

## Jobless Economic Growth in Africa: Is There a Role for Agriculture?

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### ABSTRACT

*This paper employs data from 48 African countries over the period 1990-2010 to investigate the performance of African economies with respect to job creation and its relation to economic growth. We submit that the main drivers, among others, appear to be the creative use of the agricultural sector and the level of innovation and sophistication in agriculture. The insights provide some lessons for countries seeking to speed up job creation under low growth scenarios as well as those seeking to transform their economies while creating jobs.*

**Key words:** Africa, agricultural sector, economic growth, employment, job creation.

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## INTRODUCTION

Following 2008 the -2009 global financial crisis, economic growth has eluded many countries. Africa, on the other hand, hosted seven of the ten fastest growing economies in the period from 2011-2012. It has long been understood that high economic growth is a prerequisite for job creation, causing analysts to worry about the projected low global growth scenario and its implications for economies that have either high or stubborn levels of unemployment. However, long run comparisons across Africa have shown differential performance, with some countries having better outcomes in terms of job creating economic growth. Furthermore, many African countries were long trapped in low growth scenarios yet managed to create jobs. Such patterns have led many critics to question why high economic growth rates have not led to job creation in some countries while they have in others. Critics also question whether the high economic growth rates projected for Africa will lead to job creation in the coming years. What have been the main patterns of Africa's performance in the last twenty years and what does it tell us about endogenous development theory?

The economies of many countries in Africa have undergone fundamental structural change since independence in the 1960's, with most of the change occurring between 1980 and 2010. This period has seen the goods sector dominate export markets attaining a level of US\$568 billion in current terms in 2008, compared to US\$104 billion for services, and US\$31 billion for agriculture (AfDB, 2012; World Bank, 2011). Despite these structural changes, Africa remains a rural, agriculture-based society, and will need to look to the agriculture sector to generate the bulk of the needed employment in the coming years. Agricultural labor comprised 59% of the total labor force in sub-Saharan Africa (FAO, 2011), and agriculture contributed 13% of value added to GDP in 2009, with \$322 value added per worker in agriculture (World Bank, 2011). Enhancing the productive capacity and consequently the economic returns of agriculture has crucial effects on poverty reduction and job creation in three key ways. It increases the productivity and incomes of the majority of Africa's populace. It engenders employment opportunities with related industries/enterprises. It also generates important spillovers to the rest of the economy. Just like South Asia, a region that has used the agricultural sector to tackle poverty, Africa will thus need to seek ways to improve the performance of this critical sector, even as it seeks to join East Asia and Latin America on the path to increasing its footprint in manufactured and service exports.

The agricultural sector has had mixed performance over the last thirty years. On the plus side, is the sheer size of the sector, employing more than half a billion people. This is a potential force to be reckoned with, as over the next decade the literacy rate of Africa's agricultural population due to the focus on education for all is going to massively improve. The importance of agriculture for Africa's development has also increased over the last ten years; as the population employed in the sector has been growing at a steady 1.7% per year from 319 million in 1980 to 505 million in 2008. Agriculture, thus, clearly provides a direct source of employment and livelihood for a sizeable proportion of the society, contributing to gross domestic production and essential for creating value as well as wealth (Chuhan-Pole and Angwafo, 2011; World Bank, 2008). There is therefore a general understanding and expectation that the development and job creation prospects in Africa are inexplicably linked to the performance of the agricultural sector.

There have been competitive policy recommendations for Africa's development, particularly from the World Bank. One set of policies supports the focus on agglomeration economies and the role of intermediate goods and services as key drivers of economic growth (World Bank, 2009). Yet another set of policies (World Bank, 2008) support the need for focus on the agriculture sector and rural development as a key driver of poverty reduction and inclusive growth. The policy mix has not helped countries transform the agriculture sector as Africa has a large number of countries with very low or low capacity. Many of them have not invested enough in the training and innovation as well as research needed to transform the agriculture sector and guarantee food security, or even to generate skilled jobs in the sector, with limited roles of the private sector in many countries (ACBF, 2012).

In this paper, we start from the endogenous development model formulation by Romer (1994) to compare the performance of African countries under different policy choices, including how the sophistication of the agriculture sector can increase its attractiveness to educated youth as a sector for employment. Building on the work of Aghion et al (1998), we investigate how modern innovations in the agriculture sector—such as use of mobile communication platforms to inform farmers of market prices or cold-chain logistics to support high value-added exports from perishable agriculture products—can be further enablers for ensuring the high levels of projected economic growth in the coming years in Africa and can indeed translate into jobs for the burgeoning number of young people entering the job market. We further argue, building on

the work of Pieterse (2010) that the best way to generate jobs for an economy that is highly dependent on agriculture is to follow the “modernization of tradition” where local knowledge is used to generate change and advancement of a society from within. We draw on analysis using data from the African Development Indicators as well as experience from rural India on how to address the challenge of jobless growth (Novotný and Ramachandran, 2010) to uncover the dynamics driving employment creation and economic growth on the continent. Finally, we draw on the work done by Meijerink and Roza (2007) on the role of agriculture in economic development and investigate particularly the job creating potential of the sector and the factors that need to be in place for agriculture to really drive job creating economic growth.

The paper builds on original work done by Léautier and Hanson (2012) and extracts specific hypotheses that are tested using data from 48 African countries, over the period 1990-2010. We use the data to examine the link between employment, economic growth and the agricultural sector. We find that growth did not have a significant impact on employment. We also find that there is no significant difference in employment creation for resource dependent and non-resource dependent countries, and for fragile states and non-fragile states. These results are robust. They hold for the full sample and for Sub-Saharan African countries, and also for male employment, female employment and employment for all genders. Finally, we find that countries that are dependent on agriculture, have a sophisticated and more productive agricultural sector, or have an enabling environment that enhances the productivity of the agricultural sector (good roads and communication technology) were more successful in generating jobs, irrespective of growth performance.

The remainder of the paper is structured as follows. Section 2 describes the variables employed in the regressions, Section 3 describes the summary statistics and correlations between the employment and the explanatory variables, Section 4 presents the empirical results and Section 5 concludes.

## **THE DATA AND THE VARIABLES**

The dependent variable is the natural log of employment. One of the goals of the paper is to determine whether there is a link between economic growth and employment. Note that several factors that may have an impact on employment may also affect growth. We examine whether other variables in particular, natural resource abundance, state fragility and agricultural related

variables may have a causal and direct impact on employment, in addition to any indirect effect on employment that may occur through growth.

To facilitate the discussion, we classify the agricultural related variables into four broad categories—variables that reflect dependence on agriculture, the productivity of the agricultural sector, the sophistication or modernization of the agricultural sector, and the availability of factors that enhance agricultural productivity. Below, we describe the explanatory variables employed in the regressions.

### **Agriculture related Variables**

**Dependency on Agriculture:** We examine whether all else being equal, a country's dependence on agriculture has a direct causal effect on employment. We employ two measures that reflect the importance of agriculture to a country in terms of labor or exports: the number of people engaged in agriculture, *agricemp*, and the amount of agricultural exports, *argexp*. The size of the sector determines its absorptive capacity in terms of employment needs, while the exports measure the potential for the sector to generate revenues over and above food security needs. All else being equal, we expect the estimated coefficient of *agricemp* and *argexp* to be positive and significant.

**Productivity of the Agricultural Sector:** We use two measures to reflect productivity of the agricultural sector: the gross livestock production index (base period 1999), *lstock*, and cereal yield per (kg per hectare), *cereal*, to examine the extent to which changes in employment can be explained by changes in livestock and cereal production.

**Sophistication of the Agricultural Sector:** We use the total number of agricultural tractors which includes the number of wheel and crawler tractors (excluding garden tractors) in use in agriculture and the value of tractor imports (in US\$) to measure the modernization or sophistication of the agricultural sector. All else equal, we hypothesize a positive association between these variables and employment creation.

**Agricultural Productivity Enhancing Dynamics:** The availability of transportation and information technology provides an enabling environment for agricultural production. For example, the ease to transport perishable products (e.g., fruits, vegetables, and flowers), locally and abroad, depends on access to

good roads and sophisticated air transport services. Building on the work of Aghion et al (1998) we investigate how modern innovations in the agriculture sector—such as use of mobile communication platforms to inform farmers of market prices or cold-chain logistics to support high value-added exports from perishable agriculture products, can be further enablers for ensuring the high levels of projected economic growth in the coming years in Africa can translate into jobs for the burgeoning number of young people entering the job market. We further argue, building on the work of Pieterse (2010) that the best way to generate jobs for an economy that is highly dependent on agriculture is to follow the “modernization of tradition” where local knowledge is used to generate change and advancement of a society from within. We use the total road network (km) and the air transport freight (million ton-km) to measure the availability/ease of transportation and mobile cellular subscriptions to measure the availability of information technology. We note some caveats in the use of mobile cellular subscriptions in the model. First, the link between cell phone availability and its usage in agriculture is unclear. It is possible for two countries to have the same penetration rate for mobile phones; however, the usage of the technology may differ significantly across countries. A good example is the financial sector in Kenya and Ghana. Kenya and Ghana have the same number of cell phones per capita, yet Kenya is much ahead in using mobile phones in the financial sector than Ghana. Mobile phones are used in Kenya to transfer funds, pay for utilities, and so on.

### **Other Explanatory Variables**

**GDP growth rates:** We include the growth rate of GDP, growth, to examine whether growth generated employment in African countries, from 1990-2010.

**State Fragility:** We include a dummy variable that takes on the value 1 for fragile states and zero otherwise to examine whether all else being equal, state fragility has a direct impact on employment creation, after controlling for economic growth.

**Natural Resource Abundance:** Several studies have found that natural resource abundance generates conflict (Collier and Hoeffler, 2012) and it also retards economic growth (Sachs and Warner, 2001). We examine whether after controlling for growth and state fragility, there is a significant difference in employment creation for resource-rich countries and non-resource rich countries by including in our regressions a dummy variable, nat, which takes on value 1 if a country is rich in natural resources and zero otherwise.

**SUMMARY STATISTICS AND CORRELATIONS**

The analysis covers 48 African countries and the data are averaged from 1990-2010. The countries included in the regressions are Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Dem. Rep., Congo, Cote d'Ivoire, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe. The data are from the African Development Indicators and the World Bank Development Indicators. The summary statistics of the variables included in the regressions are reported in Table 1 and Table 2 shows the p-values as well as the sample correlation coefficient between employment and the explanatory variables.

**Table 1: Summary Statistics**

Variable	All Countries		Sub-Saharan Africa	
	Mean	Std. Dev.	Mean	Std. Dev.
Ln (employment)	14.77	1.36	14.69	1.37
Ln (male employment)	13.90	1.40	13.86	1.43
Ln (female employment)	13.99	1.99	13.85	2.00
GDP growth	3.84	2.74	3.85	2.86
Ln (cereal production)	7.05	0.79	7.03	0.77
Ln (tractors)	7.61	2.43	7.08	2.17
Ln (air freight)	2.27	2.47	2.18	2.51
Ln (road network)	10.02	1.45	9.90	1.45
Ln (agricultural exports)	18.42	1.76	18.36	1.77
Fragile States dummy variable	0.313	0.468	0.34	0.48
Natural resource dummy variable	0.438	0.501	0.41	0.50
Ln (livestock production index)	4.66	0.37	4.67	0.39
Ln (agricultural imports)	14.82	1.83	14.66	1.82
Ln (agricultural population)	15.04	1.64	15.01	1.64
Ln (mobile phone subscribers)	13.30	1.65	13.11	1.58

**Table 2: Correlation Coefficients and P-Values**

Variable	All Countries		Sub-Saharan Africa	
	Correlation Coefficient	P-value	Correlation Coefficient	P-value
GDP growth	-0.172	0.243	-0.177	0.250
Fragile States	0.028	0.851	0.077	0.621
Natural resources	0.068	0.648	0.037	0.811
Ln (cereal production)	0.298**	0.042	0.248***	0.110
Ln (tractors)	0.597***	0.001	0.586**	0.002
Ln (air freight)	0.558***	0.000	0.529***	0.001
Ln (road network)	0.823***	0.000	0.828***	0.000
Ln (agricultural tractor exports)	0.622***	0.000	0.608***	0.000
Ln (agricultural imports)	0.676***	0.000	0.663***	0.000
Ln (agricultural population)	0.769***	0.000	0.794***	0.000
Ln (mobile phone subscribers)	0.805***	0.000	0.767***	0.000
Ln (livestock production index)	0.127	0.392	0.144	0.350

Robust p-values in parentheses. \*\*\* implies significance at the 1 percent level, \*\* implies significance at the 5 percent level and \* implies significance at the 10 percent level.

There are three noticeable points from Table 2. First, there is no significant correlation between GDP growth and employment. This implies that growth did not generate extra employment in African countries during the period 1990 to 2010, but may have managed to keep steady the employment level over the decade. Second, the correlation coefficients for indicators of natural resource abundance and state fragility are not significant. This suggests that there is no significant difference in job creation in natural resource abundant countries and non-resource rich countries; and fragile and non-fragile states. The third noticeable point is that unlike growth, resource abundance and state fragility, the agricultural related variables (except the livestock index) are positively and significantly correlated with employment. These three observations may lead one to conjecture that from 1990-2010, economic growth in Africa was jobless (i.e., did not result in a significant increase in job creation); that the level of natural resource and the state of fragility of a country were irrelevant with regards to job creation, and that African countries that were dependent on agriculture, had a



sophisticated agricultural sector, a productive agricultural sector, or had better transportation and communication networks were more successful in creating jobs. An interesting and important question is whether the effectiveness of the agricultural sector in generating employment depends on the country's growth performance. To answer this question, we conduct a multivariate analysis to examine whether the positive relationship between agriculture and employment will hold after controlling for economic growth. We also control for natural resource availability as well as state fragility.

### EMPIRICAL RESULTS

In all the regressions, we report the results for the full sample and for countries in Sub-Saharan Africa (SSA). The analysis is partly motivated by the "African Dummy" puzzle that suggests that SSA is significantly different from other regions. For example, several studies have found that the determinants of growth (Easterly and Levine, 1997) and FDI are significantly different for SSA (Asiedu, 2002). If so, then estimation that pools together observations from SSA and other regions will produce biased and unreliable results.

We employ ordinary least square (OLS) for our analysis. We start by testing the first two conjectures. Here we estimate equation (1):

$$\ln(\text{employ}) = \alpha + \gamma\text{growth} + \delta\text{nat} + \delta\text{frag} + \epsilon \quad (1)$$

where employ is employment, growth is GDP growth rate, nat is a dummy variable that takes on value 1 for natural resource dependent countries and zero otherwise, and frag is a dummy variable that equals 1 if a country is a fragile state and takes on value zero otherwise. We note that many variables may have an impact on employment. However, these variables are likely to affect growth and therefore including growth as an explanatory variable mitigates the potential omitted variable bias problem.

**Table 3: Gender and Employment**

VARIABLES	All Countries			Sub-Saharan Africa		
	(1) All gender	(2) male	(3) female	(4) All gender	(5) male	(6) female
GDP growth	-0.102 (0.220)	-0.158** (0.041)	-0.101 (0.255)	-0.089 (0.292)	-0.141* (0.070)	-0.096 (0.294)
Fragile State	-0.156 (0.696)	-0.006 (0.989)	-0.125 (0.748)	0.004 (0.993)	0.226 (0.621)	-0.070 (0.869)
Natural Resources	0.282 (0.503)	0.800 (0.170)	0.128 (0.761)	0.177 (0.698)	0.660 (0.275)	0.112 (0.810)
Constant	15.090*** (0.000)	14.247*** (0.000)	14.268*** (0.000)	14.955*** (0.000)	14.047*** (0.000)	14.210*** (0.000)
Observations	48	48	48	44	44	44
R-squared	0.041	0.076	0.035	0.036	0.071	0.034

Robust p-values in parentheses. \*\*\* implies significance at the 1 percent level, \*\* implies significance at the 5 percent level and \* implies significance at the 10 percent level.

The results are reported in Table 3. Columns 1-3 report the results for the full sample and Columns 4-6 show the results for Sub Saharan Africa. Table 3 also shows the estimations for male employment (Columns 2 and 5), female employment (Columns 3 and 6) and both genders (Columns 1 and 6). There are two noticeable points. First, the estimated coefficient of growth,  $\gamma$ , is not significant in 5 out of the six regressions<sup>2</sup>, suggesting that overall growth did not have a significant impact on employment. The employment performance for countries that experienced high growth was similar to that of countries that experienced low growth. The second noticeable point is that the estimated coefficient of nat and frag are not significant in all the regressions. This implies that after controlling for economic growth, there is no significant difference in employment creation for resource dependent and non-resource dependent countries, and fragile and non-fragile states. This result holds for the full countries and Sub Saharan African countries, and also for male employment, female employment and employment for all genders.

We next examine the second conjecture: African countries that were dependent on agriculture, had a sophisticated, productive agricultural sector, or that had better transportation and communication networks were more successful in creating jobs. Here we estimate equation (2):

<sup>2</sup> However, at 10%, 4 out of 6 are not significant.

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$$\ln(\text{employ}) = \alpha + \beta_{\text{agric}} + \gamma_{\text{growth}} + \delta_{\text{nat}} + \delta_{\text{frag}} + \epsilon \quad (2)$$

where *agric* represents the nine agriculture related variables described in Section 2.

**Table 4: Employment and Dependence on Agriculture**

VARIABLES	(1)	(2)	(3)	(4)
	All countries	SSA	All countries	SSA
GDP growth	-0.033 (0.481)	-0.023 (0.622)	-0.004 (0.957)	0.011 (0.878)
Fragile State	-0.322* (0.073)	-0.193 (0.309)	0.349 (0.290)	0.500 (0.142)
Natural Resources	0.098 (0.663)	-0.026 (0.909)	0.240 (0.472)	0.079 (0.827)
Ln (agricultural population)	0.640*** (0.001)	0.641*** (0.003)		
Ln (agricultural exports)			0.500*** (0.000)	0.494*** (0.000)
Constant	5.333* (0.077)	5.222 (0.112)	5.370*** (0.000)	5.363*** (0.001)
Observations	48	44	48	44
R-squared	0.603	0.593	0.412	0.400

Robust p-values in parentheses. \*\*\* implies significance at the 1 percent level, \*\* implies significance at the 5 percent level and \* implies significance at the 10 percent level

**Table 5: Employment and Agriculture Productivity**

VARIABLES	(1)	(2)	(3)	(4)
	All countries	SSA	All countries	SSA
GDP growth	-0.107 (0.183)	-0.095 (0.249)	0.090 (0.483)	0.108 (0.415)
Fragile State	-0.133 (0.740)	0.032 (0.941)	0.261 (0.501)	0.389 (0.345)
Natural Resources	0.343 (0.426)	0.241 (0.605)	0.372 (0.335)	0.307 (0.475)
Ln (livestock production index)	0.569** (0.020)	0.604** (0.014)		
Ln (cereal production)			0.553** (0.027)	0.506* (0.058)
Constant	12.426*** (0.000)	12.122*** (0.000)	10.373*** (0.000)	10.550*** (0.000)
Observations	48	44	47	43
R-squared	0.064	0.064	0.125	0.103

Robust p-values in parentheses. \*\*\* implies significance at the 1 percent level, \*\* implies significance at the 5 percent level and \* implies significance at the 10 percent level.

**Table 6: Employment and Sophistication/Modernization of the Agricultural Sector**

VARIABLES	(1)	(2)	(3)	(4)
	All countries	SSA	All countries	SSA
GDP growth	0.050 (0.558)	0.056 (0.523)	0.012 (0.927)	0.005 (0.967)
Fragile State	0.442 (0.125)	0.494 (0.111)	0.074 (0.830)	-0.003 (0.993)
Natural Resources	-0.228 (0.477)	-0.296 (0.392)	-0.016 (0.971)	0.101 (0.839)
Ln (agricultural tractor exports)	0.518*** (0.000)	0.510*** (0.000)		
Ln (tractors)			0.325*** (0.000)	0.350*** (0.001)
Constant	6.927*** (0.000)	7.022*** (0.000)	12.459*** (0.000)	12.333*** (0.000)
Observations	47	43	30	26
R-squared	0.479	0.469	0.357	0.345

Robust p-values in parentheses. \*\*\* implies significance at the 1 percent level, \*\* implies significance at the 5 percent level and \* implies significance at the 10 percent level

**Table 7: Employment and Agricultural Productivity Enhancing Factors**

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	All countries	SSA	All countries	SSA	All countries	SSA
GDP growth	-0.049 (0.376)	-0.041 (0.477)	0.003 (0.944)	0.003 (0.935)	-0.024 (0.377)	-0.026 (0.353)
Fragile State	0.008 (0.982)	0.133 (0.737)	0.238 (0.368)	0.256 (0.365)	0.795*** (0.002)	0.780*** (0.004)
Natural Resources	0.026 (0.947)	-0.079 (0.857)	-0.466* (0.077)	-0.462 (0.103)	-0.528** (0.033)	-0.551** (0.041)
Ln (air freight)	0.292*** (0.000)	0.276*** (0.000)				
Ln (road network)			0.823*** (0.000)	0.813*** (0.000)		
Ln (mobile phone subscribers)					0.764*** (0.000)	0.772*** (0.000)
Constant	14.394*** (0.000)	14.346*** (0.000)	6.649*** (0.000)	6.728*** (0.000)	4.694*** (0.000)	4.622*** (0.001)
Observations	44	40	48	44	48	44
R-squared	0.321	0.293	0.707	0.714	0.746	0.731

Robust p-values in parentheses. \*\*\* implies significance at the 1 percent level, \*\* implies significance at the 5 percent level and \* implies significance at the 10 percent level

The estimation results are presented in Tables 4-7. Table 4 employs measures that reflect agriculture dependence, Tables 5 and Table 6 show the regressions for the agricultural productivity and agricultural sophistication variables, respectively, and Table 7 shows the results for the variables that facilitate the productivity of the agricultural sector. Here again we report the results for the full sample and the Sub Saharan Africa sample. We run a total of 18 regressions. The estimated coefficient of *agric* is positive and significant at the 1% in 8 regressions, positive and significant at the 5% level in 3 regressions (Columns (1), (2) and (3) of Table 5); and positive and significant at the 10% level in one regression (Column (4) of Table 5). This indicates that agriculture promotes employment in Africa and the result is robust. For example, the results for the full sample suggest that all else being equal, a 10% increase in agricultural exports will expand employment by about 5% (Column 3, Table 4). A similar increase in cereal yield and tractor imports will increase employment by about 5.54% (Column 3, Table 5) and 5.18% (Column 1, Table 6), respectively. Thus, the results suggest that suppose you take two countries that have attained the same level of economic growth, are similar in terms of natural resource abundance and fragility, but differ

in terms of the sophistication/productivity of the agricultural sector. Then the more sophisticated country will generate more employment. An important point is that the agriculture related variables have a direct causal impact on employment. Clearly, this result has important policy implications.

### CONCLUSION

In the preceding sections, an attempt has been made to develop and test hypotheses on the factors impacting job creation and the role of economic growth in job creation. Our results show that overall growth did not have a significant impact on employment. The level of natural resource dependence and the state of fragility of the country have no specific impact on job creation, as there was no significant difference in employment creation for resource dependent and non-resource dependent countries, and fragile and non-fragile states. African countries that were dependent on agriculture, had a sophisticated, productive agricultural sector, or that had better transportation and communication networks were more successful in creating jobs.

These results are significant as a jobless growth economy has serious implications for all – policymakers and citizens alike. The results also matter because agriculture is the cornerstone of the African society, and that most nations depend on the sector for economic growth and employment creation. The finding on the importance of the level of sophistication of the sector means that a concerted effort is needed to integrate local knowledge into agricultural policy. Our results support the argument by (Lwoga et al., 2011) that research should be taken more seriously.

The results also show that key factors are central to the impact of agriculture on employment – the size of the sector and its ability to absorb a large population seeking opportunities for engagement; and the sophistication level of the sector and whether it is attractive particularly to the educated youth. Regional integration policies that expand the opportunity space by increasing the size of economies and markets could therefore prove critical. Also needed are regional policies that can support the development and enhancement of innovation systems including investment in science and technology education to speed up the creation of a cadre of young people that can lead the transformation of stages of production from dependencies on primary products and extraction. Policies and programs that can modernize agriculture and support effective creation of value

chains that enhance the value added from agriculture that can excite youth back to the rural areas would also contribute to the sophistication of the sector, and therefore add to job creation opportunities.

Africa's population is predominantly rural and with a large share of the labor force in agriculture, making rural activities a major part of the equation of job creation. Our results further support the recognition by Kararach, Hanson and Léautier (2011), Puplampu (2004) and World Bank (2009) that in the short term, rural activities both farm and non-farm, can effectively create occupation for most new job seekers. Our results also are in line with the observation by Proctor and Lucchesi (2012) that governments and their development partners, going forward, need to engender a supportive and enabling environment for agriculture and agribusiness including providing a new focus on youth through rural and agricultural policy and investment. Our findings support in particular, the sort of activities needed to transform the sector such as agrifood value chains including the growth of modern retail, growth of regional and south-south trade in agricultural products and support for activities like transport, storage, packaging, financial services, quality assurance and auditing.

There is room for further research including examining whether the results we found hold for other developing countries—or it pertains only to Africa? If so then Africa is “different”. The other area for further work is to analyze the gender dimension and the specific effect of explanatory variables to see whether there is a difference for male and female unemployment.

### REFERENCES

- ACBF (2012), Africa Capacity Indicators Report 2012 – Capacity Development for Agricultural Transformation and Food Security. Harare, Zimbabwe: The African Capacity Building Foundation.
- AfDB (2012), African Development Indicators. [www.afdb.org](http://www.afdb.org). [Also referenced as World Bank, 2011]
- AfDB (2011), The Middle of the Pyramid: Dynamics of the Middle Class in Africa. AfDB Market Brief, April 20, 2011. [www.afdb.org](http://www.afdb.org).

- Aghion, P., P. Howitt, and C. Garcia-Peñalosa (1998), *Endogenous Growth Theory*. MIT Press.
- Arbache, J.S., A. Kolev, and E. Filipiak (eds.) (2010), *Gender Disparities in Africa's Labor Market*. A co-publication of the Agence Française de Développement and the World Bank.
- Asiedu, E. (2002), "On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different?" *World Development*, 30 (1), 107–119.
- Chuhan-Pole, P. and Angwafo, M. (eds.) (2011), *Yes Africa Can: Success Stories from a Dynamic Continent*. Washington, D.C.: World Bank.
- Collier, P. and A. Hoeffler (2012), *High-value Natural Resources, Development, and Conflict: Channels of Causation*. In P. Lujala and S. A. Rustad, eds. *High-Value Natural Resources and Peacebuilding* (London: Earthscan), 296-312.
- Easterly, W. and R. Levine (1997), "Africa's Growth Tragedy, Policies and Ethnic Division," *The Quarterly Journal of Economics*, 112 (4), 1203-1250.
- FAO (2011), *The State of Food and Agriculture – Women in Agriculture: Closing the Gender Gap for Development*. Rome: Food and Agricultural Organization of the United Nations.
- Kararach, G., Hanson, K.T., and Léautier, F.A. (2011), "Regional Integration Policies to Support Job Creation for Africa's Burgeoning Youth Population." *World Journal of Entrepreneurship, Management and Sustainable Development*, 7 ( 2/3/4), 117-215
- Léautier, F. and K. Hanson (2011), "Jobless Economic Growth: Lessons from Africa", Paper presented at the 38th Annual Conference of the Eastern Economic Association. March 9-12, 2012. Boston Park Plaza Hotel, Boston, MA.
- Lwoga, E.T., P. Ngulube and C. Stilwell (2011), "Challenges of Managing Indigenous Knowledge with other Knowledge Systems for Agricultural Growth in Sub-Saharan Africa" *International Journal of Libraries and Information Services*, 61 (3), 226-238.
- Meijerink, G. and P. Roza (2007), "The Role of Agriculture in Economic Development." *Markets, Chains and Sustainable Development Strategy and Policy Paper*, no. 5. Stichting DLO: Wageningen. Available at <http://www.boci.wur.nl/UK/Publications/>



- Novotný, J. and N. Ramachandran (2010), "Alternative to Jobless Growth? All-India Context and a Case for Participatory Development Scheme from Rural Tamil Nadu", *GEOGRAFIE*, 115 (3), 330-346.
- Pieterse, J.N. (2010), *Development Theory*. Second Edition. SAGE Publications, London.
- Proctor, F. and V. Lucchesi (2012), *Small-scale Farming and Youth in an Era of Rapid Rural Change*. International Institute for Environment and Development (IIED), London.
- Puplampu, K.P. (2004), "Research and Development in Africa: An Analysis of Policies and Programs in the Agricultural Sector." In S. Adjibolosoo (ed.) *The International Development Program of Activities: What Are We Doing Wrong?*, (Bloomington, IN: Ist Books), 111-138.
- Romer, P. (1994), "The Origins of Endogenous Growth", *The Journal of Economic Perspectives*, 8 (1), 3-22.
- Sachs, J. D., and A. M. Warner. (2001). "The Curse of Natural Resources", *European Economic Review*, 45, 827-38.
- World Bank (2008), *World Development Report 2008: Agriculture for Development*. Washington, DC: World Bank
- World Bank (2009), *World Development Report 2009: Spatial Disparities and Development Policies*. Washington, DC: World Bank.
- World Bank (2011), *African Development Indicators (ADI)*, Washington, DC: World Bank.
- World Bank (2011), *World Development Report 2011 - Conflict, Security, and Development*. Washington, DC: World Bank.
- World Bank (2012), *Global Economic Prospects: Uncertainties and Vulnerabilities*, 4 (January), Washington, DC: World Bank.