1. Driving factors of male employment in African countries

John C. Anyanwu¹,²

Abstract
The issue of employment is currently one of the greatest development challenges facing countries globally, including those in Africa. In 2011, the global male employment-to-population was estimated at about 72.7% compared to the female employment-to-population ratio of only 47.9%. For Africa as a whole, the employment-to-population ratio for males was estimated at about 69.2% compared to a ratio for females of only 39.2%. In addition to analyzing the characteristics of male employment in Africa, this paper empirically studies its key drivers (proxied by the male employment-to-population ratio for the age group 15–64 over the period 1991–2009), using cross-sectional data. The results suggest that for all-Africa estimation, quadratic (squared) levels of real per capita GDP, greater access to credit by the private sector, more education, and higher male share of the population increase male employment while higher level of real GDP per capita, higher government consumption expenditure, urban share of the population, and being a net oil-exporting country tend to lower it. In Sub-Saharan Africa, our results indicate that higher domestic investment, greater access to credit by the private sector, more education, and higher male share of the population increase male employment, while higher government consumption expenditure, greater openness of the economy, urban share of the population, and being a net oil-exporting country tend to lower it. However, North Africa presents a different picture. The North Africa sample results indicate that while the quadratic (squared) element of democracy, greater access to credit by the private sector, inflation, and greater openness of the economy increase male employment; the level of real GDP per capita, the level of democracy, increased inflow of foreign direct investment, and being a net oil-exporting country tend to lower male employment in the subregion. The policy implications of these results are discussed.

Key words: Male employment-to-population ratio; female employment-to-population ratio; determinants; Sub-Saharan Africa; North Africa.

JEL classification: J16, J21, J64, J68, I32, C33, E24, O55.

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². The views expressed here are those of the author and in no way reflect those of the AfDB or its Executive Directors.
**Résumé**
La question de l’emploi est actuellement l’un des grands défis au développement que doivent relever les pays du monde, y compris ceux d’Afrique. En 2011, tandis que le ratio emploi masculin-population était estimé à 72,7 % au niveau mondial, le ratio emploi féminin-population plafonnait à 47,9 % seulement. Dans toute l’Afrique, le ratio emploi masculin-population n’est que de 69,2 % alors que le ratio emploi féminin-population s’établit à 39,2 %. L’article analyse les caractéristiques de l’emploi chez les hommes en Afrique et en étudie empiriquement les principaux déterminants (sur le ratio emploi masculin-population du groupe d’âge 15–64 ans et sur la période 1991–2009) à partir d’une base de données transversale. Nos résultats montrent que, sur l’ensemble de l’Afrique, des niveaux quadratiques de PIB réel par habitant, un plus grand accès au crédit pour le secteur privé, un meilleur niveau d’éducation et une proportion plus importante d’hommes dans la population améliorent la situation de l’emploi chez les hommes ; par contre, la situation a tendance à se dégrader avec l’accroissement du PIB réel par habitant, l’augmentation des dépenses de consommation du gouvernement, une plus forte proportion de citadins dans la population et le fait que le pays soit exportateur net de pétrole. Nos résultats se présentent comme suit : en Afrique subsaharienne, la situation de l’emploi chez les hommes s’améliore en fonction d’un certain nombre de facteurs – augmentation des investissements dans le pays, facilité d’accès au crédit pour le secteur privé, qualité du système éducatif, forte proportion d’hommes dans la population – et a tendance à se dégrader lorsque les dépenses de consommation du gouvernement sont élevées, l’économie plus ouverte, la proportion de citadins plus importante dans la population totale, et quand le pays est un exportateur net de pétrole. En Afrique du Nord cependant, l’élément quadratique de la démocratie, un plus grand accès au crédit de la part du secteur privé, l’inflation, ainsi qu’une ouverture accrue de l’économie améliorent la situation de l’emploi chez les hommes, mais celle-ci se dégrade avec le niveau du PIB réel par habitant, le niveau de démocratie et l’afflux accru d’investissements étrangers directs, et lorsque le pays est un exportateur net de pétrole. L’auteur examine les conséquences de ces résultats en termes de politiques.

**Mots clés :** Ratio emploi masculin-population ; ratio emploi féminin-population ; déterminants ; Afrique ; Afrique sub-saharienne ; Afrique du Nord.

**Classification JEL :** J16, J21, J64, J68, I32, C33, E24, O55.
1. INTRODUCTION

The issue of employment has grown in prominence on national and global development agendas in recent times, given its socio-economic and political implications. Though the employment challenge has its own dimensions, it scourges countries worldwide regardless of their stage of socio-economic development. Thus, employment is currently a global policy issue: employment increases economic growth; promotes political and social stability; positively affects progress toward the Millennium Development Goals (MDGs) and poverty reduction generally. It also leads to greater social equality and more efficient resource allocation; increased productive potential; and low dependency ratio (Anyanwu 2012; Anyanwu and Erhijakpor 2012; World Bank 2012a). In 2011, the male employment-to-population ratio, globally, was estimated at about 72.7% compared to a female employment-to-population ratio of only 47.9%. For Africa as a whole, the male employment-to-population ratio was estimated at about 69.2% compared to a female employment-to-population ratio of only 39.2%. While estimates for Sub-Saharan Africa stood at 70.4% (male) to 58.8% (female), the gender gap was more pronounced in North Africa. Women in North Africa faced an employment rate of only 19.6% (compared to the global average of 47.9%), the second lowest of all regions and subregions in the world – and against a figure of 68% for the men in the subregion during the same year.

What factors are driving male employment in Africa and its key components? In addition to analyzing the characteristics of male employment in Africa, this paper empirically studies the key drivers (proxied by the male employment-to-population ratio for the age group 15–64 over the period 1991–2009), using cross-sectional data. It also draws out important policy implications for African countries. The model is estimated by feasible generalized least squares (FGLS) method, with subregional and oil-fixed effects. A deeper understanding of the key determinants of male employment in Africa is crucial for implementing effective policies to make Africa's labor market more inclusive and promote gender equality in employment so as to reap its benefits in the shortest time possible.

The next section of the paper summarizes the evidence on the characteristics of male employment-to-population ratios, an indicator of how effectively a country utilizes its male productive potential. The third section reviews some relevant empirical literature. The fourth section presents the model and data, while section five presents the cross-country regressions of the key determinants of male employment for the entire continent, Sub-Saharan Africa and North Africa. The last section concludes with policy recommendations.
2. CHARACTERISTICS OF MALE EMPLOYMENT IN AFRICA

Low employment is a global problem

As noted above, the employment problem is currently a global phenomenon. Figure 1 demonstrates the relationship between male (malesq22012) and female employment ratios in OECD countries during the second quarter of 2012. It shows that the problem is most acute in countries like Greece, Spain, Hungary and Italy, for both male and female employment – and also Turkey for female employment. However, the problem is also serious in Belgium, France, the Euro Area and EU generally, among others. Yet, employment, including for males, is critical for economic development (see Figure 2 for the positive correlation between male employment (empmrnew) and economic growth in Africa, for example).

Figure 1: Relationship between male and female employment ratios in OECD countries, Q2-2012

Source: OECD database.
Figure 2: Positive correlation between male employment ratios and economic growth in Africa, 1991–2011

Male employment ratio relatively high in Africa but far below that of South Asia; however, it fell in all regions between 1991 and 2011

In 2011, the South Asia region recorded the highest average male employment ratio (at about 78.5%) (Figure 3). While the male employment ratio for the whole of Africa was relatively high at 69.3%, that of Sub-Saharan Africa was slightly higher, at 70.8%. Africa’s performance was pulled down slightly by North Africa’s average of only 67.8%. However, as the figure shows, male employment ratios fell between 1991 and 2011 in all regions.

Sources: ILO and World Bank databases, ILO (2012a), World Bank (2012b).
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Figure 3: Male employment ratios by global regions, 1991 and 2011

![Bar chart showing male employment ratios by global regions for 1991 and 2011.]

Sources: ILO database, ILO (2012a).

Figure 4 presents the average employment ratio for men and women in African countries in 1991 and 2011. It shows that employment was significantly higher for men. For the continent as a whole in 2011, the male employment ratio stood at about 69%, compared to 39% for women (1.8 times higher than for women). However, these average figures hide huge disparities between North Africa and Sub-Saharan Africa (Figure 5). In addition, there is greater gender inequality in employment in North Africa than in Sub-Saharan Africa, across all age groups (Figures 6 and 7).
Figure 4: Male and female employment ratios in Africa, 1991 & 2011

![Bar charts showing male and female employment ratios in Africa, 1991 & 2011](image)

Sources: ILO database, ILO (2012a)

Figure 5: Male and female employment ratios in North Africa & Sub-Saharan Africa, 2011

![Bar charts showing male and female employment ratios in North Africa & Sub-Saharan Africa, 2011](image)

Sources: ILO database, ILO (2012a, b).

Figure 6: Male and female employment ratios in North Africa, 1991 & 2011

![Bar charts showing male and female employment ratios in North Africa, 1991 & 2011](image)

Sources: ILO database, ILO (2012a, b).

Figure 7: Male and female employment ratios in Sub-Saharan Africa, 1991 & 2011

![Bar charts showing male and female employment ratios in Sub-Saharan Africa, 1991 & 2011](image)

Sources: ILO database, ILO (2012a, b).
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As Figure 8 demonstrates, the average male employment-to-population ratio in North Africa (57%) is far greater than that for women (18%). This huge gender gap in employment in North African countries largely explains the generally low levels of employment ratios in the subregion. For the African continent as a whole, the employment ratio averaged 45% for males against 38% for females between 1991 and 2011. In Sub-Saharan Africa, the employment ratio averaged 71.3% for males compared to 57.3% for females.

In 2011, the employment ratio in North Africa was 68% for men, compared to just 20% for women, aged 15 and above. In Sub-Saharan Africa in the same year, the employment ratio was 71% for men, compared to 59% for women.

Male adult employment ratios are also higher than those for the youth, but much more so in North Africa, where it stands at more than double that of the youth male (Figure 9). Indeed, in 2011, while the ratio of male adult–to-youth employment in Sub-Saharan Africa was 1.7, it was 2.2 in North Africa.

**Figure 8: Male and female employment ratios in Africa’s major subregions, 1991–2011 (%)**

![Line chart showing employment ratios for North Africa and Sub-Saharan Africa from 1991 to 2011](chart.png)

Sources: ILO database, ILO (2012).
Substantial variation in male employment ratios across African countries

There were substantial variations in male employment ratios across African countries between 1991 and 2011. Figure 10 also shows that a number of smaller African economies have relatively higher male and female employment ratios compared to richer, oil-exporting and North African economies.

Figure 9: Male adult and youth employment ratios in Africa, 1991–2011

Sources: ILO database, ILO (2012a, b).
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Figure 10: Relationship between average male and female employment ratios in African countries, 1991–2011

![Graph showing the relationship between male and female employment ratios in African countries, 1991–2011.](image)

Sources: ILO database, ILO (2012a).

Falling male employment trend in Africa generally
Male employment has fallen generally since 1991 across the continent, but the decline has been dramatic in some countries. These include Niger, Benin, Rwanda, Lesotho, Kenya, and Burundi (Figure 11). A similar picture is evident in the OECD countries between 2009 and 2012 (Figure 12).
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Figure 11: Male employment ratios did not generally increase between 1991 and 2010 in African countries

Sources: ILO database, ILO (2012a).

Figure 12: OECD countries: Male employment ratios on a decline between 2009 and 2012

Sources: OECD database, ILO (2012a).
Overall, a substantial gender inequality persists in African countries. As shown in the distribution of the difference between average male and female employment ratios (malefemalediffemp) between 1991 and 2011, the gap between the two is not symmetrical but positively distributed, indicating gendered social exclusion (Figure 13).

**Figure 13: Distribution of average male minus female employment ratios in Africa, 1991 and 2011**


### 3. REVIEW OF THE LITERATURE

The literature suggests that the key determinants of male employment relate to a country’s stage of economic development, access to credit by the private sector, globalization, demographic factors, macroeconomic factors, education, cultural and social norms, perceptions and expectations, and political systems.

It is hypothesized that as countries develop, the male labor force participation generally increases. Böserup (1970) suggests that men’s greater access to education and technologies leads to their displacing women from the labor force during the early stages of a country’s development. However, as development increases and women gain more access to education and technologies, the female labor force participation increases.
Another well-established hypothesis for this phenomenon focuses on income and substitution effects. As development occurs, households’ unearned incomes rise, reducing the incentive for women to work outside the home. The negative impact of rising incomes on women’s labor force participation is termed the “income effect,” since greater household income implies that households are able to afford more female leisure time. On the other hand, the “substitution effect” works in the opposite direction – as female wages rise, more women have the incentive to enter the labor market (Goldin 1995; Mammen and Paxson 2000; Bloom et al. 2009; Chaudhuri 2009; Tam 2011). The stylized U-shaped curve holds for overall male employment in African countries. It can be seen in Figure 14, which depicts the relationship between economic development (as captured by real GDP per capita) and the male employment ratio across African countries between 1991 and 2011.

Figure 14: Africa: U-shaped correlation between male employment ratio and GDP per capita, 1991–2011

The male employment ratio in Africa partly reflects the natural resource endowment structure, being low in fossil fuel-rich and mineral-rich economies. For example, Algeria, Egypt, Libya, and Sudan have very low employment ratios relative to their income levels. The same applies to countries like Gabon, Mauritania, and Tanzania, among others.
Recent empirical work reveals that foreign direct investment (FDI) and international trade can generate employment opportunities for both men and women (Richards and Gelleny 2007; see also ILO 2012c). According to Oostendorp (2009), in the long term, FDI may increase male employment at the expense of females; alternatively, women may be pushed down the production chain into subcontracting work. Furthermore, FDI may widen the gender gap as technical training is offered primarily to men, thereby “improving male technical knowledge and reducing women’s access to technology and employment” (Parpart et al. 2000). Also, by benefiting men, FDI may reinforce existing gender inequalities (Ward 1984; Ernesto 2011).

Policies designed to increase trade and FDI inflows reduce state revenues, and therefore reduce the government’s capacity to provide social services. Because women are often the key beneficiaries of these services, economic integration can act against men’s employment in many dimensions.

In a recent study, Tseloni, Tsoukis, and Emmanouilides (2011) reveal a greater participation of women in paid employment than men in more populous countries, with a greater share of women in their populations, more equal income distribution, and higher growth rates. However, such countries also evince a lower level of economic development, democracy ratings or international capital mobility (i.e., current account surplus or deficit/GDP).

The banking sector is the key conduit for financial intermediation in an economy. Thus, access to credit by the private sector enhances the productive capacity of businesses. Businesses and enterprises with adequate credit access have greater potential to grow in terms of sales, revenues, and operations; to expand investments; and to create more employment. Indeed, greater access to credit by the private sector fosters growth because it means that fewer firms will be financially constrained and more investment projects will be undertaken. This in turn should foster employment and economic growth.

Financial development also contributes to building and improving productivity of assets held by poor people, creating opportunities for entrepreneurship and new investments, improving efficiencies in product and factor markets, while stimulating private sector development and job creation (see Gandelman and Rasteletti 2012). Also, as IFC (2012) notes, improving access to finance helps firms expand their operations, which can have a positive effect on the quality and number of jobs created. The effects tend to be greatest for smaller firms. In a recent review of seven evaluations that focused on the provision of loans and advisory services to MSMEs and households, the IFC (2012) found that private sector access to credit has mainly positive
effects on job creation. The report concludes that increasing access to loans helped firms to expand, facilitating the hiring of more workers.

According to the findings of Niemi and Lloyd (1981), inflation has an independent, positive impact on female labor force participation. As a result of women’s lower cash holdings relative to men, it is posited that it possible that women are less adversely affected than men by increases in inflation (Cardoso 1992).

Another macroeconomic variable is domestic investment. Domestic investment is a key source of employment, wealth creation and innovation. Without it, countries are unable to spur the growth of their economies or to sustain the reduction of poverty over the long term. Where domestic investment is low, the productive capacity of the economy fails to increase. This results in lower rates of economic growth, fewer opportunities for the poor to improve their livelihoods, and lower rates of job creation. As the ILO (2011) shows, investment growth has a strong and positive effect on employment creation. The results show that a 1 percentage point increase in the investment growth rate produces a 0.12 percentage point increase in employment growth. In addition, results from ILO (2012c) show that both private and public investment rates positively and strongly affect employment.

The literature on the relationship between government consumption expenditure and employment focuses on the transmission mechanisms and the results of policy actions. According to the real business cycle (RBC) model, an increase in government consumption expenditure (financed by current or future lump-sum taxes) has a negative wealth effect which should lead to a decline in consumption and hence a rise in labor supply. The rise in labor supply leads, in equilibrium, to a lower real wage, higher employment and higher output (Ramey 2011a, 2011b; Wilson 2012). However, the New Keynesian models differ in that they generally assume some degree of stickiness, that is, that wages and prices do not adjust instantly to economic shocks (Christiano, Eichenbaum, and Rebelo 2011).

Earlier, the Keynesian IS-LM model had asserted that consumption rises in response to an increase in government consumption expenditure. According to the proponents of this position, consumers exhibit non-Ricardian behavior in the IS-LM model and consumption is a function of current disposable income. Thus, the impact of an increase in government consumption expenditure depends on how the government consumption expenditure is financed, with the fiscal multiplier increasing in line with the extent of deficit financing (see Wilson 2012). Indeed, Wilson (2012) concluded that
though the impact depends on the environment in which expenditures are made, the effects of government investment are potentially greater than other types of government expenditure, a finding which was also attested by Kehoe and Serra-Puche (1982).

Aiyagari, Christiano, and Eichenbaum (1990) also find that persistent changes in government consumption have contemporaneous employment and output effects which are larger than those due to transitory changes. Fatás and Mihov (2002) maintain that increases in government consumption lead to increases in employment. Also, the ILO (2012c) finds that government expenditures on public wages and salaries, social benefits, and social transfers positively and significantly affect employment, while government expenditures on interest payments significantly reduce employment.

As Sakellariou (2011) explains, changes in educational attainment and in the demographic profile of the population, explain changes in the female–male gap in labor force participation, especially in rural communities. Changes in education and literacy help to explain the variation in male and female labor force participation within a country (Ogawa and Akter 2007; World Bank 2010; Gallaway and Bernasek 2004) and in employment in US multinational enterprises (MNEs) in Africa (Asiedu 2004).

Campa et al. (2011) analyze the extent to which the gender culture affects the gender gap in employment. They show that the index of gender culture, based on firms’ attitudes as well as female literacy and education, is significant in explaining the gender gap in employment in Italian provinces. As Forsythe et al. (2000) have noted, “rapid development is particularly likely to be accompanied by greater gender rigidity in a country with a tradition of patriarchal institutional arrangements.” Indeed, Böserup (1970), Moghadam (1994), Shukri (1996), Psacharopoulos and Tzannatos (1989) have found that Muslim and Latin American countries – i.e. countries with strong socio-religious views about women’s role in the public sphere and the workplace – are more likely to be characterized by entrenched patriarchal institutions (see also Antecol 2000; Fernández 2010; Fernández and Fogli 2005; Fernández, Fogli, and Olivetti 2004).

In addition, the seminal work by Hegre et al. (2001) supports a quadratic relationship between democracy and employment. Democracy could also unleash women’s labor market potential and open up the decision-making process to the less privileged, including women, resulting in redistributive policies that would benefit these groups. Democracy could also increase women’s employment by increasing expenditures on social programs. We
therefore expect that democracy will not have significant positive effect on male employment.

4. THE MODEL AND DATA

This section focuses on the econometric analyses of the determinants of male employment in Africa. We use the cross-sectional time series data covering 48 African countries to empirically study the key drivers of male employment in the continent during the period 1991 to 2009. The variable that proxies male employment (male employment-to-population ratio for the age group 15-64 over the period) was used as dependent variable. The level of economic development, along with other control variables, acted as independent variables.

**Independent Variables**

*Level of economic development*

To control for the level of economic development, we include a nation’s real gross domestic product (GDP) per capita measured in terms of constant 2000 dollars. We also include the square of real GDP per capita in order to determine whether a non-monotonic relationship exists between development and male employment. The quadratic term tests Böserup’s (1970) assertion that the gap between men and women increases at intermediate levels of economic development but subsequently narrows after a nation has achieved a certain level of economic development.

We also include economic growth (real GDP growth rate) separately to control for the possibility that an economic decline or slowdown might have adverse effects on male employment independent of the level of development.

*Institutionalized democracy*

It has been hypothesized that democracy increases equity in gender relations as women and men become empowered through the political process. This is because it is assumed that democratic regimes have greater respect for human rights, relative to authoritarian regimes. We use the measure democracy from the Polity IV Project, in which a country’s level of democracy is ranked along a 21-point spectrum, ranging from -10 for fully institutionalized autocracies to +10 for fully institutionalized democracies, based on research conducted at the Center for International Development and Conflict Management, University of Maryland. Since it is intuitively plausible that democratic countries encourage male employment, we expect
that increasing levels of democracy will act to increase women’s employment more than men’s. Democracy is fitted as a quadratic function for capturing possible average across country non-linear effects.

**Access to credit by the private sector**
As noted earlier, access to credit by the private sector enhances the productive capacity of businesses, leading to greater potential to grow in terms of sales, revenues, and operations. Moreover it expands investments and creates more employment. We therefore include banking system’s credit to the private sector as a percentage of GDP. The higher the value of credit to the private sector, the more resources firms have at their disposal for investment, expansion and entrepreneurship, all of which increase employment.

**Macroeconomic factors**
Three indicators are used to measure macroeconomic conditions: (i) the inflation rate (percentage change in CPI), (ii) domestic investment rate, and (iii) government consumption expenditure relative to GDP. With respect to inflation’s effect on employment, the current literature is inconclusive. Some experts contend that inflation hurts women more than men, since women are disproportionately represented among the poor and thus unable to protect their consumption levels in the presence of rising inflation. However, others assert that inflation will not harm women as much as men due to their lower cash holdings; further still, others contend that inflation may actually benefit women by increasing labor force participation. We expect inflation to have a negative effect on men’s employment.

The second indicator of macroeconomic condition is a nation’s domestic investment measured as a percentage of GDP. The higher the value of investment rate, the more resources a government and the private sector ostensibly have at their disposal to spend on economic and social programs, including investments for employment creation.

The third macroeconomic condition is government consumption expenditure measured as a percentage of GDP. The higher the value of government consumption expenditure, the less resources the government has at its disposal to spend on economic and social programs, including investments for employment creation for both men and women.

**Demographic factors**
To measure the effect of key demographic variables on men’s employment, three indicators are used: (i) population growth rate, (ii) ratio of male to female population of those aged 15 to 64, and (iii) the share of urban areas
to total population. Increasing population growth is expected to narrow the
gender equality in employment. Inclusion of the sex population ratio ensures
that changes in the population ratio due to changes in the sex population
ratio are properly accounted for. In light of the above, the population sex
ratio is expected to have a positive effect on the male employment. More
specifically, increases in the male–female population ratio, a measure of
labor supply, are expected to lead to increases in male employment. Thus,
the higher the proportion of men in a nation’s population, the higher will
be the employment of men. On the other hand, living in an urban area is
associated with an increase in access to labor markets and formal employ-
ment opportunities. Men, like their female counterparts, have access to more
economic opportunities in urban areas than in rural areas. This is because
urban labor markets offer a wide variety of occupations, from manufactur-
ing and services to clerical activities. Thus, increased urbanization rate is
expected to lead to higher levels of male employment.

Globalization
In order to control for the effect of globalization on male employment,
trade openness of the economy and foreign direct investment (FDI) are
included as explanatory variables and are measured as a percentage of GDP.

A nation’s openness to trade is defined as the sum of net exports of goods
and services as a percentage of GDP. An increase in openness is hypothesized
to augment male labor force participation thereby increasing male employ-
ment. In addition, if the export sector is primarily capital intensive, then
male employment is expected to decrease as a result of differential access
to productive resources.

As authors like Oostendorp (2009) have argued, FDI is assumed to be
positively associated with higher employment, especially for women. On
the other hand, some authors have argued that FDI can have a positive
effect on male employment by serving to reinforce existing gender in-
equalities in the access to the labor market and the gender division of labor.
Indeed, in the predominantly agricultural nations of Africa, men have a
greater advantage in producing export crops, compared with women who
predominately produce crops for subsistence and local consumption. Ac-
ccording to this hypothesis, greater access to export channels through FDI
would further widen the gender gap. Many African countries are today
blessed with abundant natural resources, which have been attracting huge
FDI. However, most natural resources sectors such as minerals, are enclave
and capital-intensive sectors, and operate to the advantage of men, thus
widening the gender gap in employment.
Level of general education
Education tends to broaden one’s views, reduce ethnocentricity, and increase one’s flexibility to accept new customs and norms. As such, the level of education attained by the general population plays an important role in increasing access to the labor market and employment opportunities. Indeed, men with higher levels of education are more likely to enter the labor market, especially in urban areas, which may reflect their higher wage premiums and higher opportunity cost of being inactive (see also Ogawa and Akter 2007).

Subregional and oil effects
We include the five subregional dummies to capture subregional effects. In addition, to capture the effects of net oil exporters, we add two dummies representing net oil exporters and net oil importers.

The Model
Based on the above review and following the frameworks posited by Tseloni, Tsoukis and Emmanouilides (2011), Choudhry, Marelli, and Signorelli (2012), and Eastin and Prakash (2013), the relationship that we want to estimate can be written as:

\[ \log ME_{it} = \alpha_i + \beta_1 \log(rgd_{it}) + \beta_2 \log(rgd^{2}_{it}) + \beta_3 \log(credit_{it}) + \beta_4 (democ_{it}) \\
\beta_5 (democ^{2}_{it}) + \beta_6 (X_{it}) + \beta_7 (Z_{it}) + \epsilon_{it} \]

(1)

where \( ME \) is the measure of male employment in country \( i \) at time \( t \); \( \alpha \) is a fixed effect reflecting time differences between countries; \( \beta 1 \) is the elasticity of male employment with respect to real per capita income in 2000, \( rgd \); \( \beta 2 \) is the male employment elasticity with respect to quadratic real per capita GDP; \( \beta 3 \) is the coefficient of access to credit by the private sector, \( credit \); \( \beta 4 \) is the coefficient of democracy, \( democ \); \( \beta 5 \) is the coefficient of the quadratic of democracy; \( X \) is the control variables, including inflation (inf), domestic investment (% of GDP) (inv), trade openness (open), foreign direct investment (% of GDP) (fdi), primary school enrollment ratio (educ), urban population share (urban), population growth rate (popg), male–female population ratio (popratio); \( Z \) represents subregional and oil effects dummies used as fixed effects; and \( \epsilon \) is an error term that includes errors in the male employment measure. We use the North African dummy with its separate estimation to check if indeed, North Africa is different.
Data for these variables are largely drawn from the World Bank’s WDI Online database, except as indicated in Appendix 1. The Feasible Generalized Least Squares (FGLS) regressions with subregional and oil fixed-effects were estimated to investigate the determinants of male employment. Table 1 provides detailed descriptions of the raw dataset.

**Table 1: Descriptive statistics of main regression variables (excluding dummies), 1991–2009**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male employment ratio</td>
<td>931</td>
<td>71.77</td>
<td>10.04</td>
</tr>
<tr>
<td>Real GDP per capita</td>
<td>960</td>
<td>1065.43</td>
<td>1573.73</td>
</tr>
<tr>
<td>Credit to private sector-GDP</td>
<td>950</td>
<td>19.40</td>
<td>21.60</td>
</tr>
<tr>
<td>Govt consumption expd-GDP</td>
<td>895</td>
<td>15.82</td>
<td>8.00</td>
</tr>
<tr>
<td>Democracy</td>
<td>916</td>
<td>-3.57</td>
<td>23.17</td>
</tr>
<tr>
<td>Inflation</td>
<td>877</td>
<td>92.66</td>
<td>1175.11</td>
</tr>
<tr>
<td>Domestic investment-GDP</td>
<td>950</td>
<td>20.78</td>
<td>11.13</td>
</tr>
<tr>
<td>Openness</td>
<td>942</td>
<td>75.10</td>
<td>38.56</td>
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<tr>
<td>FDI-GDP</td>
<td>962</td>
<td>3.88</td>
<td>9.45</td>
</tr>
<tr>
<td>Education</td>
<td>623</td>
<td>36.72</td>
<td>26.36</td>
</tr>
<tr>
<td>Urban population share</td>
<td>1007</td>
<td>38.23</td>
<td>17.31</td>
</tr>
<tr>
<td>Population growth</td>
<td>1007</td>
<td>2.33</td>
<td>1.14</td>
</tr>
<tr>
<td>Male–female population ratio</td>
<td>988</td>
<td>1.03</td>
<td>0.06</td>
</tr>
<tr>
<td>Economic Growth</td>
<td>966</td>
<td>3.93</td>
<td>7.68</td>
</tr>
</tbody>
</table>

*Note: These are raw data before the log and other transformations.*

*Source: Author’s calculations.*

5. RESULTS AND ANALYSIS

Table 2 presents the results of estimating the male employment equation (1).

*Level of economic development*

In our model, the coefficient associated with real GDP per capita is found to be negative and statistically significant in the all-Africa and North Africa samples. To test the hypothesis that real GDP per capita has a non-monotonic relationship with male employment, the squared real GDP per capita is included as an explanatory variable. The quadratic term is positive in sign and significant at the 1 percent level in only the all-Africa sample.
1. Driving factors of male employment in African countries

Table 2: FGLS estimates of the determinants of male employment (with subregional and oil-fixed effects)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Africa</th>
<th>Sub-Saharan Africa</th>
<th>North Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP per capita</td>
<td>-14.993 (-3.32***</td>
<td>1.344 (1.92)</td>
<td>-9.729 (-3.17***</td>
</tr>
<tr>
<td>Real GDP per capita²</td>
<td>1.127 (3.39***</td>
<td></td>
<td>1.127 (3.39***</td>
</tr>
<tr>
<td>Democracy</td>
<td>0.036 (1.58)</td>
<td>0.030 (1.31)</td>
<td>-2.081 (-2.62**</td>
</tr>
<tr>
<td>Democracy²</td>
<td>0.00001 (-0.03)</td>
<td>0.0001 (0.17)</td>
<td>0.446 (2.07**</td>
</tr>
<tr>
<td>Inflation</td>
<td>-0.379 (-5.52***</td>
<td>-0.476 (-6.87***</td>
<td>-0.083 (-0.39</td>
</tr>
<tr>
<td>Govt. consumption</td>
<td>-0.379 (-5.52***</td>
<td>-0.476 (-6.87***</td>
<td>-0.083 (-0.39</td>
</tr>
<tr>
<td>expd-GDP</td>
<td>-0.379 (-5.52***</td>
<td>-0.476 (-6.87***</td>
<td>-0.083 (-0.39</td>
</tr>
<tr>
<td>Domestic investment-GDP</td>
<td>0.357 (0.48)</td>
<td>0.079 (1.65*)</td>
<td>-0.087 (-0.95</td>
</tr>
<tr>
<td>Openness</td>
<td>-0.007 (-0.52)</td>
<td>-0.025 (-1.80*)</td>
<td>0.146 (3.52***</td>
</tr>
<tr>
<td>FDI-GDP</td>
<td>0.027 (0.36)</td>
<td>0.087 (1.15)</td>
<td>-0.246 (-1.62*)</td>
</tr>
<tr>
<td>Education</td>
<td>0.124 (7.07***</td>
<td>0.114 (6.59***</td>
<td>0.176 (2.72**</td>
</tr>
<tr>
<td>Urban population share</td>
<td>-0.254 (-5.59***</td>
<td>-0.338 (-7.90***</td>
<td>0.586 (1.39</td>
</tr>
<tr>
<td>Population growth</td>
<td>-0.968 (-1.52)</td>
<td>-0.548 (-0.85)</td>
<td>-0.905 (-0.35</td>
</tr>
<tr>
<td>Male-female population</td>
<td>0.216 (2.59**)</td>
<td>0.260 (3.11**)</td>
<td>-0.137 (-1.17</td>
</tr>
<tr>
<td>ratio</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit to private sector-GDP</td>
<td>0.080 (4.14***</td>
<td>0.067 (3.29***</td>
<td>0.198 (6.36***</td>
</tr>
<tr>
<td>Net oil exporters</td>
<td>-8.210 (-7.42***</td>
<td>-11.771 (-9.86***</td>
<td>-11.425 (-1.75*)</td>
</tr>
<tr>
<td>Net oil importers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Africa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern Africa</td>
<td>-5.558 (-3.25***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Africa</td>
<td>5.079 (3.22***</td>
<td>12.881 (8.28***</td>
<td></td>
</tr>
<tr>
<td>East Africa</td>
<td>-5.220 (-3.15**)</td>
<td>-1.000 (-0.78)</td>
<td></td>
</tr>
<tr>
<td>West Africa</td>
<td>0.729 (0.44)</td>
<td>6.227 (4.89***</td>
<td></td>
</tr>
<tr>
<td>Real GDP Growth</td>
<td>0.066 (0.83)</td>
<td>0.022 (0.28)</td>
<td>0.019 (0.16</td>
</tr>
<tr>
<td>Constant</td>
<td>105.389 (6.08***</td>
<td>44.431 (5.16***</td>
<td>99.162 (3.16**</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-2008.122</td>
<td>-1803.161</td>
<td>-106.5155</td>
</tr>
<tr>
<td>Wald chi2</td>
<td>287.47</td>
<td>317.52</td>
<td>1219.41</td>
</tr>
<tr>
<td>Prob &gt; chi2</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>N</td>
<td>569</td>
<td>512</td>
<td>57</td>
</tr>
</tbody>
</table>

Note: t-values are in parentheses; *** = 1% significant level; ** = 5% significant level; * = 10% significant level.

These results provide evidence of a U-shaped relationship between real GDP per capita and male employment in Africa as a whole. Thus, these results suggest that although higher levels of real GDP per capita are negatively
associated with male employment, the effect is not constant. Rather, above a certain point, higher levels of real GDP per capita act to increase male employment, holding other factors constant. This relationship suggests that the marginal effect of real GDP per capita exhibits increasing returns for male employment. This finding supports Böserup’s (1970) assertion of a curvilinear relationship but this U-shaped relationship contradicts the findings of Tseloni, Tsoukis, and Emmanouilides (2011), and Eastin and Prakash (2013). We note, however, that real GDP per capita (both level and quadratic) is not significantly related to male employment in Sub-Saharan Africa, while the quadratic element is not significant in the North Africa sample – hence was dropped.

**Institutionalized democracy**

Institutionalized democracy is negative and statistically significant only in the North African sample, against earlier findings such as those of Tseloni, Tsoukis, and Emmanouilides (2011), and Eastin and Prakash (2013). The quadratic term included to determine whether democracy has a nonlinear effect on male employment is positive in sign and statistically significant in the North African sample also, indicating a U-shaped relationship between democracy and male employment in North Africa, holding other factors constant. Institutionalized democracy (both level and quadratic) does not significantly affect male employment in Africa as a whole, nor in Sub-Saharan Africa – hence the quadratic term was dropped in both results.

**Access to credit by the private sector**

The credit variable has a positive and statistically significant effect on male employment in the all-African, Sub-Saharan African and North African estimations. These results are consistent with the findings of IFC (2012), thus underscoring the huge role of access to finance in employment creation in Africa.

**Macroeconomic factors**

It is only in North Africa that rising inflation is found to be positively associated with increasing levels of male employment. This is consistent with some of the results of Eastin and Prakash (2013). This finding may be linked to the fact that a reduction in real wages increases male labor force participation, as men enter the workforce in greater numbers to supplement household earnings.

As shown in Table 2, a nation’s domestic investment rate is found to be positively and significantly associated with male employment only in the Sub-Saharan African estimation. Its effect is insignificant in the all-African
1. Driving factors of male employment in African countries

and North African estimations. This could be attributed to wastages, inefficiency, and corruption associated with investment projects in many African countries. Indeed, investment in white-elephant, unproductive activities, remains a development challenge confronting the continent.

Related to the issue of wastages is that of government consumption expenditures in Africa. Our results show that government consumption expenditures negatively and significantly affect male employment in both the all-African and Sub-Saharan African estimations. These results are also in conformity with the crowding-out theories prevalent in the literature.

*Globalization*

Trade openness is negative in sign and statistically significant in the Sub-Saharan African estimation but it is positive and statistically at the 1 percent level in the North African case. The North African results support the view that increasing levels of exports relative to imports may increase male employment and that an external market orientation may further enhance job opportunities for men. This suggests that labor-intensive export sectors dominate the capital-intensive sectors in North Africa, while the opposite is likely to be the case in Sub-Saharan Africa.

On the other hand, the FDI–GDP ratio was found to have a positive but insignificant effect on male employment in both the all-African and Sub-Saharan African estimations. However, it has a negative but statistically significant effect on male employment in North Africa. Our findings, therefore, do not support the proposition that the inflow of foreign direct investment enhances male employment in Africa. In fact, we found that it lowers male employment in North Africa.

*Education*

The education variable has a positive and statistically significant effect on male employment in the all-African, Sub-Saharan African, and North African estimations. This is consistent with Asiedu’s findings (2004). This supports the hypothesis that education tends to broaden one’s awareness of cultures and social norms that exist in industrial countries where both men and women are in most circumstances entitled to the same freedoms and opportunities.

*Demographic factors*

Increasing urbanization rates are found to be negatively and highly significantly associated with falling male employment in the all-African and Sub-Saharan African estimations. As seen in Table 2, this effect is statistically
significant at the 1 percent level in both cases. However, the variable is positive but insignificant in the North African case.

Furthermore, our results suggest that rising population growth rates have a negative but statistically insignificant effect on male employment in all three sample groups.

The ratio of male to female population has a positive and statistical significant effect on male employment in the all-African and Sub-Saharan African samples. Thus, the higher the proportion of men in a nation’s total population, the higher the level of male employment in that country. However, in North Africa, the male-to-female population ratio has a negative but insignificant effect on male employment.

Economic growth
In view of the various arguments about the effects of growth or development, we also entered the real GDP growth, in addition to real GDP per capita. The results show that real GDP growth was insignificant for three samples: all-Africa, Sub-Saharan Africa, and North Africa. These results were consistent with those of the ILO (2011) for developing economies.

Subregional and oil effects
The subregional fixed effects, which shift the intercepts, imply that Southern African countries, followed by those in East Africa, have lower male employment compared to Central and West Africa.

Our results also show that net oil-exporting countries generally have systematically lesser male employment compared to net oil-importing countries in Africa. This suggests that, holding other factors constant, net oil-exporting countries experience lower levels of male employment than net oil-importing countries. In this sense, our results also suggest that oil-exporting nations have failed to fully utilize their huge oil revenues to create adequate jobs for their citizens.

6. CONCLUSION AND POLICY RECOMMENDATIONS

Our empirical estimates, using available cross-sectional data over the period 1991 and 2009 suggest that in the all-African estimation, quadratic levels of real per capita GDP, greater access to credit by the private sector, more education, and higher male share of the population increase male employment while higher level of real GDP per capita, higher government consumption
1. Driving factors of male employment in African countries

Expenditure, urban share of the population, and being a net oil-exporting country tend to lower it. In Sub-Saharan Africa, our results indicate that higher domestic investment, greater access to credit by the private sector, more education, and a higher male share of the population increase male employment while higher government consumption expenditure, greater openness of the economy, urban share of the population, and being a net oil-exporting country tend to lower it. However, North Africa is different. The North African results indicate that while the quadratic element of democracy, greater access to credit by the private sector, inflation, and greater openness of the economy increase male employment; the level of real GDP per capita, the level of democracy, increased inflow of foreign direct investment, and being a net oil-exporting country tend to lower male employment in the subregion.

What are the implications of these results for African countries? Given our finding that government consumption expenditure reduces male employment across Africa and that domestic investment is not male employment-promoting in the overall sample and particularly in North Africa, achieving investment effectiveness must remain an active goal of governments. All actors, from governments to civil society, must share responsibility for making investment more productive, efficient and effective, and for preventing one of its main breakdowns: corruption. Political will and good governance, strengthening accountability and transparency, as well as enlarging civil society space as a “watch dog” are critical in this direction. Attention should be paid to the design, implementation, and monitoring and evaluation phases of projects and programs. At the design stage, the aim should be to create achievable and quantifiable targets and to have all-stakeholder ownership through the collaboration of governments, the private sector, civil society, and other development agencies. All stakeholders must follow through to ensure that projects and programs are implemented as designed. Also, stakeholders must ensure that those projects and programs are regularly monitored and evaluated against indicators established in the design phase and agreed on by the development partners.

Productive and efficient domestic investment requires the development of coordinated, objective, and transparent processes for decision-making based on thorough and rigorous cost-benefit analysis. Adoption of high-level best practice principles to inform the development of these processes will help African governments to achieve this. Those broad principles should include the following key elements: a nationally coordinated approach to the development of significant strategic projects and programs; the promotion of competitive markets; decision-making based on rigorous cost-benefit
analysis to ensure the highest economic and social benefits to the nation over
the long term; a commitment to transparency at all stages of the decision-
making and project implementation processes; and a public sector financial
management regime with clear accountabilities and responsibilities.

To reduce waste, fraud, and corruption, all African countries should em-
brace and fully implement Transparency International’s (2009) “Integrity
Pacts,” which embody rights and obligations to the effect that neither side
in contracts will pay, offer, demand or accept bribes, or collude with com-
petitors to obtain the contract, or while carrying it out. At the same time,
efforts to reform the fiscal system for consolidation by both the executive
and legislative arms of government are imperative to reduce government
consumption expenditure to avoid waste, corruption and crowding out
resources for public sector investment and employment creation.

The current study suggests that, holding other factors constant, increasing
levels of FDI are associated with decreasing male employment in North Africa
while having an insignificant effect in the other samples. Thus, to promote
male employment and ensure men have complete access to productive
resources, African countries should regulate the inflow of foreign capital to
ensure labor-intensive industries are not displaced by globalization. Further,
to protect against threats to individual basic rights, the government should
mandate that MNCs adhere to core labor standards, as provided by the
International Labor Organization (ILO). Since labor-intensive employment
represents a viable channel through which job-seekers are able to realize gains
in real wages and social capital, the protection of these industries should be
a policy priority for African countries.

We find that access to credit by the private sector is essential to increasing
men’s employment across the countries of Africa. African governments should
start encouraging entrepreneurship and access to financing, for both men
and women. The continent needs entrepreneurs ready and able to exploit
new opportunities. Men and women need training in entrepreneurship and
to be encouraged to take risks and start businesses and subsequently become
employers themselves (WEF 2012a, 2012b); however, some deliberate and
focused credit targeting will be of immense help in this direction. In fact,
the promotion of domestic investment through improved credit conditions
for small and medium enterprises, for example, would yield significant gains
in employment.

Effective policies that invest in the human capital of the workforce are needed.
Policies that promote the upskilling, better training and education for the
low-skilled workforce are imperative. Educational reforms that conform to industry needs will also help to address the skills mismatches existing in many African countries.

African governments need to dialogue with large employers as to how best to create employment for the men (and women) through strategic skills planning, skills development, and skills matching. Addressing the skills mismatch in the short-run will require improved training programs and closer links between tertiary and vocational educational institutions on the one hand, and the private sector on the other. Training programs should include on-the-job initiatives targeting those already working, as well as graduates with a general education who lack specific work skills. In addition, governments need to develop innovative public–private partnerships and the opportunities for collaboration among large employers, governments and other relevant stakeholders such as higher and vocational educational institutions to transform institutional structures and strengthen the region’s economy (Ncube and Anyanwu 2012).

Indeed, stronger university–industry linkages are essential. This can be achieved by including private sector representatives in national education and training policy bodies and on academic boards involved in curriculum development. No doubt, this will also facilitate private sector funding for research, scholarships, internships, and apprenticeships. Our results also point to the need for enhanced government efforts, not just to increase human capital, especially for the men, but more importantly to reform the educational curriculum for better quality education and skills.

We have shown in this study that being a net oil-exporting country decreases men’s employment in Africa. Thus, efficient management of oil and other natural resources in Africa requires actions throughout the value chain.

In particular, a new natural resources management framework is needed for better governance, sectoral linkages, economic growth and human, capacity and infrastructure development – with strong parliamentary legislation, oversight, and representation throughout the resources value chain.

Key effective natural resources management practices will require the following measures:

- **Enhanced good governance**, especially as it relates to the way public money is spent, is a crucial factor in turning a natural resource boom into an opportunity for growth and development, job creation, and gender
equality in Africa. Prioritizing the public investment management system is imperative. Checks and balances need to be maximized through parliaments.

- **Integrating the extractive sector into national development frameworks** – Revenue optimization needs to be integrated with the downstream sector. Value-addition and natural resources–industry linkages are paramount. There are many opportunities for improving positive linkages between the natural resources sector and development initiatives.

- **Reinforcing institutional capacity** and building strong and capable institutions.

- **Sound fiscal policy and diversification of the economy**, while using windfall taxes to protect against reneging on taxation.

- **Full disclosure of terms of natural resources contracts** is needed, as well as activating third-party brokers such as development partners (e.g. AfDB) and NGOs to ease information availability and reduce information asymmetry.

- **African natural resource-rich countries** should stop the practice of entering into bilateral development agreements with extractive companies for generous concessions in extraction contracts. Consequently, **all contracts and terms should be legislated in the substantive law** and implemented as such.

- **EITI adherence**: African countries’ company and financial laws should be reformed to require all extractive companies to use the EITI template in their annual financial reports by law.

Without doubt, sustainable inclusive growth and development as well as inclusive governance should be the basis for policymakers and leaders in Africa to bridge the transformation between pain of current unemployment time bomb, especially in North Africa and net oil-exporting countries, and the promise of the future.
APPENDIX 1: Description of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment ratios</td>
<td>World Bank/International Labor Organization (ILO) database</td>
</tr>
<tr>
<td>Per capita GDP (constant 2000 US dollar)</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>Credit to the private sector</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>Democracy</td>
<td>Polity IV Project</td>
</tr>
<tr>
<td>Trade openness ((imports + exports)/GDP)</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>School enrollment rate</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>Inflation (annual percentage change in CPI)</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>Urban population ratio</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>Population</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>Domestic investment</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>FDI</td>
<td>World Development Indicators</td>
</tr>
<tr>
<td>Government consumption expenditures</td>
<td>World Development Indicators</td>
</tr>
</tbody>
</table>

REFERENCES


1. Driving factors of male employment in African countries


1. Driving factors of male employment in African countries


2. Alcohol consumption patterns:
Do neighborhoods matter?
A multilevel analysis of alcohol consumption patterns in Uganda

Nazarius Mbona Tumwesigye,1 Richard Muwonge,2 and Rogers Kasirye3

Abstract
This paper presents a re-analysis of data on patterns of alcohol consumption with adjustment for cluster effects. The outcomes of interest were the consumption of alcohol at least three times a week and consuming 12 or more drinks in a single day. Multilevel regression analysis was applied using STATA V.10. Results show that there is a significant variation in the likelihood of drinking frequently at village level (p<0.01), but that this is confounded by the average proportion of drinkers. The variation in the likelihood of heavy drinking remained significant after controlling for background characteristics of respondents and village-level prevalence of drinking and unemployment. Cluster effects have an influence on the frequency and amount of alcohol consumption but their inclusion in statistical models does not affect the influence of established factors. Cluster analysis provides information on other correlates of frequent and heavy alcohol consumption.

Key words: cluster effects, village effects, logistic regression, intracluster correlation, multilevel models, rho.

Résumé
Cet article présente une nouvelle analyse des données sur les schémas de consommation d’alcool, avec ajustement pour effets de grappe, et compare ces résultats avec ceux de la précédente analyse. Les résultats concernent la consommation régulière d’alcool au moins trois fois par semaine et l’absorption de douze boissons ou plus en une seule et même journée. L’analyse de régression multi-niveaux a été appliquée à l’aide de STATA V.10. Les résultats révèlent l’existence d’une variation significative dans la probabilité de boire fréquemment au niveau du village (p<0.01), mais cette variation se perd dans la proportion moyenne des consommateurs. La variation dans la probabilité d’une forte consommation d’alcool reste significative après neutralisation de certains facteurs comme le niveau d’instruction des personnes.

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