches – (i) arithmetic and (ii) econometric.

Arithmetic computation of elasticity

The arithmetic formula of computing elasticity is the ratio of the proportionate change in employment to the proportionate change in output over two given periods. Following Okun's GDP-unemployment relation and based on the assumption that a declining rate of unemployment implies increasing employment[5] in the labor market, arithmetic elasticity of employment to output is specified as:

$$\sigma_{e,y} = \frac{\left(E_1 - E_0\right)/E_0}{\left(Y_1 - Y_0\right)/Y_0} = \frac{\Delta E/E}{\Delta Y/Y} = \frac{dE}{dY}\frac{Y}{E} = \frac{d\ln E}{d\ln Y} \qquad (1)$$

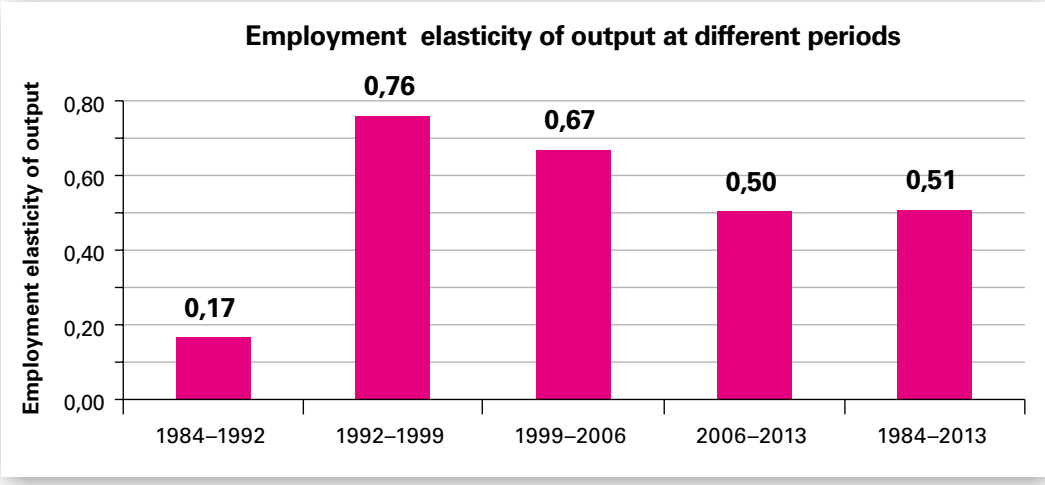
where *E* and *Y* denote employment and GDP, respectively. Subscript *1* is the current period and subscript *0* represents the previous period. This method is computationally very simple and useful when there is a challenge of obtaining annual time series data to make any meaningful prediction or forecasting. Employment data for computation is sourced from the 1984 population census and four rounds of nationally representative household surveys, the Ghana Living Standards Survey (GLSS3,4,5&6), while GDP figures are obtained from the national accounts.

4 This includes Programme of Action to Mitigate the Social Cost of Adjustment (PAMSCAD)

5 Declining unemployment could result from a flow of labor out of the labor market measured by the extent of discouraged worker effect.

The results of elasticity based on equation (1) are reported in Figure 3 to confirm the relative patterns of economic growth and the rate of employment growth depicted in Figure 2. Average employment elasticity of output over a 3-decade period was estimated at 0.51 indicating that on average, every 1 % of economic growth is expected to be accompanied by a 0.5 % expansion in total workforce regardless of the sector. Employment response to economic growth from 1984–1992 was very weak,at about 0.2, and this could be explained by the high obsession with growth and macroeconomic stability at the time. Employment elasticity improved strongly in the 1990s with an elasticity value of 0.76 suggesting a strong employment response to economic growth. This is linked to attempts by government to introduce social interventions to address the social consequences of the economic reforms and structural adjustment policies. The subsequent periods saw a slowdown of employment response to growth with declining elasticity of 0.67 in 1999–2006 and 0.5 in 2006–2013 (Figure 3). One key explanation of the declining elasticity since the beginning of the new millennium is the high growth of low employment-generating sectors of extractives and finance against slower growth of agriculture and manufacturing considered as having a higher job creating effect.

Figure 3: Employment elasticity of output 1984–2013.



Source: Author's own calculation from National Accounts 1984 census and GLSS3, 4, 5 & 6

Econometric analysis

Essentially, employment or unemployment is the outcome of the interaction between demand for labor by firms and the supply of labor in the labor force. From the demand side based on a reverse of Okun's proposition, the rate and sources of economic growth is a key function of job creation. This is based on the premise that labor demand is a derived demand such that firms hire labor for the purpose of producing goods and services with implications for the growth of national output (Baah-Boateng, 2015). The supply of labor measured by the availability and quality of the labor force also indicates the extent to which job opportunities created from the demand side would be taken up.

Model specification and data sources

Following Osberg et al. (1986), the employment model is specified as:

$$E_t = f(D_t) + g(S_t) \tag{2}$$

where *E* is total employment in the economy, *D* is a vector of factors of labor demand such as economic growth and quality of growth, *S* represents a vector of labor supply factors captured by the quantity and quality of labor, and subscript *t* denotes time.

Based on equation (2), an expanded employment model is specified in logarithm form to underscore a non-linear relationship between total employment and its determining factors based on both demand and supply factors in the labor market.

$$E_t = \beta_0 + \beta_1 GDP_t + \beta_2 qGDP_t + \beta_3 WP_t + \beta_4 Edu_t + \beta_5 W + \beta_6 R_t + \varepsilon_t \tag{3}$$

E is natural log of total employment. *GDP* denotes log of real GDP and *qGDP* is quality of GDP measured by the log of the share of agriculture and manufacturing in GDP to capture the demand side of the model. The supply side of the model is accounted for by *Edu* representing the level of education of the workforce measured by log of senior high school enrolment and *WP* denoting log of the share of the working age population in the total population. *W* is the wage rate proxied by log of real minimum wage to capture the effect of cost of labor on changes in employment and *R* is log of lending rate as a proxy of cost of capital to account for a factor that competes or complements labor in the production process. The term ε is a random error (noise) term assumed to obey all the relevant classical linear regression estimation assumptions. Employment elasticity of output is captured by the estimated coefficient of output, β1.

Data for estimation is obtained from different sources. Annual real GDP figures based on 2006 constant prices and annual lending rates were sourced from the Bank of Ghana, while the share of agriculture and manufacturing in GDP were computed from national accounts. Minimum wage figures were compiled from government budget statements and the National Tripartite Committee's gazetted minimum wage documents. High school enrolment figures were obtained from reports by the Ministry of Education. Working age population data was sourced from the world development indicators of the World Bank. Annual time series data on employment was extrapolated from employment data from 1984, 2000 and 2010 population censuses, six rounds of the Ghana Living Standards Survey between 1987 and 2013, and Core Welfare Indicator Questionnaires (CWIQ) from 1997 and 2013.

Estimation and discussion of results

A linear regression estimation technique is applied to annual time series data for 30 years between 1984 and 2013. The results are reported in Table 2. The model performed well with high and statistically significant R2 values of 0.983 and 0.998 for bivariate and multivariate estimated regression models, respectively. The strong power of fit indicates that changes in the regressors included in the models strongly and highly explain changes in employment. Nonetheless, the statistically significant value of Breusch-Godfrey LM and Ramsey RESET tests (Table 2) suggest exclusion of relevant variables that explain employment generation in Ghana. Basic diagnostic tests also show that the estimated bivariate and multivariate employment regression results do not suffer from the problem of autocorrelation or heteroskedasticity.

Table 2: Linear regression results 1984–2013: Dep. variable – log of employment

Independent Variable	1	2
National output (log of Real Gross Domestic Product)	0.546***	0.519***
Quality of output (log of agric. &manuf. share in GDP)	—	0.161**
Wage (log of real minimum wage)	—	–0.011
Cost of capital (log of real lending rate)	—	–0.012
Education (log of secondary school enrolment)	—	0.256***
Working age population (log of share of WAP in total population)	—	1.042***
Constant	–3.196***	–4.439***
R^2	0.9831	0.9994
Adjusted R^2	0.9825	0.9984
F-statistic	1,633.47***	494.73***
Breusch-Godfrey LM test for autocorrelation Chi^2 (1)	17.69***	1.86
Breuch-Pagan test for Heterskedasticity Chi^2 (1)	1.89	1.79
Ramsey RESET test for omitted variable F (3, 25)	48.05***	31.32***
N	30	30

*** p-value < 0.01 ** p-value < 0.05 * p-value < 0.10

The annual time series bivariate regression estimation results show an estimated employment elasticity of output of 0.546 from 1984–2013. It reduces marginally to 0.519 in the multivariate regression estimation after controlling for five variables. The implication of this observation is that on average and controlling for relevant variables, 1 % economic growth has a 0.5 % growth impact on employment. This result is not different from the findings of the arithmetic analysis with elasticity of 0.5 from 1984-2013. The quality of growth measured by the agriculture and manufacturing share in GDP also showed a statistically significant effect on employment. Thus a 1 percentage point rise in agriculture and manufacturing contribution to GDP significantly predicts a 0.16 % growth in employment and vice versa (Table 1). Thus from demand side, employment generation is not only influenced by economic growth, but also the source of growth matters.

From the supply angle, the working age population which depicts the quantity of labor, and education which represents the quality of labor have an increasing effect on employment generation. A 1-percentage point rise of the working age population as a share of the total population increases total employment by a little over 1 %. In addition, improvement in the level of education of the workforce based on a 1 % increase in high school enrolment causes 0.26 % growth in employment. The cost of labor represented by minimum wages and lending rates as a measure of cost of capital has no significant impact on employment generation, although the coefficients showed expected signs. Thus, a rise in the cost of labor and capital has a reducing but less significant effect on employment generation.

5 Conclusion and Policy Thoughts

Ghana's success growth story over a three-decade period since the inception of economic reform triggered by economic recession in the early 1980s has been questioned about its weak job creation implication. This criticism is often triggered by the nature of the growth, driven largely by extractive activities, financial intermediation and information technology in recent times as these are considered to have a weak employment generation effect. At the same time, activities in agriculture and manufacturing estimated to have a strong job creation effect continue to slow down. Even though the size of Ghana's workforce has more than doubled in 30 years, it has not kept pace with the rate of economic growth. Empirical analysis points to faster economic growth than the rate of expansion of jobs such that on average, every 1 % growth of total employment is significantly influenced by 2 % economic growth controlling for other relevant factors. The extent of the employment response to economic growth was found to be weak in the 1980s but improved substantially in the 1990s. Since 2000, the employment generation effect of economic growth has slowed down with declining elasticity. In addition, growth driven by improved activity in agriculture and manufacturing has had a positive job creation effect. Improved education of the workforce above a basic level is also very relevant for job creation.



These empirical observations call for a change in policy direction from a high obsession with economic growth regardless of the source, to more employment-focused growth that is anchored on high productivity manufacturing and agriculture activities. The declining importance of agriculture relative to industry and service activities is a reflection of the weak policy commitment to agriculture, considered to be a major source of employment and livelihood for many Ghanaians. Key policy intervention in agriculture such as improved agriculture extension services, development of irrigation schemes to promote uninterrupted farming activities, and provision of guaranteed prices and buffer stock facilities should engage the attention of policy makers to improve agriculture productivity. The manufacturing sectors could be resuscitated with well-focused investment in energy to provide a stable power supply for manufacturing and enactment of policy to create a stable macroeconomic environment that ensures reasonable interest rates for manufacturing activities. Essentially, the country could also leverage the strong growth of the extractive sector, considered to have a low job creation effect, to boost employment-friendly growth by channelling the returns from the sector into infrastructure to support the growth of agriculture and manufacturing. On the supply side, a low quality of labor measured by the large proportion of the workforce with at most a basic education that underscores flourishing informality, needs to attract priority policy attention. Evidently, education and skills development have improved over the last three decades but the pace has been very slow. This requires investment in both skills acquisition through the promotion of vocational and technical education as well as secondary and tertiary education that emphasize training in critical thinking, problem solving and case studies.

6 References

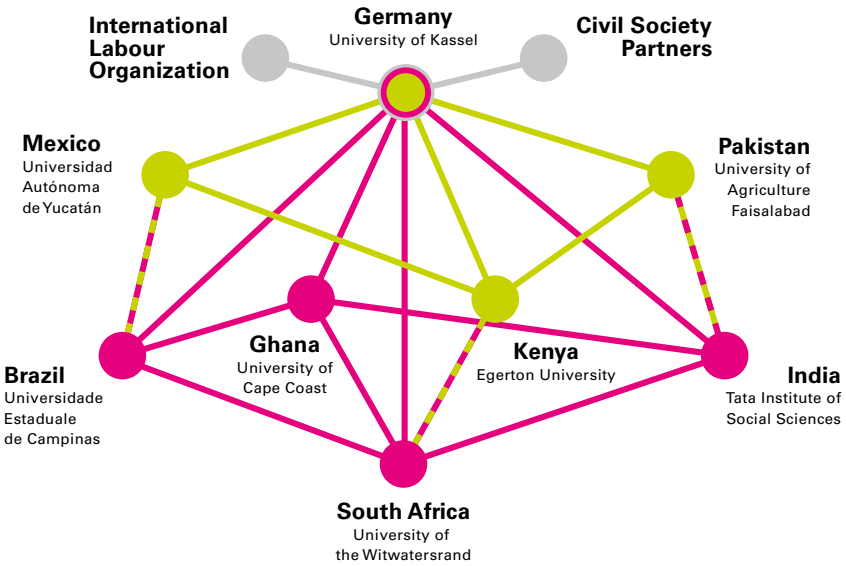
- **Abel, Andrew B. & Bernanke, Ben S. (2005):** Macroeconomics (5th ed.), Pearson Addison Wesley. ISBN 0-321-16212-9
- **Ajilore, T., and Yinusa O. (2011):** "An analysis of employment intensity of sectoral output growth in Botswana", Southern African Business Review, Vol. 15, No. 2, pp. 26 – 42
- **Alagidede, P., Baah-Boateng, W and Nketiah-Amponsah E. (2013):** "The Ghanaian economy: an overview", Ghanaian Journal of Economics (GJE), Vol.1, No. 1, pp. 1–33, ISSN: 2309-8945, December
- **Aryeetey E and Baah-Boateng W (2015):** "Understanding Ghana's success growth story and job creation concerns", UNU-WIDER working paper 140, December;
- **Aryeetey, E., Baah-Boateng W, Ackah C, Mbiti, I and Lehrer, K. (2014):** "Ghana" Chapter 5 in Hino and Ranis (ed.) Youth and Employment in Sub-Saharan Africa: Working but Poor, Routledge Publication, pp. 233–302, ISBN: 978-0415-85938-7
- **Baah-Boateng W (2015):** "Unemployment in Africa: how appropriate is the global definition and measurement for policy purpose" International Journal of Manpower, Vol. 36, Issue. 5, pp. 650–667 Emerald, ISSN: 0143-7720, July
- **Baah-Boateng W. (2013):** "Determinants of Unemployment in Ghana", African Development Review, Vol. 21, Issue 4, pp. 385–399, Wiley Publication, ISSN: 1467-8268, December
- **Baah-Boateng W and Ewusi K, (2013):** "Employment: Policies and Options", Chapter 8 in Ewusi K. (ed.) "Policies and Options for Ghana's Economic Development" 3rd Edition, pp. 190–221; Institute of Statistical Social and Economic Research (ISSER), University of Ghana, Legon Publication, ISBN: 978-9964-75-097-8
- **Baah-Boateng W (2012):** Labour Market Discrimination in Ghana: A Gender Dimension, LAMBERT Academic Publishing, Germany, ISBN: 978-3-659-17830-6
- **Baah-Boateng, W. (2008):** "Employment Generation for Poverty Alleviation", Chapter 11 in Amoako-Tuffour J. and Bartholomew A. (ed.) Poverty Reduction Strategies in Action: Perspectives and Lessons from Ghana, pp. 223–242, Lexington Books A Division of Roman and Littlefield Publishers Inc. United States of America, ISBN: 978-0-7391-1010-2
- **Baker, D., & Schmitt J, (1999):** "The macroeconomic roots of high unemployment: the impact of foreign growth", Economic Policy Institute, [Online] Available: www.epinet.org March 3 2013
- **Eita, J.H., & Ashipala, J.M. (2010):** "Determinants of Unemployment in Namibia" International Journal of Business and Management Vol. 5, No. 10, pp. 92–104.
- **ILO (2009):** Guide to the New Millennium Development Goals Employment Indicators, Geneva: International Labour Organization (ILO), Geneva.
- **Lee, J. (2000):** "The Robustness of Okun's Law: Evidence from OECD Countries" Journal of Macroeconomics, Vol. 22, pp. 331–356.
- **Okun, A. (1962):** "Potential output: Its measurement and significance", Proceedings of the Business and Economic Statistics Section of the American Statistical Society.

- **Osberg, L., Apostle, R. and Clairmont, D. (1986):** "The incidence and duration of individual unemployment: supply side or demand side?" Cambridge Journal of Economics, Vol. 10 No. 1, pp. 13–33.
- **Osmani, S. R. (2006):** "Employment Intensity of Asian Manufacturing: An Examination of Recent Trends", Paper prepared for the Asian Regional Bureau of the United Nations Development Programme (UNDP), New York, March.
- **Prachowny, Martin F. J. (1993):** „Okun's Law: Theoretical Foundations and Revised" Review of Economics and Statistics, Vol. 75, No. 2, pp. 331–336
- **Villaverde, J., & Maza A. (2009):** "The robustness of Okun's law in Spain, 1980–2004: Regional Evidence" Journal of Policy Modeling, Vol. 31, No. 2, pp. 289–297, March–April

ICDD Working Paper Series

- **Vol. 1:** **Webster, Edward**: Work and Economic Security in the 21st century. What Can We Learn from Ela Bhatt?, 17 pages
- **Vol. 2:** **Hagmann, Jonas**: Opportunities and Constraints of Peri-urban Buffalo and Dairy Cattle Systems in Faisalabad, Punjab, Pakistan, 48 pages
- **Vol. 3:** **Marchetti, Sabrina**: Together? On the Not-so-easy Relationship between Italian Labour Organisations and Migrant Domestic Workers' Groups, 23 pages
- **Vol. 4:** **Sinaga, Hariati / Scherrer, Christoph**: Core Labor Rights: Competitive Pressures and Non-Compliance, 29 pages
- **Vol. 5:** **Burchardt, Hans-Jürgen / Weinmann, Nico**: Social Inequality and Social Policy outside the OECD: A New Research Perspective on Latin America, 39 pages
- **Vol. 6:** **Beck, Stefan**: Sozial verantwortliche Beschaffung von Informationstechnik. Socially Responsible Public Procurement of Information Technology, ISBN 978-3-944090-08-5, 40 pages
- **Vol. 7:** **Aufderheide, Mareike / Voigts, Clemens / Hülsebusch, Christian / Kaufmann, Brigitte**: Decent Work? How Self-employed Pastoralists and Employed Herders on Ranches Perceive their Working Conditions, ISBN 978-3-944090-05-4, 28 pages
- **Vol. 8:** **Bhattacharjee, Manojit / Rajeev, Meenakshi**: Credit Exclusion of the Poor: A Study of Cultivator Households in India, ISBN 978-3-944090-09-2, 22 pages
- **Vol. 9:** **Younas, Muhammad**: The Dairy Value Chain: A Promoter of Development and Employment in Pakistan, ISBN 978-3-944090-06-1, 22 pages
- **Vol. 10:** **Erbach, Juliane**: The Decency of Women's Working Conditions in Peri-urban Buffalo Production Systems in the District Faisalabad, Punjab, Pakistan, kassel university press, ISBN 978-3-86219-692-0, 45 pages
- **Vol. 11:** **Schützhofer, Timm B.**: Can Decent Work and Export Oriented Growth Strategies Go Together? Lessons from Nicaragua's Export Processing Zones, kassel university press, ISBN 978-3-86219-810-8, 52 pages
- **Vol. 12:** **Bhattacharya, Tulika / Rajeev, Meenakshi**: Identifying Employment Creating Sectors in India: An Analysis of Input-Output Linkages, kassel university press, ISBN 978-3-86219-852-8, 28 pages
- **Vol. 13:** **Withanachchi, Sisira Saddhamangala / Houdret, Annabelle / Nergui, Soninkhishig / Ejarque i Gonzalez, Elisabet / Tsogtbayar, Ankhbold / Ploeger, Angelika**: (Re) configuration of Water Resources Management in Mongolia: A Critical Geopolitical Analysis, kassel university press, ISBN 978-3-86219-860-3, 42 pages
- **Vol. 14:** **Gordana Kranjac-Berisavljevic**: Transformations of traditional landuse systems and their effects on development opportunities and people's livelihoods, kassel university press, ISBN 978-3-7376-0032-3, 24 pages
- **Vol. 15:** **Meenakshi Rajeev, Manojit Bhattacharjee, B P Vani**: Crop Insurance and Risk Mitigation: Experiences from India, kassel university press, ISBN 978-3-7376-0066-8, 34 pages
- **Vol. 16:** **William Baah-Boateng (PhD)**: Economic growth and employment generation nexus: Insight from Ghana, kassel university press, ISBN 978-3-7376-0066-8, 24 pages

The Global ICDD Network



International Center for Development and Decent Work
University of Kassel, Germany
Phone: + 49 (0) 561 804-7399
E-Mail: felmeden@icdd.uni-kassel.de

With financial support from the
Federal Ministry for Economic Cooperation and Development
DAAD Deutscher Akademischer Austauschdienst German Academic Exchange Service
UNIKASSEL VERSITÄT
exceed EXCELLENCE CENTERS FOR EXCHANGE AND DEVELOPMENT

▶▶▶ www.icdd.uni-kassel.de