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The Nexus Between Corruption and Youth Unemployment in African Countries: A Gender Analysis

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Abstract:

Using the dynamic threshold panel model, this paper aims to assess the nonlinear effects of corruption on male and female youth unemployment for 33 African countries over the period 2002–2021. Corruption has positive effects on youth unemployment when its threshold scores are below -0.46, -1.03, and -0.48 for overall, male, and female youth unemployment, respectively. In countries with low levels of corruption, a one-point increase in the control of corruption score reduces male and female youth unemployment by 0.48 and 1.61 percentage points, respectively. To bring youth unemployment under control, policymakers should implement good governance to reduce corruption.

Keywords: Youth unemployment, Corruption, Threshold, Gender, Africa

Introduction

The linkage between corruption and youth unemployment can be explained by the "vicious cycle of corruption" and the "institutional theory." The vicious cycle of corruption helps to explain the intricate relationship between corruption and youth unemployment. Corruption not only undermines economic growth and job creation but also weakens the institutions necessary for addressing youth unemployment effectively (Boly and Gillanders, 2023). Breaking this cycle requires comprehensive efforts to combat corruption, strengthen institutions, and promote a conducive environment for economic growth.

Institutional theory suggests that a society's quality of institutions and governance significantly impacts economic outcomes, including unemployment rates and corruption levels. High levels of corruption indicate weak institutions, which often fail to foster economic growth and job creation (Pillay, 2014). Tolerance to corruption can perpetuate youth unemployment by obstructing reforms and policies aimed at reducing unemployment (Pillay and Kluvers, 2014).

The dynamic relationship between corruption and unemployment was investigated by Bouzid (2016). He found a dynamic link between corruption and unemployment, particularly among youth and educated job seekers' unemployment rates. Fagbemi et al'. (2023) found a cyclical connection between corruption and employment in Nigeria's labor market. They conclude that a higher level of corruption inhibits employment growth.

Corruption has various negative consequences on economic growth and employment via multiple channels. Nonetheless, the relationship between corruption and employment remains ambiguous. Indeed, a few studies have indicated that corruption could potentially boost economic growth and potentially reduce unemployment rates (Egger and Winner, 2005). In this paper, we seek to clarify the relationship between corruption and employment. The literature on corruption and unemployment in African countries, including studies by Ndjé et al. (2019), Adjor and Kebalo (2018), and Fagbemi et al. (2023), largely overlooks the specific effects of corruption on youth unemployment. Research on corruption's impact on youth unemployment in African contexts is limited, with no insight into its gender-based impact. Additionally, the relationship between corruption and employment may be nonlinear, suggesting that corruption can hinder employment when its level exceeds a certain threshold.

Corruption, as a pervasive social problem, has long been recognized as detrimental to economic development and societal welfare. However, its consequences on youth unemployment may not be linear but rather exhibit nonlinear dynamics. This means that corruption's influence on youth unemployment may remain relatively insignificant until it reaches a critical point or threshold, beyond which its impact becomes more pronounced. Identifying this threshold level is essential for policymakers and researchers aiming to implement effective strategies to combat both corruption and youth unemployment. By understanding when corruption starts significantly affecting youth employment prospects, policymakers can develop targeted interventions that address underlying causes and ensure sustainable economic

growth and opportunities for young individuals. To our knowledge, no study has examined the impact of corruption on the gender gap in youth unemployment in the African region. This study evaluates the threshold effects of the control corruption indicator on the male and female youth unemployment rate to fill this research gap.

Research Results

We used annual data for a sample of 33 African countries over the period spanning from 2002 to 2020. Table A1 in the Appendix provides the list of countries included in the study. The data include the total (YUR), male ($MYUR$) and female ($FYUR$) youth unemployment rates collected from the World Bank's World Development Indicators (WDI) database. The six governance indicators of Kauffman et al. (2010) are retrieved from the World Governance Indicators site¹. The six governance indicators are control of corruption (CC), government efficiency (GE), regulatory quality (RQ), rule of law (RL), political stability (PS), and voice and accountability (VA). The score estimator for each indicator ranges from -2.5 to +2.5. Bad governance is associated with a lower level of governance indicator, implying less effort towards good governance.

The data include additional control variables such as GDP growth ($GDPG$), inflation rate ($INFR$), percentage of population aged between 0 and 14 years (Pop 0-14), and human capital index (HC). The time series of ($GDPG$), ($INFR$), and (POP 0-14) are collected from the World Bank Indicators (WDI), while the (HC) is retrieved from the Penn World Table PWT 10.0 database².

To identify the threshold effects of the control of corruption indicator on youth unemployment, we rely on a dynamic threshold panel approach that includes 33 African countries. We employ the strategy that Kremer et al. (2013) used. They extended Hansen's (1999) panel threshold model by combining the cross-sectional threshold model of Caner and Hansen (2004) and the generalized moment method (GMM)-type estimators introduced by Arellano and Bover (1995). The advantages of this method include controlling for the endogeneity of significant explanatory variables and estimating threshold values endogenously rather than exogenously as required by Hansen (1999). Moreover, the introduction of Arellano and Bover's (1995) forward orthogonal deviation transformation ensures that the error terms remain uncorrelated. Accordingly, we estimate the following dynamic panel threshold model:

$$YUR_{it} = \alpha_i + \theta YUR_{it-1} + \beta_1 CC_{it} I(CC_{it} \leq \gamma) + \beta_1 CC_{it} I(CC_{it} > \gamma) + \delta X_{it} + u_{it} \quad (1)$$

$$YUR_{it}^M = \alpha_i^M + \theta^M YUR_{it-1}^M + \beta_1^M CC_{it} I(CC_{it} \leq \gamma^M) + \beta_2^T CC_{it} I(CC_{it} > \gamma^M) + \delta^T X_{it} + u_{it}^M \quad (2)$$

$$YUR_{it}^W = \alpha_i^W + \theta^W YUR_{it-1}^W + \beta_1^W CC_{it} I(CC_{it} \leq \gamma^W) + \beta_2^W CC_{it} I(CC_{it} > \gamma^W) + \delta^W X_{it} + u_{it}^W \quad (3)$$

Where YUR_{it} , YUR_{it}^M and YUR_{it}^W are the total, male and female youth unemployment rates, respectively ($i = 1, \dots, N$ is the country index; $t = 1, \dots, T$ is the time index), CC_{it} is the control of corruption, and u_{it} is

¹ [WGI 2022 Interactive > Home \(worldbank.org\)](https://wgi2022.worldbank.org/)

² The human capital index estimate is based on the average years of schooling from Barro and Lee (2013) and the rate of return to education from Psacharopoulos (1994). For more details, see PWT 9.0, PWT earlier releases, Groningen Growth and Development Centre, University of Groningen(rug.nl)

the error term. The vector of exogenous variables X_{it} is considered uncorrelated with u_{it} , while the lagged gender youth unemployment rate (YUR_{it-1}) is considered correlated with u_{it} .

To estimate the dynamic panel threshold model in Eqs. (1), (2) and (3), Kremer et al. (2013) used Arellano and Bover's (1995) forwards orthogonal deviation transformation to eliminate the fixed effects; thereby, Caner and Hansen's (2004) cross-sectional estimation conditions are fulfilled. Accordingly, one can first derive a reduced form estimator of the endogenous variable YUR_{it} . Second, one should replace YUR_{it} with its estimated value and then estimate Eqs. (1), (2) and (3) by least squares (LS) for a fixed threshold γ . Finally, one should derive an LS consistent estimator of the threshold $\hat{\gamma}$ and apply the generalized method of moments (GMM) to estimate the parameters of the dynamic panel threshold model in Eqs. (1), (2) and (3)³.

To test the null hypothesis $H_0: \beta_1 = \beta_1$ (absence of threshold effects of corruption on youth employment) against the alternative hypothesis $H_0: \beta_1 \neq \beta_1$ (there are threshold effects of corruption on youth employment), we make use of Hansen's (1999) bootstrapped likelihood ratio test defined as follows:

$$SupWstar = \frac{S_0 - S_1(\hat{\gamma})}{\hat{\sigma}^2}$$

where S_0 and $S_1(\hat{\gamma})$ are the residual sum of squares of the model under the null and alternative hypotheses, respectively.

Table 1 provides the estimation results of the relationship between the control of corruption and the overall, male, and female youth unemployment rates. For all groups, we find a significant positive effect of the lagged value of the youth unemployment rate on the current youth unemployment rate in Africa, which reflects its persistent character for both young men and women. This result supports the use of a dynamic panel model. Moreover, for all regressions, the estimation results indicate that the estimated threshold levels of control of corruption are statistically significant at the 10% level, suggesting the existence of regime-dependent effects of the control of corruption on youth unemployment. Results of the cross-sectional dependence tests of Pesaran (2004) fail to reject the null hypothesis of cross-sectional independence in the error terms of the dynamic panel threshold regressions.

For overall youth unemployment (YUR), the estimated threshold value of the control of corruption is -0.406. The regime-dependent parameters are significant and plausibly signed with regard to both regimes. Indeed, when the control of the corruption index is below the estimated threshold (high corruption regime), a 1-point increase in the control of corruption increases the overall youth unemployment rate by 3.73 percentage points. In addition, when the control of the corruption index exceeds the estimated threshold (low corruption regime), the overall youth unemployment rate decreases by 1.04 percentage points as a result of a 1-point increase in the control of corruption. This result confirms

³ Additionally, the critical values determining the 95% confidence interval for the threshold are derived following the procedure's estimation of Hansen (1999) and Caner and Hansen (2004).

the nonlinear threshold effect of the control of corruption on overall youth unemployment.

Among the 33 African countries, only 11 countries recorded average scores of control of corruption that exceeded the estimated threshold level. Most of these countries succeeded in reducing their youth unemployment rates, whereas 23 out of 34 countries with average scores under the estimated threshold reached high youth unemployment rates (see Table A2 in Appendix). For these 23 countries, the practices put in place to control corruption are not yet sufficient to reduce the level of youth unemployment.

Table 1

Results of the threshold effect of control of corruption on gender youth unemployment rate

Estimates	Dependent variable		
	Overall (YUR)	Male (MYUR)	Female (FYUR)
$\hat{\beta}_1$	3.731* (0.635)	0.867** (0.327)	3.080 (0.628)
$\hat{\beta}_2$	-1.045*** (0.594)	-0.481*** (0.359)	-1.605* (0.543)
Lag_dependent	0.631* (0.008)	0.771* (0.010)	0.679* (0.015)
GDPG	-0.218* (0.007)	-0.112* (0.010)	-0.199* (0.011)
INFR	0.011 (0.008)	0.030* (0.005)	-0.014** (0.008)
HC	-1.503** (0.741)	1.375* (0.287)	1.512* (0.339)
POP 0-14	0.122** (0.049)	0.001 (0.033)	0.127* (0.034)
constant	4.017 (3.254)	0.276 (1.734)	-1.716 (1.832)
Threshold estimate $\hat{\gamma}$	-0.406***	-1.032***	-0.478***
90% confidence interval	[-1.170, -0.125]	[-1.096, -0.842]	[-0.598, -0.125]
SupWStar test	20.12* (6.38)	15.80* (4.63)	24.84* (4.19)
CD	-1.35	-0.97	-1.46

Notes. The Table displays the results of estimates of the effects of control of corruption and the other macroeconomic factors on gender youth unemployment. The asterisks *, **, *** denote significance at 1%, 5% and 10%, respectively. SupWStar is the bootstrapped likelihood ratio statistics of threshold effect tests. CD is the cross-sectional dependence test of Peseran (2004).

Likewise, the control of the corruption variable exerts a threshold effect on male youth unemployment, supporting the nonlinear relationship between the two variables. The estimated threshold level is approximately -1.03. Once the control corruption index exceeds the estimated threshold, its coefficient turns out to be negative and statistically significant. Hence, the control corruption index is found to boost the male youth employment rate only in the upper regime. Indeed, above the threshold level, an increase in the control of the corruption index by 1 point decreases the unemployment of male youth by 0.48 percentage point.

For the female population, the estimated threshold value of the control of corruption is (-0.478), which is higher than that estimated for young men (-1.03). The estimated threshold effect of corruption is

statistically significant only in regime 2, with a value of -1.61. In other words, when the control of the corruption score jumps above (-0.478), the youth unemployment rate among women decreases. In fact, an increase in the control of corruption index by 1 point decreases female youth unemployment by approximately 1.61 %. These results indicate that the effect of corruption on unemployment is more pronounced among women than among men. On the one hand, the control of corruption estimated threshold value for the population of young women is higher than that for the population of young men.

Conclusion

This paper investigates the nonlinear relationship between the control of corruption and youth unemployment by gender in a sample of 33 African countries during the 2002-2020 period. Using the model of Kremer et al. (2013), findings suggest that corruption is one of the major determinants of youth unemployment and the cause of gender inequality in African labour markets. The control of corruption exerts a threshold effect on African youth unemployment. For the total population, youth unemployment in African countries can be reduced only when the scores of the control of corruption indicator exceed the threshold of -0.406. Gender analysis shows that the estimated threshold value of the control of corruption is (-0.478) for young women, which is higher than the estimated threshold value for young men (-1.03). The negative sign of the control of the corruption threshold, as well as that of other governance indicators, confirms that African countries have weak institutions and poor governance. Policymakers should minimize the number of failures in government institutions to curb corruption practices and improve labour market outcomes.

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Appendix

Table A1. List of 33 African countries

County	Abbreviation	County	Abbreviation
Algeria	DZA	Lesotho	LSO
Benin	BEN	Botswana	BWA
Burundi	BDI	Morocco	MAR
Burkina Faso	BFA	Madagascar	MDG
Botswana	BWA	Mali	MLI
Central Africa	CAF	Mauritania	MRT
Ivory Coast	CIV	Mozambique	MOZ
Benin	BEN	Mauritius	MUS
Burundi	BDI	Malawi	MWI
Burkina Faso	BFA	Niger	NER
Botswana	BWA	Nigeria	NGA
Central Africa Republic	CAF	Rwanda	RWA
Ivory Coast	CIV	Sudan	SDN
Cameroun	CMR	Senegal	SEN
Congo Democratic	COG	Swaziland	SWZ
Egypt	EGY	Togo	TGO
Ethiopia	ETH	Tunisia	TUN
Gabon	BFA	Uganda	UGA
Ghana	GHA	South Africa	ZAF
The Gambia	GMB	Zambia	ZMB
Kenya	KEN		

Table A2. Mean of the six governance indicators for the period 2002-2020.

Country	CC	GE	PS	RQ	RL	VA
BDI	-1.13454	-1.28047	-1.75026	-1.09879	-1.23879	-1.16586
BEN	-0.5531	-0.47215	0.309319	-0.40517	-0.48975	0.232929
BFA	-0.21602	-0.63145	-0.41996	-0.27986	-0.48573	-0.26734
BWA	0.900737	0.499171	1.02553	0.555571	0.607428	0.543996
CAF	-1.1524	-1.54311	-1.80776	-1.2253	-1.49197	-1.10185
CIV	-0.78772	-0.88281	-1.29161	-0.62155	-1.02869	-0.80692
CMR	-1.13972	-0.83948	-0.76206	-0.8283	-1.11338	-1.04995
COG	-1.16073	-1.21122	-0.77853	-1.23327	-1.20817	-1.12846
DZA	-0.63004	-0.5983	-1.24988	-0.9498	-0.81572	-0.97703
EGY	-0.61655	-0.49705	-0.92747	-0.51032	-0.27275	-1.12357

ETH	-0.58634	-0.66666	-1.44303	-1.03846	-0.69026	-1.22101
GAB	-0.83813	-0.71916	0.196216	-0.50326	-0.53728	-0.81389
GHA	-0.14989	-0.09849	-0.01251	-0.0936	0.003467	0.355626
GMB	-0.5665	-0.639	0.147738	-0.46217	-0.40752	-0.90377
KEN	-0.97204	-0.49884	-1.17553	-0.25636	-0.76267	-0.33363
LSO	0.027347	-0.4288	-0.0149	-0.49738	-0.16144	-0.05896
MAR	-0.24995	-0.12105	-0.34803	-0.16569	-0.11409	-0.62269
MDG	-0.5587	-0.83287	-0.25238	-0.53298	-0.62278	-0.32941
MLI	-0.67539	-0.86752	-0.6773	-0.46898	-0.48147	-0.04492
MRT	-0.64177	-0.63589	-0.4275	-0.55046	-0.72539	-0.84699
MUS	0.352345	0.752213	0.905477	0.764973	0.919532	0.848437
MWI	-0.57998	-0.59178	-0.08294	-0.56916	-0.25698	-0.19697
NER	-0.73271	-0.75627	-0.79024	-0.61103	-0.59907	-0.4584
NGA	-1.14905	-1.02982	-1.80871	-0.88482	-1.12118	-0.6818
RWA	0.101473	-0.24832	-0.60208	-0.36195	-0.46105	-1.27276
SDN	-1.30089	-1.33481	-2.16937	-1.41176	-1.35221	-1.72264
SEN	-0.17385	-0.2772	-0.23936	-0.19339	-0.17162	0.097189
SWZ	-0.31523	-0.67509	-0.20892	-0.50485	-0.54845	-1.36085
TGO	-0.87338	-1.22811	-0.43902	-0.76072	-0.8268	-0.9603
TUN	-0.11964	0.194114	-0.28919	-0.16755	-0.03884	-0.53395
UGA	-0.9325	-0.52437	-1.01799	-0.17266	-0.42612	-0.644
ZAF	0.22925	0.489549	-0.15422	0.420768	0.100252	0.657163
ZMB	-0.53509	-0.73798	0.21156	-0.48956	-0.41584	-0.28218

Table A3. Result of panel cross-sectional dependence and unit root tests.

	CD test	CPIS-test Level	CPIS-test First Diff.
YUR	8.5885*	-1.50195	-3.14752*
MYUR	11.84667*	-1.56723	-3.15321*
FYUR	7.301950*	-1.63111	-2.84188*
GDPG	20.07567*	-3.43050*	
INFR	20.71168*	-3.21286*	
HC	92.07864*	-3.68647*	
POP	53.97499*	-3.61217*	
CC	-1.65333***	-3.71617*	
GE	-0.949896	-2.20455**	
RQ	6.580222*	-2.06703***	
RL	-1.52283	-2.83325*	
PS	3.18956*	-2.58008*	
VA	-0.79059	-2.77583*	

Note. (*), (**) and (***) indicates significant at 1%, 5% and 10% level respectively. YUR, MYUR, FYUR, are the youth unemployment rates for total population, men, and women, respectively. GDPG, INFR, POP 0-14 and HC represent GDP growth, inflation rate, population aged 0-14 years and human capital index, respectively. Corruption control (CC), government efficiency (GE), regulatory quality (RQ), and rule of law (RL) are the governance indicators. CD test and CPIS-test are the Pesran (2004) cross-section independence, and Pesaran (2007) panel cross-sectional dependence unit root tests, respectively.