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Remittances and Youth Labor Market Participation in Africa

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Les envois de fonds et la participation au marché du travail des jeunes en Afrique

Résumé

Le papier examine les effets des envois de fonds sur la participation au marché du travail des jeunes qui appartiennent à la tranche d'âge entre 15 et 24 ans en Afrique. L'étude utilise une régression apparemment indépendante pour la période 2000-2011 et des données obtenues à partir du World Development Indicators (WDI) et d'autres sources. Nous constatons que les envois de fonds n'ont aucun impact sur l'offre de travail totale, ils réduisent l'offre de main-d'œuvre féminine, mais accroissent l'offre de travailleurs de sexe masculin. D'autre part, les envois de fonds réduisent la demande totale de main-d'œuvre et celle des travailleurs masculins et féminins. Enfin, l'interaction entre les envois de fonds et la variable religion est négative et significativement liée à l'offre de travail totale.

Mots-clés : envois de fonds, participation au marché du travail, genre

Remittances and Youth Labor Market Participation in Africa

Abstract

The paper examines the remittances effects on the labor market participation in Africa with a focus on the young people who belong to the cohort between 15 and 24 years. The study uses seemingly unrelated regression for the period 2000-2011 and data obtained from the World Development Indicators (WDI) and other sources. We find that while remittances have no impacts on the total labor supply, they reduce female labor supply but increase the supply of male workers. On the other hand, remittances reduce the total demand for labor and that of both male and female workers. Finally, Interaction between remittances and religion variables is related to total labor supply in a negative and significant way.

Keywords: Remittances, Labor market participation, Gender

JEL: F14, F15, J21

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<http://ideas.repec.org/p/grt/wpegrt/2015-32.html>.

1. Introduction

A large body of literature shows that remittances can have important development impacts in the country of origin. Among others, remittances have been found to have significant positive effects on poverty, entrepreneurship and employment among recipient households. One of the major areas of interest has been the effects of remittances on the labor markets. Remittances may generate employment if used as entrepreneurial capital or invested in education with the long term effect of increasing skills and employability of the youth.

However remittances may also have negative effects on employment if it substitutes wage income. From the neoclassical labor market theory, increase in non-wage income raises the reservation wage, increasing worker's consumption of leisure and reducing hours of work. Through this channel, increased remittances act as a disincentive to work (Rodriguez and Tiongson, 2001). This is the disincentive effect of remittances on labor market participation.

Other studies have argued that the reduction of labor supply that comes with increased remittances may not necessarily result from the disincentive effect alone, but from education effect and/or labor substitution effect as well. The first argument in support of the education effect is that the youth from remittance receiving families are more likely to engage in further education and less in the labor market since remittances reduces credit constraints for these families. The second argument is that the prospect for increased future remittances may motivate recipient families to invest more in education. The labor substitution effect posits that the departure of a migrant implies that more non-wage household work are left in the hands of a few household members and therefore migrant-sending households are likely to give fewer hours in the formal labor market and give more hours to household work and not leisure.

While a few studies have examined the effects of remittances on labor market participation, little attention seem to have been devoted to the heterogeneous impacts of remittances by gender and religion. As a matter of fact that religion can impact the remitting behavior of migrants. In most cases, the males migrate more than the female (OECD-UNDESA, 2013). This leaves the females as the heads of the household with additional household work. Female labor is therefore more likely to reduce with increased remittances (as a cover for wage income) as female workers take up more household duties left by the departing men. On the other hand, since the male are the majority migrants, remaining male youth may be motivated to engage in more years of education in order to have the opportunity to migrate and send remittances back home and engage in other development

projects like the other male migrants are doing. After school and before they migrate, male labor supply is likely to be higher.

The aim of this paper is to investigate the role of remittances on labor market participation in Africa with a deeper analysis of the differential impacts by gender induced regional integration and religion. The importance of examining this question and the knowledge addition to remittances-labor market participation literature cannot be overemphasized. First, if there is widespread reduction in labor supply, whether due to disincentive effect, education effect or substitution effect, the consequences for the whole economy in the long run may not be trivial. Such behavior may lead to long term dependency among recipient households that may reduce their long term involvement in productive activities and may increase unemployment in the midst of labor shortages which may perpetuate poverty. In Africa, where unemployment and poverty rates are very high, an assessment of the impact of remittances on the labor market becomes critical. Secondly, and as far as we are aware, no study has examined the effect of remittances on the African labor markets let alone the differential impacts by gender. We go further in our analysis and examine how increased years of youth education in high remittance receiving countries affect labor market participation (increased years of education may affect youth labor market participation in either direction as explained above). Third, the differences of remittance effects on the labor markets may not be trivial and obvious, yet no study has examined this angle.

Using data for the period 2000-2011 obtained from the World Development Indicators (WDI) and other sources, we find that while remittances have no significant impacts on the total labor supply, it reduces female labor supply but increases the supply of male workers. On the other hand, remittances reduce the total demand for labor and that of both male and female workers. The Interaction term remittances*religion and total labor supply are negatively connected. The rest of the paper is organized as follows; Section two details remittance and labor market participation trends in Africa, section three reviews related literature, section four outlines the methodology, section five presents the results while section six concludes.

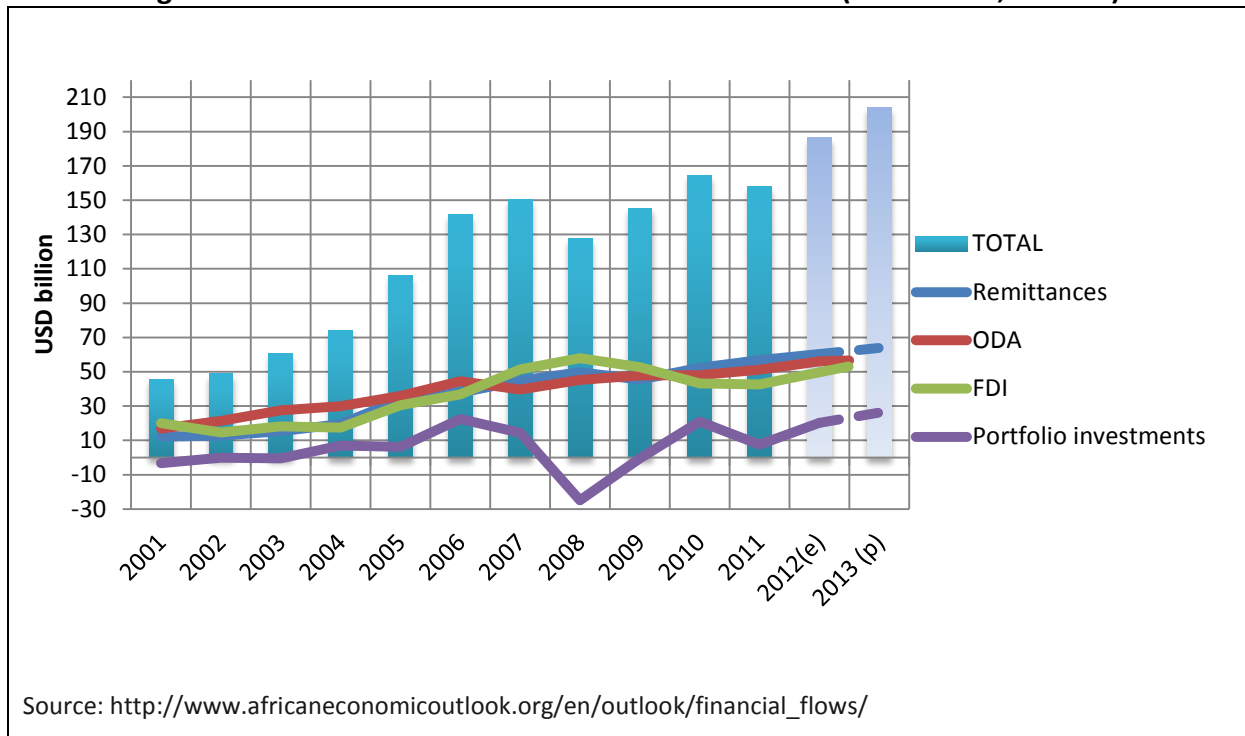
2. Remittances and Labor Market Participation trends in Africa

2.1 Remittances

Remittances to Africa form a very significant proportion of the total financial flows. African Economic Outlook (2013) shows that, during 2013, remittances through official channels represented 32% of total external financial flows to Africa. Remittances are considered as a more stable, reliable and

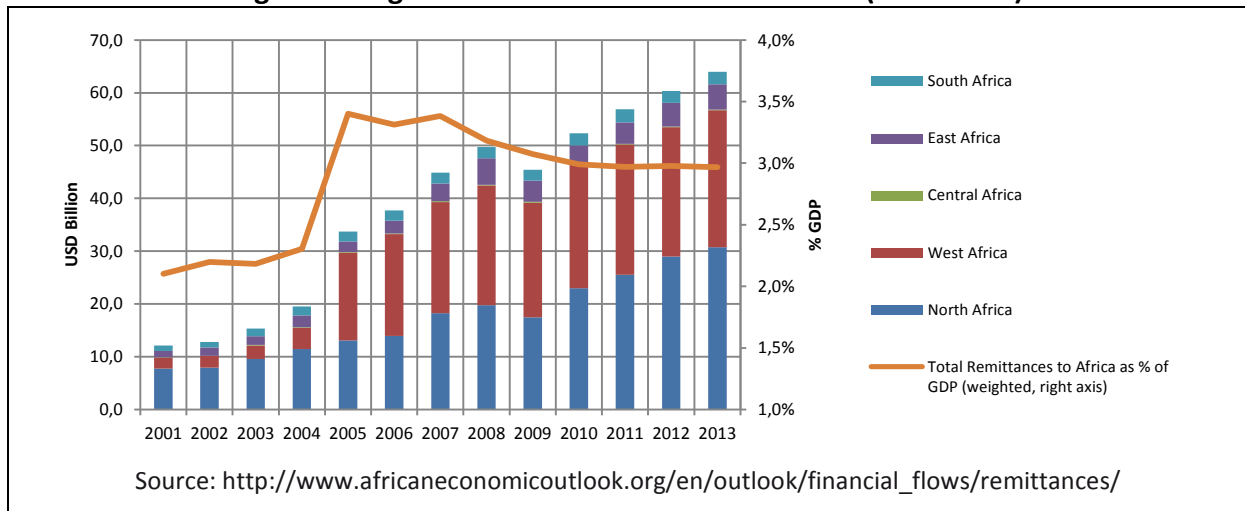
countercyclical source of external financing for the development of origin countries compared to other external flows like foreign direct investment, official development assistance and portfolio investment (Ratha et al., 2011). Since 2007, remittances to Africa formed the largest component of external financial flows exceeding official development assistance, foreign direct investments and portfolio investments (Figure 1).

Figure 1: External financial flows to Africa 2001-2013 (Billion USD, current)



During the period 2001-2013, remittances to countries of North and West Africa regions grew faster than in other regions. However, in the Central, South and East Africa, remittances remain modest (Figure 2). The amount of remittances differs from one country to another even for countries in the same region. African Economic Outlook (2013) shows that for some African countries, the ratio of remittances to GDP exceeds 35%. The main recipient countries are Lesotho (35, 4%), Nigeria (10, 4%), Senegal (10, 4%), Cape Verde (10, 3%), Togo (10, 3%) and Gambia (9%).

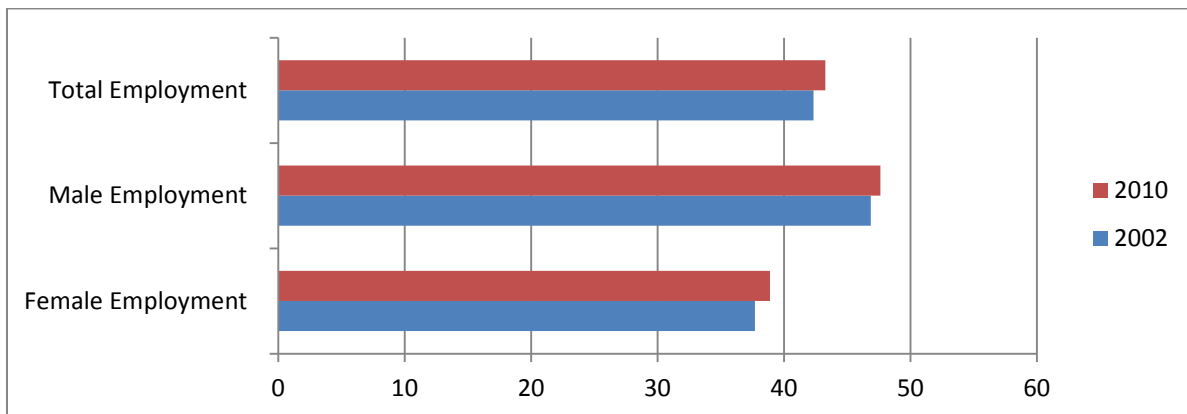
Figure 2: Regional Remittances Trends in Africa (2001-2013)



2.2 Labor market participation

Data from Africa Development Indicators shows that in 2010, the ratio of total employment to population aged from 15 to 24 was about 43 % in Africa. As shown in Figure 3, employment was higher for males (48%) than females (39%).

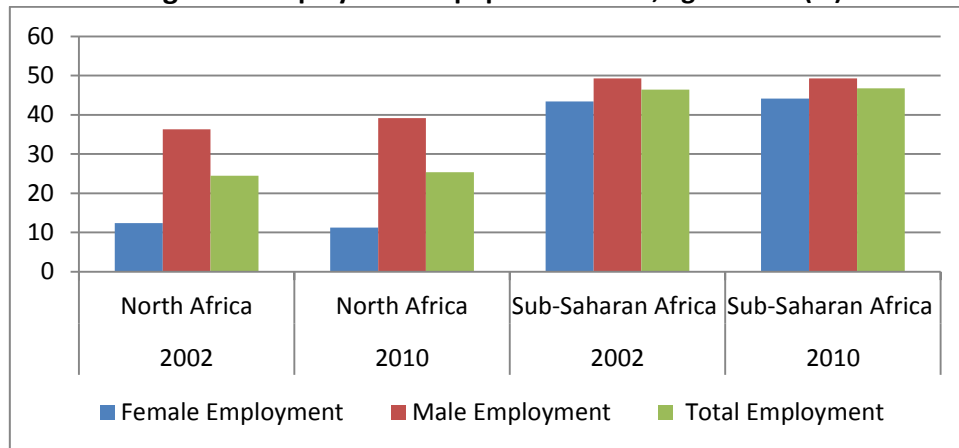
Figure 3: Africa employment to population ratio, ages 15-24 (%)



Source : Africa Development Indicators, 2013

At the regional level, youth employment rate in North Africa is lower compared to sub-Saharan Africa as Figure 4 shows. Female employment is lower in both SSA and North Africa compared to male employment but is even lower in North Africa compared to SSA.

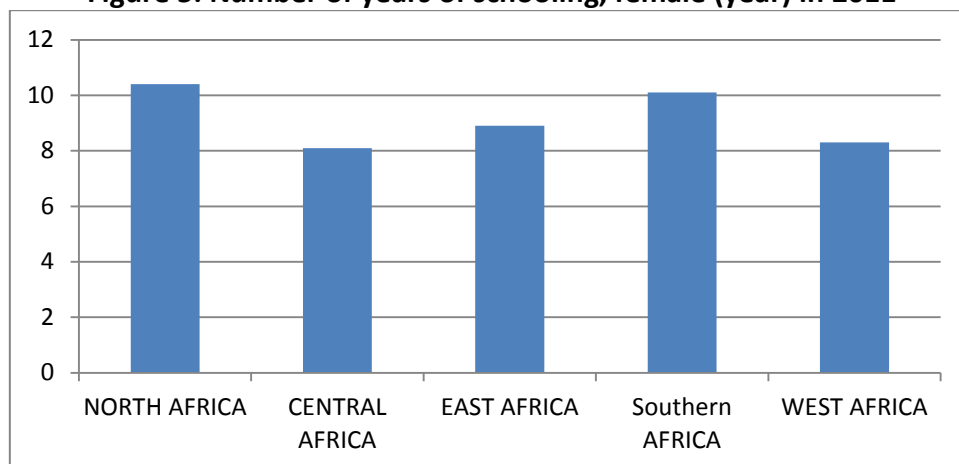
Figure 4: Employment to population ratio, ages 15-24 (%)



Source : Africa Development Indicators, 2013

One possible explanation for lower labor market participation rate in North Africa could be the long periods of education which delays entry into the labor market. Countries where employment rate was lower in 2011 for instance South Africa and Namibia at about 13 %, Gabon at 15 %, Mauritania at 19%, Algeria, Egypt and Tunisia are about 22% and Libya 24% have also experienced considerable development in tertiary education of young. As shown in Figure 5 below, North Africa has the longest periods of education among the regions of Africa.

Figure 5: Number of years of schooling, female (year) in 2011



Source : AfDB Statistical Portal

3. Review of related literature

3.1 Development impacts of remittances (poverty, employment, child health, and economic growth)

Several studies have found that remittances have significant positive impacts on several development outcomes including on economic growth, poverty, employment, education, health, entrepreneurship among other outcomes. Chami et al., 2003 for instance finds that remittances contribute to better economic performance while Acosta et al., 2007 finds that remittances reduce poverty and inequality. Remittances also improve education and health access (Yang, 2008; Frank et al., 2009) and reduce consumption instability while increasing resilience to shocks (Combes and Ebeke, 2011). Giuliano and Ruiz-Arranz, 2009 find that remittances increase households saving, bank deposit and credit and promote financial sector development. Remittances expenditures on housing create new income and employment opportunities for low income people working in building and construction sectors (De Haan, 2011). Bjuggren et al., 2010 find that remittances have direct positive impacts on investment. The effect of remittances on investment is more important in countries with low financial development and institutional quality. Lartey, 2010 arrives at the same conclusion for 36 countries in sub-Saharan Africa.

3.2 Remittances and improved labor market participation through enterprise

Other studies have shown that remittances improve entrepreneurship and create employment opportunities. Funkhouser, 1992 finds that reception of remittances in Nicaragua increase self-employment of migrants and non-migrant households through business formation and capital stock accumulation. Bjuggren et al., 2010 finds that remittances allow for higher investments in physical assets and create opportunities for entrepreneurship. Arif and Irfan, 1997 on the other hand find that 44% of the total employed Pakistani return migrants changed their pre-migration occupations from employed to self-employed upon their return using their accumulated savings to do their own investment. The same case is found by Ilahi, 1999 in Pakistan who shows that returning migrants have a strong tendency to be self-employers, through their accumulated savings abroad. Black and Castaldo, 2009 find that experience of working abroad, accumulated foreign savings and the frequency of visits to the country of origin are the most significant factors driving entrepreneurial activity among return immigrants in Ghana and Côte d'Ivoire.

Gubert et al., 2010 examine entrepreneurial activity among returning migrants and non-migrants in West Africa in 7 cities (Abidjan, Bamako, Cotonou, Dakar, Lome, Niamey and Ouagadougou) from 2001 to 2002 and find that returnees from OECD countries have a higher probability of being

entrepreneurs or self-employed than those who did not emigrate or those returning from other parts of the world.

3.3 Remittances as a disincentive to labor market participation (disincentive effect)

While it is generally acknowledged that remittances may have positive impacts on the labor market, possibilities of adverse impacts exist. Killingsworth, 1983 for instance considers remittances as a non-labor income that helps to raise household purchasing power and wages and finds that remittances reduces the quantity of labor supply by people receiving remittances. Amuedo-Dorantes and Pozo, 2006 show that remittances increase the reservation wage used to consume leisure products and leads to a lower likelihood of entrepreneurship.

3.4 Remittances, labor market participation and Education (Education Effect)

Hanson and Woodruff, 2003 find that children in households with a migrant family member in Mexico completed more years of schooling and which delayed their entry into the job market. Cox Edwards and Ureta, 2003 find that in households with at least one family member living abroad in El Salvador, remittances significantly contributed to a reduction in the probability of children leaving school. They argue that remittances may help to relax the liquidity constraints of households to finance education of their children. Docquier and Rapoport, 2005 find that if household income increases due to remittances, families tend to minimize the workload of their children, thereby increasing the time available for study. However, remittances can create negative incentives for children education because of the parental absence (generally the father) and can disrupt family life in general and have a negative impact on school performance of children in particular. In addition, potential migrant may be discouraged to invest in education if the ability to migrate is not conditioned on high level of education. In Mexico for example, migration structures are predominated by low-skilled migration and often illegal. (McKenzie, 2006).

3.5 Remittances, labor market participation and household production (substitution effect)

Remittances can also reduce labor market participation through household work reallocation when one member of the family migrates (Acosta, 2006; Hanson, 2007). Mendola and Carletto, 2012 analyze the impact of international migration flows from Albania on the labor market opportunities of female and find that women with household member currently abroad are 32% more likely to supply unpaid work. The authors explain that migration necessitates more effort at home to replace people currently abroad. The study highlights the fact that receipt of remittances is an outcome of

household members 'out-migration and entails the reallocation of time and resources by individuals left behind to compensate for the migrant's absence. Male migration may leave women left behind with higher levels of responsibilities and greater autonomy.

Binzel and Assaad, 2011 on the other hand find that in rural areas, women are more likely to engage in additional household and subsistence work (land and livestock). However, in urban areas, life is more comfortable and household production is less important and women cannot replace the male wage labor; they may only reduce their own wage work due to the income effect of the remittances but not due to substitution effect.

3.6 Remittances and labor market participation by gender

At the general level, several studies have found that labor participation of the male and the female may be different for several reasons. Mthuli, 2007 examines the driving factors behind female labor force participation in South Africa and finds that emigration changes in human capital and financial endowments define whether or not a woman will participate in the labor market. The study finds that education, non-labor income, marriage, fertility and geographical variations in economic development (rural/urban spatial dimension) significantly determine female labor market participation. In particular, the author explains that non-labor income explains substantial negative income effect on female labor participation. Funkhouser, 1992, Rodriguez and Tiongson, 2001, Acosta, 2006 and Amuedo-Dorantes and Pozo, 2006 found similar results, showing that remittances and female labor supply are negatively correlated in Nicaragua, Manila, El Salvador and Mexico respectively. Living in high migration states or having a migrant in the household and receiving remittances reduce labor participation of women.

Justino and Shemyakina, 2012 examine the impact of remittances on labor supply in post-conflict Tajikistan and find that remittances have a negative effect on the labor supply for both men and women. In the non-migrant households however, they find that remittances have no impact on the labor supply of men. Cox Edwards and Rodríguez, 2009 on the other hand find that remittances have a "neutral effect" on labor force participation (no significant differences in its impacts between men and women).

3.7 Remittances, labor market and religion

Some studies suggest that remittances can be driven by altruism (Agarwal and Horowitz, 2002) and Religious defend opinions regarding that religion promotes altruism. For example, Kelly and Solomon,

2011 examine the relationship between religion and remittances. The results show that remitting behavior depends on religious affiliations. Protestants and individuals from other religion are more likely to remit than Catholics who are more likely to remit than individuals with no religion. As we develop in the previous section, considering remittances as a non-labor income decrease labor participation. Zachariah and Irudaya Rajan, 2007 used the Migration Monitoring Studies (MMS) survey to analyze the short-term trends and long-term development implications of migration, remittances and employment in Kerala. Results show that 50 percent of the remittances to the state were received by the Muslim community which forms less than 25 percent of the total population of the state. Moreover, Muslims have the lowest employment rate, only a third of the Muslims 15 years or more were employed in 2007. The difference is mainly among females. 6.5 percent of Muslim women were working against 17.2 percent of the Hindu and 13.9 percent of the Christian women were employed.

4. Methodology

In this section, we outline the methodology followed and the data used.

4.1 Theoretical Model

According to the neoclassical theory of labor supply, each individual has a limited time endowment (T) and has the possibility to decide between consumption of goods (C) and consumption of leisure (L). Each individual seeks to maximize his utility $U = f(C, L)$. The time constraint is given by: $T = H + L$ where (H is the number of hours of work). To consume, the individual needs income that is limited by the budget constraint (BC). where $BC = \text{Total Revenue} = \text{Non Income Revenue} + W * H$, (W is the wage rate). Labor supply depend on two factors, rate wage and non-income revenue. Increase in non-wage income may have two contradictory effects; 1) Substitution effect: non-wage income increases \rightarrow individuals consume more leisure time and spend less time at work \rightarrow the opportunity cost of leisure time falls. 2) Income effect: non-wage income increases \rightarrow individuals consume more normal goods \rightarrow individuals reduce hours of work and consume a larger quantity of leisure time, because leisure is a normal good. From both effects, increase in non-wage income including remittances is expected to reduce the number of hours worked and labor supply.

4.2 Empirical model

Our intention is to estimate the labor supply and demand equations. Both equations have four parameters in common. Remittances influence labor market participation in two principal ways. On the one hand, remittances reduce labor market effort and increases consumption leisure reducing

the supply of labor. On the other hand, remittances may be used to finance consumption and entrepreneurship. This increase investment and job opportunities and demand for labor. Remittances therefore may affect both supply and the demand of labor. In addition, both equations are explained by some similar factors (population, size of the economy, etc). We therefore expect that the error terms of the two equations will be correlated.

In order to take into account the simultaneously in analyzing the impacts of remittances on labor market outcomes, we use seemingly unrelated regressions (SUR) method developed by Zellner (1962). This is done to improve the efficiency of parameter estimates since the errors terms are found to be contemporaneously correlated and the parameters in the different equations related.

The formal model is given as:

$$y_{ijt} = X_{ijt}\beta_{ijt} + \mu_{ijt}, i = 1,2 \quad (1)$$

where y_i is an $nx1$ vector of observations on the i 'th dependent variable. The vector of dependent variables includes the supply of labor and the demand for labor. X_i is an nxk_i matrix with full column rank of observations on the k_i independent variables in the i 'th regression equation, The matrix of independent variables include remittances and other factors that determine the supply and demand for labor including education, population, size of the economy captured by GDP per capita growth, health expenditures denoting the health status of the nation, religion and regional integration denoting the ability of the work force to move freely across the borders. β_i is k_ix1 vector of regression parameters and μ_i is an $nx1$ vector of zero mean error terms. $j = 1, 2, \dots, N$ denotes the cross-section dimension (countries) and $t = 1, 2, \dots, T$ the time period.

4.3 Data

To achieve the objective of the study we, use panel annual data from 2000-2011 for 34 African countries obtained from the World Development Indicators (2013) database and other sources. GDP per capita (GDP per capita, PPP constant 2005 international USD), population growth (annual %), Education (secondary school enrollment as a % of the gross enrolment), Investment (gross fixed capital formation as % of GDP), remittances (personal remittances, received as a % of GDP), medical brain drain (rate of physician emigration obtained from Bhargava and al., 2010), health expenditure (total health expenditure as a % of GDP), Religion, dummy variable equal to 1 when the majority of the population are Muslim religion, total supply of labor in Africa (labor force participation rate for ages 15-24 as a percentage of the total labor force), total demand of labor in Africa (employment to population ratio for ages 15-24 as a percentage of the total employment), female supply of labor in Africa (female labor force participation rate for ages 15-24 a percentage of

the total labor force), female demand of labor in Africa (female employment to population ratio for ages 15-24 as a percentage of the total labor force), male supply of labor in Africa (male labor force participation rate for ages 15-24 as a percentage of the total labor force), male demand of labor in Africa (male employment to population ratio for ages 15-24 as a percentage of total labor force). Regional integration dummy variable is included in the regression to capture the ability of labor to move across borders. The dummy variable is one if a country is a member of a one regional block, two if a member of two regional blocs etc and zero if the country is not a member of any bloc (the maximum block number to which the country is a member - 1,2,3 and 4).

5. Results

In this section we present and discuss the results. We first begin with the descriptive statistics.

5.1 Descriptive Statistics and diagnostic statistics

The descriptive statistics are reported in the Table A2 in the Appendix A. The summary statistics show that the average of remittances in Africa is 0.11% of GDP with a standard deviation of 0.77 which indicates a high volatility of remittances over the period 2000-2011. Average labor supply and demand range between 1,60 and 1,75.

The correlation matrix in Table A3 in the Appendix A indicates that remittances are positively (negatively) correlated with labor demand (labor supply). Remittances have opposite effect on labor market, they can create new entrepreneurial enterprises and jobs opportunities and reduce labor force participation because of the not-earned income. As a first step, we examine whether there exists contemporaneous correlation among the variables. In each estimate, we report the mean square error (RMSE) and The Breusch Pagan Test to test whether the errors across equations are contemporaneously correlated.

5.2 The effects of remittances on employment

5.2.1 Total labor supply

Results from the estimation of the impact of remittances on total labor supply are reported in Table 1 below.

Table 1: Impact of remittances on total supply of labor in Africa

	(1)	(2)	(3)	(4)	(5)
Remittances	-0.0064 (0.0128)	-0.0040 (0.0128)	-0.0438 (0.0255)	-0.0154 (0.0241)	0.0467 (0.0282)
Education	0.0031 (0.0477)	0.0065 (0.0477)	0.0070 (0.0475)	-0.0242 (0.0438)	-0.0675 (0.0425)
Medical Brain Drain	-0.1305 (0.0864)	-0.1298 (0.0863)	-0.1041 (0.0868)	-0.1547 (0.0806)	-0.1538* (0.0760)
Health expenditure	-0.0017 (0.0043)	-0.0023 (0.0047)	-0.0020 (0.0047)	0.0004 (0.0043)	0.0008 (0.0041)
GDP per capita	-0.2303** (0.0404)	-0.2244** (0.0405)	-0.2148*** (0.0414)	-0.2071*** (0.0380)	-0.1789** (0.0365)
Population	-0.0521 (0.0317)	-0.0433 (0.0385)	-0.0392 (0.0397)	-0.0807 (0.0373)	-0.0936** (0.0362)
Regional integration	-	-0.0117 (0.0129)	-0.0200 (0.0134)	-0.0477* (0.0135)	-0.0490** (0.0128)
Regional integration* Remittances	-	-	0.0241 (0.0139)	0.0119** (0.0130)	-0.0099 (0.0137)
Religion	-	-	-	-0.0816** (0.0161)	-0.0704** (0.0159)
Religion*Remittances	-	-	-	-	-0.0887** (0.0251)
Constant	2.4860** (0.0987)	2.4790** (0.0995)	2.4532** (0.1041)	2.5505** (0.0976)	2.5291 (0.0930)
R ²	47%	47%	49%	56%	62%
RMSE	0.0954	0.0950	0.0941	0.0867	0.0811

The results show that remittances, medical brain drain, health expenditure, population and regional integration do not significantly affect total labor supply in Africa. GDP per capita, used to indicate the level of economic development is negative and significant indicating that improvement in economic development in Africa has not been associated with increased employment opportunities. The results are similar to those of Anyanwu, 2013, who argue that there exists a non-monotonic relationship between economic growth and employment - a U-shaped relationship between real GDP and male employment in Africa. Religion and remittances are negatively related to total labor supply.

5.2.2 Impacts of remittances on total labor demand

The results from the estimation of the impact of remittances on total labor demand are reported in Table 2.

Table 2: Impact of remittances on total demand of labor in Africa

	(1)	(2)	(3)	(4)	(5)
Remittances	-0.0909** (0.0244)	-0.0814** (0.0233)	-0.1923 ** (0.0410)	-0.1930 (0.0410)	-0.1920 (0.0410)
Medical Brain Drain	-0.2641 (0.1408)	-0.2457 (0.1341)	-0.1574 (0.1319)	-0.1609 (0.1319)	-0.1416 (0.1321)
Investment	0.2422 (0.1241)	0.2518* (0.1184)	0.1795 (0.1181)	0.2068 (0.1177)	0.1443 (0.1225)
GDP per capita	-0.0000** (4.73e-06)	-0.0000** (4.62e-06)	-0.0000 ** (4.61e-06)	-0.0000 (4.61e-06)	-0.0000 (4.67e-06)
Regional integration	-	-0.0604** (0.0169)	-0.0852** (0.0180)	-0.0850 (0.0180)	-0.0872 (0.0180)
Regional integration* Remittances	-	-	0.0717 ** (0.0222)	0.0706 (0.0222)	0.0744 (0.0223)
Constant	1.4348** (0.1545)	1.4946** (0.1486)	1.6007 ** (0.1492)	1.5668 (0.1488)	1.6411 (0.1545)
R ²	35%	41%	46%	46%	46%
RMSE	0.1649	0.1569	0.1510	0.1510	0.1510
Breusch-Pagan test of independence	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Source: Calculated using data from World Development Indicators. World Bank (2013). Equations (1), (2) and (3) are estimated using seemingly unrelated equation .All the variables are in logs except Medical Brain Drain and GDP per capita. The values in (.) are the Robust Std. Err. * p<0.05; ** p<0.01. The values in [.] are the p-value.					

The results show that remittances reduce total labor demand in Africa. Opening up of borders through regional integration significantly reduces labor demand among the countries in the bloc. The results imply that opening up of borders through regional integration has in overall reduced employment opportunities in Africa. While a few countries may have gained from opening up of borders, a number of countries' labor markets have been affected negatively by the influx of imports from other countries that have helped to kill domestic industries. However, when we interact remittances and regional integration, the effect of the interaction term is positive and significant implying that come as a result of regional integration helps to increase employment opportunities in the country of origin. This could be attributed to the fact that countries that form regional blocs are close together and migrants can easily and cheaply move across the borders to invest their remittances in their countries of origin and hence create employment compared to the migrants who migrate to countries beyond their borders who have limited chances of travelling frequently to invest their remittances at home.

5.2.3 Impacts of remittances on female labor supply

The results of the impact of remittances on female labor supply are reported in Table 3. The results show that increased remittances significantly reduces female labor supply. There could be two reasons for this outcome as explained earlier. First remittances may substitute wage income and

raise the reservation wage for women and acts as a disincentive for work. Secondly, the migration of the male member of the household may leave the women with more household duties to take care of and therefore the women may reduce their hours of work in the formal labor market when they receive remittances to keep them on the same consumption curve. This result is similar to the findings of other studies including Binzel and Assaad (2011) in Egypt for instance who find that remittances impact negatively labor supply of female in rural areas. They find that women replace their husband on informal sector work like land tilling and looking after livestock. The migration of skilled works measured by the rate of physician emigration has no significant effect on the female labor supply implying that fewer skilled women migrate and therefore the few skilled that migrate does not significantly reduce labor force participation of women in the labor market in Africa. Remittances through religion do not influence women decision to work or not.

Table 3: Impact of remittances on female supply of labor

	(1)	(2)	(3)	(4)	(5)
Remittances	-0.0490** (0.0186)	-0.0433* (0.0185)	-0.1334** (0.0381)	-0.0877** (0.0320)	-0.0640 (0.0364)
Education	-0.0048 (0.0413)	0.0119 (0.0384)	0.0128 (0.0366)	-0.0425 (0.0446)	-0.0769 (0.0482)
Medical Brain Drain	0.0740 (0.1239)	0.0476 (0.1224)	0.1093 (0.1228)	-0.0156 (0.1047)	-0.0132 (0.1022)
Health expenditure	0.0049 (0.0037)	0.0005 (0.0037)	0.0013 (0.0036)	0.0092* (0.0044)	0.0089 (0.0047)
GDP per capita	-0.2608** (0.0421)	-0.2549** (0.0404)	-0.2284** (0.0409)	-0.2433** (0.0426)	-0.2304** (0.0444)
Population	-0.0844** (0.0273)	-0.0049 (0.0307)	0.0068 (0.0304)	-0.0265 (0.0379)	-0.0380 (0.0408)
Regional integration	-	0.0231 (0.0165)	0.0039 (0.0176)	-0.0244 (0.0165)	-0.0255 (0.0164)
Regional integration* Remittances	-	-	0.0551** (0.0204)	0.0331 (0.0172)	0.0237 (0.0180)
Religion	-	-	-	-0.1070** (0.0164)	-0.1110** (0.0181)
Religion*Remittances	-	-	-	-	-0.0255 (0.0290)
Constant	2.4821** (0.1142)	2.4075** (0.1099)	2.3335** (0.1130)	2.5289** (0.1130)	2.5481** (0.1157)
R ²	43%	43%	44%	60%	62%
RMSE	0.1468	0.1467	0.1451	0.1230	0.1195

5.2.4 Impact of remittances on female labor demand

The results of the impact of remittances on female labor demand are reported in Table 4.

Table 4: Impact of remittances on female demand of labor in Africa

	(1)	(2)	(3)	(4)	(5)
Remittances	-0.0845** (0.0281)	-0.0739** (0.0275)	-0.1972** (0.0540)	-0.1967** (0.0540)	-0.1962** (0.0540)
Medical Brain Drain	0.0049 (0.1743)	0.0283 (0.1707)	0.1188 (0.1705)	0.0644** (0.1724)	0.0642 (0.1732)
Investment	-0.1570 (0.0922)	-0.1606* (0.0815)	-0.1715* (0.0796)	-0.1133 (0.1210)	-0.1315 (0.1362)
GDP per capita	-0.0000** (5.11e-06)	-0.0000** (4.94e-06)	-0.0000** (4.91e-06)	-0.0000** (5.63e-06)	-0.0000** (5.92e-06)
Regional integration	-	-0.0541* (0.0216)	-0.0811** (0.0233)	-0.0737** (0.0235)	-0.0735** (0.0236)
Regional integration* Remittances	-	-	0.0763** (0.0286)	0.0682* (0.0289)	0.0686* (0.0291)
Constant	1.8703** (0.1177)	1.9357** (0.1081)	1.9665** (0.1072)	1.9082** (0.1555)	1.9315** (0.1731)
R ²	41%	44%	46%	46%	52%
RMSE	0.2081	0.2045	0.2004	0.1992	0.0769

The results show that remittances significantly reduce female labor demand. However, remittances induced through regional integration increases female labor demand. The explanation for this outcome may be the same as explained earlier, that it is easier for remittances generated from the close-home border countries to be invested back home because of the ease and lower cost of remitting the money compared to other remittances that come from far-away countries. The investments then create employment opportunities for the women. Migration of skilled workers measured by the rate of physician emigration has no significant effect on the female labor demand. Opening up borders through regional integration is found to significantly and negatively affect female demand of labor.

5.2.5 Impacts of remittances on male labor supply

In Table 5, we report the results from the estimation of the impacts of remittances on male labor.

Table 5: Impact of remittances on male supply of labor in Africa

	(1)	(2)	(3)	(4)	(5)
Remittances	0.0222* (0.0103)	0.0289** (0.0100)	-0.0155 (0.0206)	-0.0146 (0.0207)	0.0024 (0.0222)
Education	-0.0749** (0.0269)	-0.0585* (0.0230)	-0.0535* (0.0220)	-0.0548* (0.0221)	-0.0805** (0.0254)
Medical Brain Drain	-0.1785** (0.0689)	-0.1853** (0.0664)	-0.1613* (0.0668)	-0.1615* (0.0669)	-0.1602* (0.0646)
Health expenditure	-0.0009 (0.0024)	-0.0007 (0.0022)	-0.0003 (0.0021)	-0.0001 (0.0021)	-0.0003 (0.0024)
GDP per capita	-0.1043** (0.0259)	-0.0888** (0.0234)	-0.0854** (0.0236)	-0.0831** (0.0237)	-0.0745** (0.0254)
Population	-0.0618** (0.0178)	-0.0342 (0.0184)	-0.0354 (0.0183)	-0.0373* (0.0187)	-0.0460* (0.0215)
Regional integration	-	-0.0328**	-0.0425**	-0.0443**	-0.0449**

	-	(0.0090)	(0.0096)	(0.0100)	(0.0100)
Regional integration* Remittances	-	-	0.0263*	0.0262*	0.0192
	-	-	(0.0110)	(0.0111)	(0.0112)
Religion	-	-	-	-0.0039	-0.0071
	-	-	-	(0.0081)	(0.0095)
Religion*Remittances	-	-	-	-	-0.0179
	-	-	-	-	(0.0156)
Constant	2.2363**	2.1988**	2.1901**	2.1885**	2.2056**
	(0.0684)	(0.0627)	(0.0645)	(0.0649)	(0.0678)
R ²	44%	48%	50%	50%	52%
RMSE	0.0832	0.0802	0.0791	0.0792	0.0769

The results show that remittances increase the supply of male labor in Africa. As mentioned earlier, remittances may increase male labor supply in two ways. First, remittances may reduce credit constraints faced by receiving households and increase the probability of their children engaging in education. Increased education increases employability of the youth in the long run. The impact on male labor supply and not on female labor supply could be attributed to the practice in most African societies where the boy child has a higher chance of going to school than the female child due to traditional practices and beliefs. Secondly, remittances may encourage schooling for those who see a potential for migration and sending back remittances. And since the males mainly the one who migrates, the remaining males are likely to go to school in order to increase their chances of migration in the future.

5.2.6 Impacts of remittances on male labor demand

We report the results from the estimation of the impact of remittances on male labor demand in Table 6.

Table 6: Impact of remittances on male labor demand in Africa

	(1)	(2)	(3)	(4)	(5)
Remittances	0.0066 (0.0186)	0.0217 (0.0159)	-0.0678* (0.0302)	-0.0679* (0.0302)	-0.0674* (0.0302)
Medical Brain Drain	-0.2560* (0.1138)	-0.2268* (0.0980)	-0.1642 (0.0956)	-0.1687 (0.0957)	-0.1699 (0.0964)
Investment	-0.1053 (0.0681)	-0.1097* (0.0519)	-0.1355** (0.0494)	-0.1277* (0.0506)	-0.1430* (0.0646)
GDP per capita	-0.0000** (3.49e-06)	-0.0000** (2.96e-06)	-0.0000** (2.88e-06)	-0.0000** (2.89e-06)	-0.0000** (3.18e-06)
Regional integration	-	-0.0843** (0.0124)	-0.1034** (0.0131)	-0.1028** (0.0131)	-0.1025** (0.0131)
Regional integration* Remittances	-	-	0.0558** (0.0160)	0.0550** (0.0160)	0.0552** (0.0162)
Constant	1.9117** (0.0862)	2.01595** (0.0679)	2.0623** (0.0655)	2.0537** (0.0670)	2.0736** (0.0830)
R ²	38%	54%	57%	57%	75%
RMSE	0.1341	0.1158	0.1110	0.1110	0.1111
Breusch-Pagan test of Independence	[0.0000]	[0.0000]	[0.0000]	[0.0000]	[0.0000]

Source: Calculated using data from World Development Indicators. World Bank (2013). Equations (1), (2) and (3) are estimated using seemingly unrelated equation. All the variables are in logs except Medical Brain Drain and GDP per capita. The values in (.) are the Robust Std. Err. * p<0.05; ** p<0.01. The values in [.] are the p-value.

The results show that increase in remittances has no significant impact on male labor demand in Africa. On the other hand, skilled migration is found to have significant and negative effect on male labor demand.

6. Conclusion and policy implication

In this paper, we investigate the links between labor market and remittances in Africa. Using panel data over the period 2000 and 2011, the results show that remittances have no direct impacts on the total labor supply in Africa but it reduces female labor supply and increases the supply of male workers. GDP per capita, used to indicate the level of economic development is negative and significant indicating that improvement in economic development in Africa has not been associated with increased employment opportunities. This result calls for policies to improve inclusiveness in the sharing of growth benefits in Africa. The results further show that opening up of borders through regional integration has in overall reduced employment opportunities in Africa and this is attributed to the fact that a number of countries within regional blocs are not competitive in the export of most goods and therefore receive an influx of imports from other member countries that kill their domestic industries. The results also show that increased remittances significantly reduce female labor supply. This can be attributed to two reasons; first is that remittances substitute wage income making recipients to reduce the total number of hours worked. Secondly, migration of a household member increases the household work for those remaining making them to reduce the number of hours given to the formal labor market and give more hours to household work. Finally, religion has a significant negative effect on the total and female labor supply, this result can be explained by the traditional practices in Muslim societies about working women.

Appendix A: Tables

Table A1: Regional Blocs

<i>Regional Blocs</i>	<i>Countries¹</i>
SADC	Southern African Development Community Angola (1980) / Botswana (1980)/ Democratic Republic of Congo (DRC) (1997)/ Lesotho (1980)/ Malawi (1980)/ Mauritius (1995)/ Mozambique (1980)/ Namibia (1990)/ Seychelles (1997)/ South Africa (1994) / Swaziland (1980)/ Tanzania (1980)/ Zambia (1980) / Zimbabwe (1980).
SACU	Southern African Customs Union Botswana (1969)/ Lesotho (1969)/ Namibia (1969) / Swaziland/ South Africa (1969).
CMA	Common Monetary Area South Africa / Lesotho/ Swaziland. (1976)
COMESA	Common Market for Eastern and Southern Africa Angola/ Burundi/ Comoros/ Democratic Republic of the Congo/ Djibouti/ Egypt/ Eritrea/ Ethiopia/ Kenya/ Madagascar/ Malawi/ Mauritius/ Namibia/ Rwanda/ Seychelles/ Sudan/ Swaziland/ Tanzania/ Uganda/ Zambia/ Zimbabwe.
ECOWAS	Economic Community of West African States Benin/ Burkina Faso/ Cape Verde/ Cote d'Ivoire/ Gambia/ Ghana / Guinea/ Guinea-Bissau/ Liberia/ Mali/ Mauritania/ Niger/ Nigeria/ Senegal/ Sierra Leone / Togo.
CEUCA	Customs and Economic Union of Central Africa Cameroon/ Central Africa Republic/ Chad/ Congo/ Equatorial Guinea/ Gabon.
EAC	East African Community Kenya/ Uganda/ Tanzania.
Maghreb	The Maghreb Maroc/ Algérie/ Tunisie/ Mauritanie/ Libye.

¹ In the econometric application 8 countries have been removed for data availability reason: Central Africa Republic/ Chad/ Equatorial Guinea/Comoros/ Eritrea/Somalia/ Mauritania/ Zimbabwe.

Table A2: Summary statistics

<i>Variables</i>	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Std. Dev.</i>	<i>C.V.</i>	<i>Skewness</i>	<i>Ex. kurtosis</i>
<i>Remittances</i>	0,11	0,21	-3,60	1,79	0,77	7,16	-0,89	1,65
<i>Education</i>	1,56	1,56	0,78	2,09	0,28	0,18	-0,30	-0,42
<i>Medical Brain Drain</i>	0,09	0,06	0,00	0,51	0,11	1,24	1,76	2,75
<i>Investment</i>	1,28	1,30	0,04	1,67	0,18	0,14	-1,68	6,74
<i>Health expenditure</i>	6,00	5,48	2,01	22,19	2,68	0,45	2,46	9,23
<i>Population</i>	0,30	0,37	-1,06	0,82	0,24	0,79	-2,46	9,26
<i>Female supply of labor in Africa</i>	1,63	1,65	0,92	1,92	0,19	0,12	-0,82	0,78
<i>Male supply of labor in Africa</i>	1,74	1,75	1,43	1,92	0,11	0,07	-0,40	-0,33
<i>Total supply of labor in Africa</i>	1,70	1,69	1,40	1,91	0,13	0,08	-0,12	-0,90
<i>Female demand of labor in Africa</i>	1,53	1,60	0,60	1,88	0,27	0,18	-0,99	0,51
<i>Male demand of labor in Africa</i>	1,66	1,67	1,14	1,90	0,16	0,10	-0,94	1,01
<i>Total demand of labor in Africa</i>	1,60	1,62	1,04	1,88	0,20	0,12	-0,70	-0,14
<i>GDP per capita</i>	3,28	3,17	2,39	4,36	0,45	0,14	0,56	-0,54

Source: Authors' estimates

Table A3: Correlation matrix

	<i>GDP per capita</i>	<i>Population</i>	<i>Education</i>	<i>Investment</i>	<i>Remittances</i>	<i>Medical Brain Drain</i>	<i>Regional integration</i>	<i>Health expenditure</i>	<i>Total supply of labor in Africa</i>	<i>Total demand of labor in Africa</i>	<i>Female supply of labor in Africa</i>	<i>Female demand of labor in Africa</i>	<i>Male supply of labor in Africa</i>	<i>Male demand of labor in Africa</i>
<i>GDP per capita</i>	1	-0,5558	0,7753	0,271	-0,2034	-0,3029	0,176	-0,3105	-0,5889	-0,3527	-0,5437	-0,6898	-0,5427	-0,5929
<i>Population</i>		1	-0,5307	-0,1617	-0,0492	0,213	-0,3734	0,0863	0,3633	0,1272	0,2913	0,4616	0,3265	0,4022
<i>Education</i>			1	0,3281	-0,0527	-0,0001	0,2163	-0,0802	-0,5648	-0,5183	-0,5844	-0,649	-0,6327	-0,6667
<i>Investment</i>				1	0,2017	-0,1673	0,0166	-0,1086	-0,1151	0,1278	-0,0079	-0,1607	0,0133	-0,0465
<i>Remittances</i>					1	-0,1552	-0,037	0,1022	-0,0246	0,1345	0,0571	0,0156	0,1534	-0,0003
<i>Medical Brain Drain</i>						1	0,0823	0,1057	0,125	-0,1892	-0,0229	0,1132	-0,0911	0,0052
<i>Regional integration</i>							1	0,106	0,0926	-0,1076	-0,0207	-0,1598	-0,3156	-0,2217
<i>Health expenditure</i>								1	0,1091	-0,1733	-0,0211	0,1206	-0,1108	0,0047
<i>Total supply of labor in Africa</i>									1	0,5784	0,8828	0,9348	0,6385	0,7365
<i>Total demand of labor in Africa</i>										1	0,8772	0,5803	0,9148	0,7251
<i>Female supply of labor in Africa</i>											1	0,8458	0,8667	0,7786
<i>Female demand of labor in Africa</i>												1	0,7429	0,8297
<i>Male supply of labor in Africa</i>													1	0,8564
<i>Male demand of labor in Africa</i>														1

Source: Authors' estimates

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