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Why Does Employment Policies Fail to Reduce Unemployment in Sub-Saharan Africa? Looking towards the brain drain

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Abstract

This paper aims to determine the effect of employment policies on unemployment in Sub-Saharan Africa, controlling for the brain drain. The Generalized Method Moment (GMM) is used to assess the direct and joint impact of employment policies and brain drain on unemployment, over the period from 1990 to 2010, on a sample of 17 Sub-Saharan (SSA) countries. The results show that, separately, employment policies and brain significantly contribute to reducing the level of unemployment with a more pronounced effect. Conversely, the study finds that the interaction between employment policies and the brain drain positively impacts the level of unemployment. Thus, policy-makers in SSA should consider reducing the brain drain so that employment policies can fully play their role in reducing unemployment.

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1. Introduction

For the most part, sub-Saharan African countries are experiencing enormous difficulties in recovering their economies. One of the significant problems they face is that of reducing mass unemployment (Choudhry Marelli and Signorelli, 2012; Ebaidalla, 2016). In the context of SSA countries, there is a persistence of unemployment levels, which have hovered around 8 percent[1] from the 1990s to the present day (Africa Development Forum, 2014; ILO, 2019). The recent International Labour Organisation (ILO) report (2019) predicts an increase of one million unemployed in all sub-Saharan African countries by 2020. At the same time, the Youth Employment and Sustainable Development (2019) report forecast an increase of 42% by 2030 for a total of about 321 million unemployed.

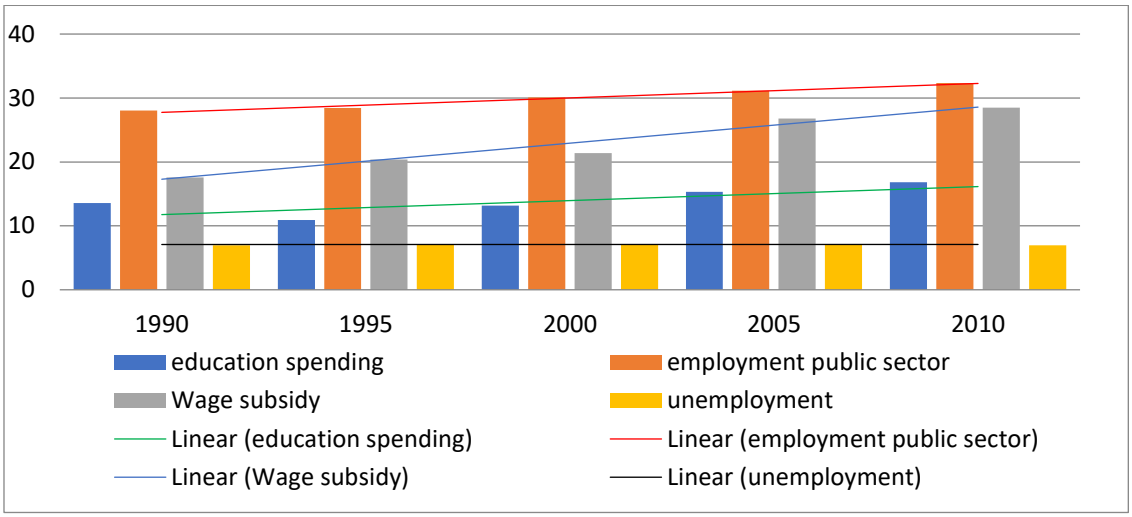
This persistent level of unemployment remains a real problem for the development of sub-Saharan African economies (ILO, 2019). Faced with this, governments have not remained indifferent and have taken several actions in terms of employment policies intending to reduce the level of unemployment (International Labour Office, 2014). Moreover, in the context of the Millennium Development Goals and the wake of the highly indebted poor country initiative, employment policies aimed at reducing the level of unemployment have been defined in most SSA countries. These development agency initiatives do not exclude other employment policies implemented by governments to reduce unemployment levels (Fomba, 2019). Government initiatives, among others, include the promotion of education for all (CEA, 2019) [2]; with a massive drop in the literacy rate, the professionalization of teaching, and the various recruitments in the civil service (Lulat, 2005). Nevertheless, despite all these efforts by the public authorities, unemployment remains a real and palpable problem for these economies. As shown in *figure 1*, despite the strengthening of employment policies[3] since the 1990s, the level of unemployment has remained unchanged in the sub-Saharan Africa economies.

[1] According to the WDI database (WDI, 2020), the measure does not take into account workers in the informal sector, nor does it take into account precarious and intermittent jobs.

[2] According to the recent Report of the United Nations Economic Commission for Africa of September 2019, there is an increase in school enrollment in SSA countries.

[3]Cameroon : Graduate Employment Program (PED), Congo : Programme d'Appui aux Diplômés sans Expérience (PADE), (DOJETIF), Projet de Développement des Compétences pour l'Employabilité (PDCE), Côte d'Ivoire : Projet Emploi Jeune et Développement des Compétences (PEJEDEC), Sénégal : Contrat de désendettement et de Développement (C2D) - Emploi.

Figure 1: Changes in Unemployment Rates and Employment Policies



Source: Authors on WDI

As persistent unemployment clouded the prospects for professional integration, international migration becomes a way out for these young people who have lost all hope of finding decent work in their countries (Brinbaum, 2018; FAO, 2017; ILO, 2005). Thus, there has been a dramatic increase in youth migration from SSA countries over the last two decades. From 2010 to 2017 the number of migrants to the rest of the world from SSA countries increased by 37% (Connor, 2018). Analyses show in 2017, some 25 million sub-Saharan migrants were living outside their country of birth. This trend in migration is all the more palpable since the European Commission report (2017b) shows that the top ten countries of origin of migrants in Europe include nine sub-Saharan African countries.

One of the main characteristics of African migrants is that most of them are skilled individuals with higher education (Docquier 2007). Indeed, the World Bank report (2017) states that sub-Saharan Africa loses nearly 50,000 managers and about 23,000 tertiary graduates each year. In Zambia, as in Nigeria, skilled workers account for almost half of all the expatriates residing in OECD countries. According to IOM data (2016), the magnitude of this massive brain drains from sub-Saharan African countries trained in these countries is relatively representative, especially in the fields of engineering and health. Also, there is a strong desire to migrate to skilled individuals to find better job opportunities (Bourgain et al., 2010). A survey of existing physicians in a few sub-Saharan African countries reveals high levels of intention to migrate from these countries, ranging from 26% in Uganda to 68% in Zimbabwe (Awases et al., 2004). Thus, public authorities invest on individuals with a view to reducing the level of unemployment, but the latter prefers to migrate because they do not have a good perception of

the actions of public decision-makers. In fact, all the efforts made by the latter are doomed to failure because of the migration of the individuals who have benefited from these policies. So, employment policies no longer benefit the creation of the local labour market but rather the foreign one. Indeed, it is questionable whether government employment policy efforts are being undermined by the brain drain effect, as there is a growing trend of high skilled migration (ILO, 2014). This paper, therefore aimed at analysing the role of brain drain on the effect of employment policies in reducing unemployment in the context of SSA countries.

The literature assembled on the effectiveness of employment policies is highly focused on developed countries and does not provide sufficient information on countries in sub-Saharan Africa (Guzmán, 2014; Nie and Strugly, 2011; David et al., 2010). So, this article tries to fill this gap. Also, compared to the investigations of Anyawu (2013, 2014) and Ebaidalla (2016), this article contributes to the literature on the relevance of employment policies by controlling the effects induced by the brain drain. The rest of the paper is organized into four sections, successively, including the literature review, methodology, results and conclusion.

2. Brief Review of Literature

Many authors have worked on labour market issues, (Fomba, 2019; Guzmán, 2014; Nie and Strugly, 2011; David et al., 2010; Ebaidalla, 2016; Anyanwu, 2013, 2014; Rovelli and Bruno, 2008; Freeman, 2007; Rovelli and Bruno, 2008) However, the inclusion of migration phenomena in the labour market will not be felt until the 1950s (Bellemare, 2010). From a theoretical point of view, the Push and Pull[4] theory is considered by several authors to be the fundamental theory supporting the analysis of the role of brain drain (Portes and Borocz, 1989; Buchan et *al.*, 2003; Naicker and Ashuntantang, 2017).

From an empirical perspective, studies analysing the effect of the brain drain oppose on the one hand those who find that the brain drain hurts the economy and the "brain drain" tax and on the other hand those who find that it has positive effects and talk about "brain gain" (Méango, 2018). Several authors find that the migration of skilled individuals has adverse effects on the

[4] The Push and Pull theory is a migration theory that talks about the repulsivity and attractiveness of migrants. In terms of migration, *the pull is a phenomenon that attracts migrants to their destination: an area of employment and economic prosperity (real or fantasy), a political security zone, cities where members of one's community of origin already reside, etc. The pull is a phenomenon that attracts migrants to their destination. The pull cannot be dissociated from the push in a migratory phenomenon because it cannot explain the observed flows alone. The push is the phenomenon that causes a person or a population to leave their country of origin: armed conflict, famine, political oppression, etc. The push is the phenomenon that causes a person or a population to leave their country of origin: armed conflict, famine, political oppression, etc.*

economies of migrants' home countries. The different arguments put forward by the latter are among others the loss of earnings of the migrant labour force because they say the brain drain has in the short-term adverse effects on employment and unemployment, in the medium term, emigration exerts pressure on wages, in which the structural characteristics of emigration are of crucial importance, and in the long-run, emigration affects the structure of the economy. Brain drain is also blamed for widening the gap between developed and developing countries. (Bhagwati and Hamada, 1974; Mishra; 2006; Docquier et *al*, 2007; Rapoport and Docquier, 2007; Docquier et al., 2008; Bellemare, 2010; Pieretti and Benteng, 2010; Hazans and Philips, 2011; Bellot and Halton 2012; Dutt, 2017; Gibson and Mc Kenzie (2012); Kalipeni, Semu and Mbilizi, 2012; Kaczmarczyk, 2012; Kasper and Barjunirwer, 2012; Pryymachenko, Fregert and Andersson, 2013; Dustmann, Frattini, and Rosso, 2015; Méango, 2016; Naicker and Ashuntantang, 2017).

On the other hand, some authors have argued that brain drain would be beneficial for both the migrants' home countries and their host countries. The main channels that have been mentioned through which the beneficial effects of brain drain could reach economies are Foreign Direct Investment and remittances (Stark et *al.*,1997 ; Stark Helmenstein and Prskawetz, 1997 and Vidal, 1998 ; Sarbajit, 2000 ; Beine et al., 2001, 2003; Docquier and Marfouk, 2004 ; Rapoport, 2005 ; Ghosh, 2006 ; Docquier, 2006 ; Batista et al., 2007 ; Baas, Brucker and Hauptmann, 2010 ; Hazans and Philips, 2011; Enel Pungas et al., 2012 ; Nkoa, 2014 ; Zaiceva, 2014; Raji Abdulwasiu et al., 2018 ; Tomic and Taylor, 2018 ; Bredtman, Martinez and Otten, 2019 ; Fargue, 2019.

In light of the literature, it is easy to see that the effect of the brain drain has been analysed on several economic and societal components, more specifically, on the components related to the labour market. However, the analysis of the role of the brain drains on the effectiveness of employment policies little attention, and this article tries to fill this gap.

3. Methodology

3.1. Model specification

The basic model is based on that of Njoku and Ihugba (2011) used to analyse the effect of employment policies on unemployment in the context of SSA countries. to this model, we add the brain drain variable given the importance of its statistics in the context of SSA countries. The functional form of our model is therefore as follows:

$$UNEMP_{it} = f(EE_{it}, WS_{it}, BD_{it}, EP_{it}, Ins_{it}, PFS_{it}, UNEMP_{it-1}) \qquad (1)$$

Where $UNEMP_{it}$ is the unemployment rate; $UNEMP_{it-1}$, the delayed unemployment rate and, BD_{it}, *is* the brain drain. EP_{it} represents the employment policies that will be captured by several proxies including education expenditures *(*EE_{it}*)*, wage subsidies *(*WS_{it}*)* and, the of the public service size *(*PSS_{it}*)*. Ins_{it} represents the set of control variables here consisting of gross fixed capital formation *(GFCFit)* and credit to the Economy (*CREit).*

The general form of the model to be estimated is as follows:

$$UNEMP_{it} = \gamma_1 UNEMP_{it-1} + \gamma_2 EP_{it} + \gamma_3 BD_{it} + \gamma_4 BD_{it} * EP_{it} + \varepsilon_{it} \qquad (2)$$

To capture the effect of the different proxy variables of individual employment policies in such a way as to bring out the impact of each of these variables and their interactions with the brain drain on the unemployment rate, we estimate the following equations in turn for greater robustness:

$$UNEMP_{it} = k_1 UNEMP_{it-1} + k_2 EE_{it} + k_3 BD_{it} + k_4 BD_{it} * EE_{it} + \mu_{it} \qquad (3)$$

$$UNEMP_{it} = b_1 UNEMP_{it-1} + b_2 PSS_{it} + b_3 BD_{it} + b_4 BD_{it} * PSS_{it} + \theta_{it} \qquad (4)$$

$$UNEMP_{it} = c_1 UNEMP_{it-1} + c_2 WS_{it} + c_3 BD_{it} + k_4 BD_{it} * WS_{it} + \mu_{it} \qquad (5)$$

With λ, k, a, b, c, d the constants of the respective equations

3.2. Variable specification and justification

The five-year data collected for this study is from secondary sources. They come from various databases, which are summarized in Table 1. Our analysis is based on quantitative panel data and will cover the periods from 1990 to 2010 and will focus on 17[5] sub-Saharan African countries. Several variables are defined to assess the effect of employment policies on unemployment in SSA controlling for the brain drain. These are described in the table below:

So, to obtain the table of descriptive statistics below, we used the available data from the brain drain variable grouped into 5 years. Thus, for the sake of consistency, we averaged the other variables over five years. Also, we have chosen the countries according to the availability of data.

[5] The choice of period and countries was constrained by the availability of data on brain drain, which is one of the main variables of interest in the study.
In addition, for a better representativeness of the different regions of SSA countries, the sample is constituted according to the availability of data from 05 countries in Central Africa 04 countries in West Africa 03 countries in Southern Africa 05 countries in South Africa.

Table 1: Summary statistics and data description

Variables	Abbreviations	Measures	Sources	Obs	Mean	Std. Dev.	Min	Max
Unemployment	Unemp	Unemployment Rate	WDI (2019)	85	5.978466	5.091435	.3	19.946
Brain drain	BD	Percentage of tertiary educated migrants	IOM (2018)	85	22.03099	13.53647	3.21933	55.83348
Credit	CRE	Domestic credit offered by the financial sector	WDI (2019)	85	12.14138	7.234742	.3874	65.993
Education Expenditures	EE	Government spending on education	WDI (2019)	85	12.1278	6.864552	3.27054	30.01515
Wage subsidies	WS	Wage subsidy and transfer to businesses	WDI (2019)	85	25.10725	12.40959	3.412628	61.94904
Size of the Public Service	PSS	Employment in Public Services as a Percentage of Total Employment	ILO (2019)	85	29.7924	13.1297	8.245	54.2334
Investment	GFCF	Gross fixed capital formation	WDI (2019)	85	19.93638	7.830511	3.750046	39.47675

Source: Authors

These equations are estimated using the Generalized Method of Moments (GMM) proposed by Blundel and Bond (1998). This method has several advantages over the other standard methods consistently used in the literature for analysing the effect of employment policies on unemployment. It has the advantage that it identifies effects that are unobservable for cross-sectional data. According to Magnac (2018), it controls for the presence of unobservable heterogeneity. It also has the advantage that it allows the estimation of dynamic models by correcting the endogeneity problem that can appear in estimates (Hansen, 1999). Moreover, it ensures that there is no risk of serial correlation in the second order. (Roodman, 2009). As a result, the GMM estimation method is the most appropriate for this analysis, given the nature of our panel where the time dimension is smaller than the individual dimension and the fact that we want to evaluate the interactions between brain drain and employment policies in a non-linear and dynamic model.

4. Results and Discussion

4.1. Model homogeneity test

The homogeneity test is suitable to verify the equality of the coefficients of the model in the individual dimension.

Table 2: **Result of specification or homogeneity tests**

Models	**Fisher F values (16, 63)**	**Prob > F**
Equation (1)	113.95	Prob > F = 0.0000
Equation (2)	81.03	Prob > F = 0.0000
Equation (3)	115.52	Prob > F = 0.0000

Source: *Authors*

The respective values of the Fisher probabilities indicate that the different models are significant at 1%, but we reject the null hypothesis of equality of the constant. The panel structure is therefore confirmed since we are entitled to assume that there are common coefficients for all countries.

4.2. Cross-sectional dependence test

Table 3: **Cross-sectional dependence test**

Variables	CD-test	p-value	Corr	abs(corr)
Bd	5.22	**0.000**	0.200	0.606
Unemp	4.03	**0.000**	0.155	0.576
GFCF	2.72	**0.007**	0.104	0.556
EE	8.80	**0.000**	0.338	0.538
Cre	7.32	**0.000**	0.281	0.542
PSS	9.17	**0.000**	0.352	0.798
WS	-0.81	**0.041**	-0.031	0.533

***Source**: Authors*

This test allows checking if there is a dependency between the variables. The p-value of the test of the transversality of the different variables is less than 1%. We reject the null hypothesis of transversal independence; this being said that there is no correlation between the variables, which confirms that there is no risk of autocorrelation.

4.3. Are employment policies in SSA effective?

The results show that (Table 4, 5 and 6) employment policies have a significant and positive impact on unemployment. Meaning, any change in employment policies would lead to a variation in the level of unemployment, in the opposite direction. From a theoretical perspective, this result corroborates the Keynesian thought that the State must intervene in the

economy to regulate and bring back equilibrium. Moreover, these results show, as among Keynesians, that there is indeed a level of unemployment that is involuntary and that public decision-makers must try to remedy (Keynes, 1936). From an empirical perspective, these results are near those of Jackman et *al.* (1990), Guzman (2014) Schwebel and al., (2019) who establishes that employment policies significantly and positively affect the level of unemployment.

Table 4: Effect of employment policies approximated by Education Spending on Unemployment in SSA

Dependent variable is Unemployment				
	eq1	eq2	eq3	eq4
L. Unemployment	0.988***	0.787***	0.803***	1.029***
	(0.0183)	(0.0884)	(0.0144)	(0.0457)
Education Expenditures	**-0.0848*** **	**-0.0852** **	**-0.0774** **	**-0.0362** **
	(0.0294)	(0.0867)	(0.0297)	(0.0436)
Brain Drain		**-0.178** **	**-0.143*** **	**-0.0797** **
		(0.0619)	(0.0152)	(0.0311)
GFCF			**0.0647** **	0.0176
			(0.0266)	(0.0188)
Credit				**0.123*** **
				(0.0222)
Number of Observations	68	68	68	68
Cross-country	17	17	17	17
AR1	0.0251	0.0921	0.0624	0.0889
AR2	0.280	0.454	0.309	0.640
Hansen		0.579	0.395	0.510

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results show that Education Expenditures has a significant effect on unemployment. Everything else being equal, an increase of 1% in education spending leads to a decrease in the unemployment rate of 0.0362%, at a 5% significance level. By adding control variables, neither the sign nor the significance of the relationship between education expenditure and unemployment changes. This result is corroborated by Agboola et al. (2018).

Table 5 gives the result on the effects of employment policies approximated by the size of the public sector on unemployment.

Table 5: Result of the impact of Public Service Size on Unemployment in SSA

Dependent Variable: Unemployment				
	eq5	eq6	eq7	eq8
L. Unemployment	1.019***	0.489***	0.499***	0.741***
	(0.00877)	(0.142)	(0.140)	(0.0193)
Public service size	**-0.0280*** **	**-0.221*** **	**-0.225*** **	**-0.0518*** **
	(0.00250)	(0.0344)	(0.0338)	(0.00786)
Brain Drain		**-0.135*** **	**-0.140*** **	**-0.0626*** **
		(0.0119)	(0.0143)	(0.00967)
GFCF			-0.00879	**-0.0499*** **
			(0.0163)	(0.00972)
Credit				**-0.0657*** **
				(0.00439)
Number of Observations	68	68	68	68
Cross-country	17	17	17	17
AR1	0.0613	0.0913	0.0965	0.0653
AR2	0.755	0.277	0.298	0.857
Hansen	0.409	0.262	0.247	0.579

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The size of the public service (PSS) has a significant and positive effect on unemployment, and this effect is robust because it remains unchanged when the control variables are introduced into the model. Any 1% increase in the size of the public service leads to a decrease in the unemployment rate of 0.225%, *ceteris paribus*. This result corroborates that of Caponi (2014) who, in the context of European countries, shows that increasing the size of the civil service would contribute to reducing the level of unemployment.

Table 6 shows the direct effect of employment policies approximated by wage subsidies on unemployment.

Table 6: Results on the impact of Wage Subsidies on Unemployment in SSA

	Dependant variable is unemployment			
	eq9	**eq10**	**eq11**	**eq12**
L. Unemployment	**0.978*** **	0.931*** *	1.024***	0.940***
	(0.0223)	(0.00817)	(0.0520)	(0.0237)
Wage Subsidies	**-0.0989*** **	**-0.0157*** **	**-0.162*** **	**-0.0237***
	(0.0343)	(0.00251)	(0.0440)	(0.0116)
Brain Drain		**-0.0507*** **	**-0.0525*** **	**-0.0938*** **
		(0.00571)	(0.0263)	(0.0165)
GFCF			**0.235*** **	**0.0927*** **
			(0.0560)	(0.00977)
Credit				**0.0943*** **
				(0.00943)

Number of Observations	68	68	68	68
Cross-country	17	17	17	17
AR1	0.0288	0.0575	0.0802	0.0932
AR2	0.134	0.400	0.853	0.760
Hansen	0.156	0.250	0.277	0.372

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

The results show that employment policies approximated by wage subsidies have a significant and positive effect on unemployment. Any upward change in wage subsidies leads to an opposite change in the unemployment rate. Consistent with the work of Almesia et al., (2014) who, in the context of developing countries shows that wage subsidies are contributing to create employment and to reduce unemployment.

4.4. Combined Effect Of Employment Policies And The Brain Drain On Unemployment In SSA.

Table 7 presents the combined effect of employment policies and the brain drain on unemployment in SSA.

Table 7: Impact of the Interaction of Brain Drain and Employment Policies on Unemployment

VARIABLES	(3) Model (EE)	(4) Model (PSS)	(5) Model (WS)
L.Unemployment	**1.043*** **	**0.733*** **	0.993***
	(0.0546)	(0.0194)	(0.0229)
Brain Drain	**-0.120*** **	**-0.145** **	**-0.0820*** **
	(0.0309)	(0.0518)	(0.00680)
Education Expenditures	**-0.247*** **		
	(0.0240)		
BD*EE	**0.00588*** **		
	(0.00137)		
Credit	**0.157*** **	**0.0751*** **	**0.0835*** **
	(0.0220)	(0.00424)	(0.0145)
GFCF	**0.101*** **	**0.0488** **	**0.0872*** **
	(0.0319)	(0.0219)	(0.0234)
Public Service Size (PSS)		**-0.0616** **	
		(0.0255)	
BD*PSS		**0.0194** **	
		(0.00184)	
Wage Subsidies (WS)			**-0.0849*** **
			(0.0172)
BD*WS			**0.00226*** **
			(0.000236)
Number of Observations	68	68	68

Cross-country	17	17	17
AR1	0.0653	0.0992	0.0532
AR2	0.857	0.560	0.302
Hansen	0.579	0.395	0.260

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results show that the effect of employment policies on unemployment is modulated by the brain drain. Indeed, employment policies that individually contributed significantly to reducing unemployment have an inverse impact when they interact with the brain drain. This result is consistent with the findings of Hazans and Philips (2011), which show that the brain drain will generate adverse effects for the labour market. However, it is noted that the proportion of reduction of unemployment induced by employment policies is higher than that of the brain drain. Yet, when the two effects are linked, there is a total cancellation of the economically positive impact they had on unemployment in favour of an economically negative impact, because their associations create the opposite effect on unemployment. This result is consistent with the conclusion of Sargant and Wallace (1975). Governments invest heavily in employment policy with the aim that, in the end, jobs can be created to reduce the level of unemployment. Unfortunately, those benefiting from these policies prefer to migrate; in short, all the efforts made in training by the government benefit to foreign countries because of the migration phenomena.

Against all odds, domestic credit and gross fixed capital formation have a significant and positive impact on unemployment in SSA. This result can be explained by the fact that most investments in SSA are made in the mining and oil sectors, which are very unproductive in terms of local employment. Kiyotaki and Moore (1997) explain that investments and credit could feed the unemployment rate, this being the case when investments are turned towards the new information technology sector that increasingly replaces man by machine.

4.5 Robustness checks

To verify the robustness of our results, we first introduce the institutional variables into the model. Indeed, several works have shown that the quality of institutions would be a very important factor in explaining the problems that undermine societies in SSA countries (Ebaidalla (2016; 2014); Shabibir and al (2019)). Thus, it would be wise to take it into account in our study to verify whether our results remain robust after their introduction (Table 8).

And then, we tested the robustness of our results by using alternative estimation methods, namely fixed effects (FE) estimation, random effects (RE) and ordinary least squares (OLS) (Table 9).

Table 8: Consideration of institutional variables

	(1) EE	(2) PSS	(3) WS
Dependantes variables:		Unemployment	
L.unemp	0.987***	0.725***	0.935***
	(0.145)	(0.0873)	(0.102)
BD	**0.0299***	**0.0613****	**0.0853*****
	(0.0162)	(0.0283)	(0.0280)
EE	**-0.168***		
	(0.189)		
BD*EE	**0.00118****		
	(0.00216)		
PSS		**-0.113*****	
		(0.0336)	
BD*PSS		**-0.00394*****	
		(0.000947)	
WS			**-0.0493*****
			(0.0163)
BD*WS			**-0.00345*****
			(0.000814)
credit	**-0.0330****	-0.0219	**-0.0280***
	(0.0153)	(0.0220)	(0.0148)
GFCF	0.00315	0.0208	-0.00391
	(0.0454)	(0.0304)	(0.0325)
Corruption	**2.431**	**2.132**	**4.081****
	(2.400)	(1.836)	(1.683)
Corruption (IRCG)	**1.113***	0.325	0.801
	(0.601)	(0.530)	(0.607)
Govefficiency	**-2.131**	**-1.368**	**-2.179****
	(3.898)	(0.817)	(0.958)
Political stability	1.016	**0.659*****	0.269
	(0.629)	(0.191)	(0.319)
Observations	68	68	68
Number of id	17	17	17
ar1p	0.0801	0.0428	0.0180
ar2p	0.372	0.183	0.277
Hansenp	0.514	0.365	0.664

Source: Authors
Note: Robust standard errors are reported in brackets. (***, **, *) indicate statistical significance at 1%, 5% and 10%

Table 9: Alternative estimation methods

	FE			RE			OLS		
	eq1	eq2	eq3	eq4	eq5	eq6	eq7	eq8	eq9
	Dependantes Variables:				**Unemployment**				
EE	**-4.38E-05****			**-7.26E-09**			**-0.00311*****		
	(0.0457)			(0.0489)			(0.0873)		
Bd*ee	**-0.00901*****			**-0.0162**			**0.173***		
	(0.000983)			(0.00106)			(0.00212)		
pss		**-0.0217*****			**-0.0622*****			**-0.149*****	
		(0.0461)			(0.0437)			(0.0500)	
Bd*pss		**-0.000282*****			**-0.000581*****			**-0.00276****	
		(0.000486)			(0.000509)			(0.00130)	
ws			**-0.00587*****			**-0.00150*****			**-0.0236*****
			(0.0182)			(0.0195)			(0.0433)
Bd*ws			**-0.000420***			**-0.000689***			**-0.00354****
			(0.000599)			(0.000637)			(0.00151)
bd	**-0.00499*****	**-0.00408***	**-0.0023***	**0.00356*****	**-0.000960***	**-0.00012*****	**-0.0309*****	**-0.00829*****	**-0.0262**
	(0.0164)	(0.0165)	(0.0162)	(0.0175)	(0.0172)	(0.0171)	(0.0307)	(0.0301)	(0.0300)
corrup	**-0.169***	**-0.0861***	**-0.0720*****	-0.221	-0.0141	-0.0469	**-1.653*****	**-1.019*****	**-0.833*****
	(0.669)	(0.652)	(0.641)	(0.714)	(0.680)	(0.679)	(1.395)	(1.340)	(1.390)
govefficiency	-0.489	-0.528	-0.480	-0.321	-0.476	-0.364	**4.116****	**3.079***	**2.974***
	(0.635)	(0.626)	(0.614)	(0.689)	(0.661)	(0.658)	(1.686)	(1.548)	(1.582)
polsta	**0.239*****	**0.231*****	**0.216*****	0.210	**0.188*****	**0.188*****	-0.526	**-0.458*****	-0.342
	(0.187)	(0.188)	(0.187)	(0.204)	(0.199)	(0.201)	(0.550)	(0.528)	(0.531)
fbcf	0.00480	**0.00328*****	0.0123	0.0130	0.00683	0.0208	**0.116****	**0.102****	**0.185*****
	(0.0242)	(0.0239)	(0.0248)	(0.0260)	(0.0251)	(0.0264)	(0.0514)	(0.0510)	(0.0593)
credit	0.00552	0.00663	0.00711	0.00386	0.00629	0.00612	-0.0349	-0.0430	**-0.0538***
	(0.0117)	(0.0118)	(0.0115)	(0.0126)	(0.0124)	(0.0122)	(0.0288)	(0.0272)	(0.0273)
popgrowth	0.0936	**0.0993***	**0.0913***	0.0436	0.0625	0.0463	**0.593*****	**0.439*****	**0.503*****
	(0.0571)	(0.0545)	(0.0543)	(0.0608)	(0.0571)	(0.0574)	(0.120)	(0.129)	(0.121)
Constant	**6.025*****	**5.502*****	**6.112*****	**5.772*****	**4.276****	**5.834*****	2.519	1.540	**4.145*****
	(0.714)	(1.369)	(0.720)	(1.269)	(1.677)	(1.278)	(1.700)	(1.637)	(1.475)
Observations	85	85	85	85	85	85	85	85	85
R-squared	0.478	0.481	0.592				0.585	0.610	0.600
Number of id	17	17	17	17	17	17			
F-Statistic	0.552	0.581	0.663						
F- Proba	0.0777	0.0814	0.0918						

Source: Authors
Note: Robust standard errors are reported in brackets. (***, **, *) indicate statistical significance at 1%, 5% and 10%.

The results show that the quality of institutions significantly affects the level of unemployment in SSA countries. Indeed, better control of corruption, better quality of bureaucracy, and political stability would help reduce the level of unemployment in SSA

countries. This result corroborates with those of Prymachenko (2013) and Eichhorst (2017) who find in an analysis in the context of OECD countries that the quality of institutions has a significant inverse effect on unemployment. However, the role of brain drain in the effect of employment policies on unemployment in SSA remains unchanged. Indeed, it can be concluded that the effect of employment policies on unemployment is modulated by brain drain.

Conclusion

The objective of this paper was to assess the effect of employment policies on unemployment controlling for the impact of the brain drain. Empirical analyses were carried out on a sample of 17 SSA countries for the period 1990 to 2010, and the different models were run using the Generalized Method of Moments (GMM). The results show that employment policies have a significant and positive effect on unemployment in SSA. However, when considering their interactions with the brain drain, this effect is ultimately cancelled out. That said, the brain drain modulates the impact of employment policies on unemployment. Therefore, policy-makers should consider developing policies to reduce brain drain so that employment policies can freely achieve their objective of reducing unemployment. This to the extent that, the effect of employment policies on unemployment is higher than that of brain drain.

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Appendices

Table Appendix 1: Matrix of correlation coefficients

	Unemp	bd	ee	pss	ws	corrup	govefficiency	polsta	fbcf	credit	popgrowth
unemp	1.0000										
bd	0.5108	1.0000									
ee	-0.6875	-0.1007	1.0000								
pss	-0.4147	-0.0733	-0.0940	1.0000							
ws	-0.4655	-0.0775	0.3299	-0.2558	1.0000						
Corrup	-0.5840	-0.1744	-0.1023	0.0705	-0.2234	1.0000					
govefficiency	0.0048	-0.1367	-0.2620	0.0705	-0.1960	0.8142	1.0000				
Polsta	0.5062	0.2082	0.1019	0.3357	0.0041	0.1499	0.1798	1.0000			
Fbcf	0.2341	0.1601	-0.0610	0.1682	0.3987	-0.1591	-0.1702	-0.0175	1.0000		
Credit	-0.3063	-0.1128	-0.3330	-0.0159	-0.1847	0.3003	0.3363	-0.1676	-0.0687	1.0000	
popgrowth	0.6944	0.1060	0.0790	0.3568	0.1235	-0.1735	-0.1767	0.7636	0.1457	-0.3269	1.0000

Table Appendix 2: List of countries

List of countries
Angola, Malawi, Uganda, Tanzania, Zimbabwe, Kenya, Ethiopia, Rwanda, Mozambique, the Gambia, Senegal, Liberia, Cameroon, Congo Republic, Central African Republic, Equatorial Guinea, Gabon