


Political instability, corruption and inclusive growth in Ethiopia: Transmission channels and moderating roles

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ABSTRACT

This paper examines the direct and moderating roles of political instability and corruption on inclusive growth in Ethiopia from 1992–2020. We also test whether corruption **sands or greases** the wheels of inclusive growth and whether the impacts of political instability and corruption vary across the low and high regimes of political instability. Different econometric approaches are applied to address these objectives, including simultaneous equation modelling, moderation analysis, and two-regime threshold regression. The findings robustly confirm negative impacts of political instability and corruption on inclusive growth. The effects of political instability and corruption are also channelled through investment and tourism and appear to be more severe in a higher political instability regime. Further, the study supports the 'sanding the wheels' hypothesis, which argues that corruption is harmful to economic activities. The results generally suggest that, unless proper efforts are taken to relieve the current political upheaval and ethnic conflicts in the country, the detrimental impacts of political instability and corruption will aggravate the country's dire situation.

1. Introduction

Economists have proposed different theories to explain why some countries have grown while others are still trapped in a vicious cycle of poverty. In this regard, classical and neo-classical economists emphasized labor productivity, capital accumulation, and economic freedom as essential factors for economic development. Since the 1990s, institutional economists have also advocated for the presence of an effective institutional setup as an essential precondition for development (North, 1989, 2003; Acemoglu et al., 2001). Institutions are deemed the most robust determinants of long-term economic progress (Acemoglu et al., 2014). Indeed, political stability is among the crucial factors that account for differences in long-term economic growth. It is a common conclusion in the empirical literature that political instability has a detrimental effect on economic growth (Aisen and Veiga, 2013; Abdelkader, 2017; Murad and Alshyab, 2019; Ayessa and Hakizimana, 2021),

by reducing physical capital, human capital accumulation, and FDI (Aisen and Veiga, 2013; Delgado et al., 2014; Gakpa, 2020; Paulo et al., 2022).

On the other hand, there is no consensus about the corruption-growth relationship in the literature, and the growth effects of corruption arguably depend on the quality of governance. In this respect, there are two competing perspectives: "greasing the wheels" and "sanding the wheels". The "greasing the wheels" hypothesis argues that corruption that occurs in tandem with poor governance (weak institutions) can be beneficial for economic activities by speeding up administrative procedures and overcoming bureaucratic bottlenecks at lower costs (Méon and Sekkat, 2005; Shabbir et al., 2016). Along these lines, Paul (2010) and Huang (2016) found a positive relationship between corruption and growth. In contrast, the "sanding the wheels" hypothesis insists that corruption (in the fragile institutional situation) is damaging to economic activities by misallocating resources from public gains to private

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profits and creating socio-political uncertainty (Méon and Sekkat, 2005). This hypothesis is the most popular and has received a lot of support in recent empirical studies (Grundler and Potrafke, 2019; Nur-tegin and Jakee, 2020; Sharma and Mitra, 2019; Paulo et al., 2022, among others).

The causal impacts of political instability and corruption on economic growth have received no attention in Ethiopia. The country has experienced political instability and ethnic conflicts in recent days. Following the escalation of widespread opposition and mass protests in 2015, the current Prime Minister (Abiy Ahmed Ali) came to political power in 2018. Despite big ambitions, the new leadership has failed to bring political stability to the country. On the contrary, sporadic ethnic conflicts and complex political crises have been even more exacerbated, leading to humanitarian catastrophes.⁴ Further, the country suffers from rampant corruption in various forms—clientelism, kleptocracy, rent-seeking, and state capture (Rahman, 2018). Hence, investigating the influence of corruption and political instability on inclusive growth in Ethiopia is interesting.

In general, this study contributes to the prevailing literature in the following strands. First, our work is related to literature investigating the link between corruption, political stability, and economic growth. In this respect, many contributions focus on the impact of corruption on economic growth (Huang, 2016; Gründler and Potrafke, 2019; Sharma and Mitra, 2019; Nur-tegin and Jakee, 2020; Paulo et al., 2022). Other studies have looked at how political stability affects economic growth (Aisen and Veiga, 2013; Abdelkader, 2017; Murad and Alshyab, 2019; Ayessa and Hakizimana, 2021). In contrast to these contributions, but in line with Shabbir et al. (2016) and Kesar et al. (2022), we do not restrict our attention to corruption or political stability, but to both. In this regard, few studies have empirically investigated the impacts of corruption and political stability on economic growth (Shabbir et al., 2016 and Kesar et al., 2022). Shabbir et al. (2016) looked at the impact of corruption on economic growth in the context of only the Muslim World using the Ordinary Least Square model, while Kesar et al. (2022) employed a panel ARDL model to provide evidence on the impacts of corruption and economic growth in the case of BRICS economies. Differing from these papers, we provide comprehensive evidence using Seemingly Unrelated Regression, Threshold Regression, Fully Modified Ordinary Least Square, and Dynamic Ordinary Least Square Models which address heterogeneity, endogeneity, and serial-correlation issues. The empirical model in Shabbir et al. (2016) suffers from a potential endogeneity problem due to the possibility of reverse causation and the possibility of endogeneity in the corruption-growth nexus (Grundler and Potrafke, 2019; Kesar et al. (2022)'s empirical model is also a single equation model which suffers from potential endogeneity problem due to the underlining assumption of ARDL model in the context of political stability, consumption and economic growth nexus (Jordan and Philips, 2018).

Second, Ethiopia is an interesting case study for two reasons. First, the country has been among the fastest-growing economies in the world since 2003/04 and its economic growth drew worldwide notice a few years ago (World Bank, 2017; Zerihun et al., 2016; Priewe, 2016), but has recently slowed (World Bank, 2022). Second, the current political instability and ethnic conflicts in the country have resulted in a humanitarian crisis (UN, 2022) and attracted international attention. Hence, it is worthwhile to examine the impacts of political instability

⁴ More than 20 million Ethiopians have needed emergency assistance (UN, 2022). Thousands of civilians have been killed, millions have been displaced from their home and infrastructure has been destroyed. Apart from the current humanitarian crisis, the worst-case political situations have thrown dozens of new long-term challenges on the already-struggling state. For instance, the country's economic growth rate has slowed down, inflation has skyrocketed, investment has declined, and unemployment has risen substantially over the last four years.

and corruption on inclusive growth in Ethiopia. For this purpose, unlike most previous studies, we provide some empirical evidence on the direct and indirect consequences of political instability and corruption on the politically unstable economy across different political stability regimes. We also look at the possible transmission channels through which political instability and corruption may adversely affect economic growth: the investment and international tourism channels⁵ and tested whether the “greasing the wheels” or the “sanding the wheels” hypothesis holds in the Ethiopian context.

Third, unlike the prior related studies, we consider inclusive growth (proxied by real GDP per employed person). Our justification is that traditional growth measures (e.g., GDP per capita) hide some socio-economic issues like poverty, high unemployment rate, and inequalities (Oyinlola and Adedeji, 2019; Kouton, 2021). While inclusive growth focuses on productive employment opportunities and indicates both the pace and pattern of growth, which are essential for attaining sustainable economic growth and reducing poverty (Ianchovichina and Lundström, 2009). This is in line with the 2030 UN agenda encompassing both economic growth and employment. Furthermore, real GDP per person employed is the key Sustainable Development Goal (SDG-8) indicator that measures the progress of a country's economic productivity.

Overall, in the spirit of the above contributions, the key research questions to be explored in this paper include (1) do political instability and corruption significantly affect inclusive growth in Ethiopia? (2) are investment and tourism important transmission channels through which political instability and corruption affect inclusive growth? (3) does corruption sand or grease the wheels of inclusive growth, investment, and tourism? (4) do the impacts of political instability and corruption vary across the lower and higher regimes of political stability?

2. Literature review

One of the key theoretical arguments behind political instability is that political instability is a significant barrier to economic growth since the uncertainty it brings may harm investment choices, and thus economic growth (Aisen and Veiga, 2013; Okafor, 2017; Alhamran et al., 2022). Political instability poses a significant challenge to the effective protection of private property and the enforcement of contracts. As a result, economic agents may hold their investments or decide to withdraw from the economy. Political instability has also an immediate determinantal impact on the tourism industry. Unappealing political factors, including conflicts and violations of human rights, have a significant influence on tourist arrivals. Empirical evidence found that countries with unpleasant political situations are largely ignored by tourists (Neumayer, 2004; Llorca-Vivero, 2008; Causevic and Lynch, 2013). As a result, political instability affects employment opportunities and economic growth by reducing the revenue from the tourism industry.

Existing evidence on the relationship between corruption and growth is mixed depending on whether ‘greasing the wheels’—corruption that occurs along with poor governance can reduce the inconvenience caused by the poor quality of governance (Méon and Sekkat, 2005; Meon and Weill, 2010; Rose-Ackerman and Palifka, 2016) and can be beneficial for economic activities by expediting administrative procedures and overcoming bureaucratic inefficiencies at lower costs (Shabbir et al., 2016; Heo et al., 2021) or ‘sanding the wheels’—corruption has an

⁵ The investment and tourism sectors are very sensitive and extremely vulnerable to economic uncertainties and political shocks. For instance, following the country's recent politico-economic crisis, the share of domestic investment to GDP decreased by 5.2 % from 2016 to 2020. The number of foreign tourist arrivals also declined by 8.2 % and the share of international tourism earnings (in total exports) was reduced by 2.7 % during the same period (World Bank, 2022).

Table 1
Description of Data.

Indicators	Abbreviations	Definition	Data Source
Inclusive growth	GDPemp	GDP per person employed (constant 2017 PPP \$) (Inclusive Growth)	World Bank
Political Stability Index	PS Index	PS Index measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.	WGI
Control of corruption Index	CCI	Measures the degree to which the government uses its power for personal gain, encompassing both small-scale and large-scale corruption, as well as the 'capture' of the state by elites and private interests.	WGI
Investment	Investment	Gross Fixed Capital Formation (% of GDP)	UNCTAD
Tourism	Tourism	International tourism, receipts (% of total exports)	World Bank

Note: WGI=World Governance Indicator; UNCTAD=United Nations Conference on Trade and Development. In the analysis, we use the inverse of the PS index and the control of corruption index (CCI) to directly measure political instability and corruption.

Source: Authors' own presentation

unfavourable impact on economic activities by misallocating resources from social gains to private ones and creating socio-political uncertainty. That is, corruption becomes even more destructive to economic growth in a weak institutional environment (Mauro, 1995; Tanzi, 1998; Nur-tegin and Jakee, 2020). For a summary of recent empirical studies on political instability, corruption, and economic growth, see Table A1.

This study differs from prior studies and adds to the existing body of literature in the following aspects. Firstly, amidst the prevalence of politically-motivated conflicts and various forms of corruption in Ethiopia, we provide some empirical insights into the direct and indirect impacts of political instability and corruption on the politically unstable economy. We also include the interaction term between political instability and corruption to assess whether the “greasing the wheels” or the “sanding the wheels” hypothesis applies within the Ethiopian context. Secondly, recognizing the manifold ways in which an unstable political environment disrupts the functioning of the economy, we look at the two possible transmission channels through which political instability and corruption may adversely affect economic growth: the investment and international tourism channels. Both sectors are highly sensitive and extremely susceptible to economic uncertainties and political upheavals. In addition, we employ a threshold analysis (non-linear approach) to examine how the effects of political instability and corruption vary across different political instability regimes, delineated by a certain threshold. Third, unlike prior related studies, we consider inclusive economic growth (proxied by real GDP per employed person). Our justification is the recognition that conventional growth metrics such as GDP overlook socio-economic issues like poverty, high unemployment rates, and inequalities, whereas inclusive growth emphasizes productive employment and reflects both the pace and distribution of growth. Moreover, we employ econometric techniques that address the problem of endogeneity, which is a commonly observed data complication and has oftentimes overlooked in many previous studies.

3. Methods and materials

3.1. Data types and sources

To address the research questions, this paper made use of an annual

time-series data set covering from 1992 to 2020. The study period is exclusively determined by the availability of data for the main variables of the paper. Table 1 presents the list of variables used in this study.

It is worth noting that there is no consensus in the literature on how to define and measure inclusive growth (see Aoyagi and Ganelli, 2015; Raheem et al., 2018). As such, this study follows the claims of Raheem et al. (2018); Oyinlola and Adedeji (2019) and Kouton (2021) to use real GDP per employment as a proxy for inclusive growth. In this context, inclusive growth appears to include income growth and employment opportunities available to the population. In addition, real GDP per person employed is a key measure of Sustainable development goal (SDG)–8.2 aiming to “achieve higher levels of economic productivity through diversification, technological upgrading, and innovation, including through a focus on high-value-added and labour-intensive sectors”.

3.2. Model specification and econometric methods

In this paper, we employed different methodological approaches to examine the impact of political instability and corruption on inclusive economic growth and the two possible transmission channels through which political instability and corruption influence inclusive growth: (i) a simultaneous equation system; (ii) moderation analysis (two-way interactions), and (iii) threshold regression analysis.

3.2.1. Seemingly unrelated regression (SUR) model

The Seemingly Unrelated Regression (SUR) model was first applied to estimate the system of equations specified in this study. The SUR method is a particular case of a simultaneous (structural) equation model that consists of different individual equations that are correlated to each other. In the SUR model, equations are simultaneously estimated, and the errors are assumed to be contemporaneously correlated across the equations (Moon and Perron, 2006; Hou and Zhao, 2019; Srivastava and Giles, 2020). One or more of the regressors in one or more equations can also be the dependent variable associated with another equation in the system. We considered the following three equations in this study. Investment and tourism are the two variables taken to look at the channelling effects of political instability and corruption on inclusive growth.

$$\ln \text{GDPemp}_t = \alpha_1 + \beta_1 \text{PI}_t + \beta_2 \text{corruption}_t + \beta_3 \ln \text{investment}_t + \beta_4 \ln \text{tourism}_t + \beta_5 (\text{PI}_t * \text{Corruption}_t) + \varepsilon_{1t} \tag{1}$$

$$\ln \text{investment}_t = \alpha_2 + \gamma_1 \text{PI}_t + \gamma_{2t} \text{corruption}_t + \gamma_{3t} (\text{PI}_t * \text{Corruption}_t) + \varepsilon_{2t} \tag{2}$$

$$\ln \text{tourism}_t = \alpha_3 + \delta_1 \text{PI}_t + \delta_2 \text{corruption}_t + \delta_3 (\text{PI}_t * \text{Corruption}_t) + \varepsilon_{3t} \tag{3}$$

These equations are assumed to be related stochastically through the error terms, which is the main motivation for applying the SUR method. The SUR model takes account of prior information concerning the absence of certain explanatory variables from certain equations of the model, which are highly realistic in many economic situations (Srivastava and Giles, 2020). In Eqs. (1–3), the interaction term between political instability and corruption is included to empirically check whether the “greasing the wheels” or the “sanding the wheels” hypothesis is valid in the Ethiopian context. Does corruption grease or sand the wheels of growth, investment, and tourism in Ethiopia? The “sanding the wheels” hypothesis is confirmed if the coefficient of the interaction term is significant and negative. While the “greasing the wheels” hypothesis is validated if the coefficient appears to be positive.

3.2.2. FMOLS and DOLS regression techniques

We also employed the Fully Modified Ordinary Least Square (FMOLS) and Dynamic Ordinary Least Square (DOLS) for moderation

analyses and to ascertain the robustness of the SUR results. The FMOLS and DOLS models are OLS-based estimation techniques that allow for estimating long-run relationships. FMOLS estimates long-run parameters by modifying the original OLS with corrections that take account of endogeneity and serial-correlation problems that mostly exist in time series variables. FMOLS estimates parameters for variables that have cointegration of order one and gives consistent parametric results even in case of small sample size and with the presence of omitted variable bias, measurement error, and heterogeneity. The DOLS estimation technique, on the other hand, shows the long-run relationship between variables of interest having different orders of integration and produces unbiased estimates, and works efficiently with a small sample, simultaneity bias in the presence of endogeneity and parameters adjust autocorrelation and residual non-normality (Stock and Watson, 1993).

We specified the following equations and estimated them using FMOLS and DOLS methods, by incorporating interaction terms among the key variables of our paper in the spirit of Shabbir et al. (2016) and Adedoyin et al. (2022).

$$\ln\text{GDPemp}_t = \alpha_1 + \theta_1\text{PI}_t + \theta_2\text{corruption}_t + \theta_3\ln\text{investment}_t + \theta_4\ln\text{tourism}_t + \varepsilon_t \tag{4}$$

$$\ln\text{GDPemp}_t = \alpha_1 + \theta_1\text{PI}_t + \theta_2\text{corruption}_t + \theta_3\ln\text{investment}_t + \theta_4\ln\text{tourism}_t + \theta_5(\text{PI}_t * \text{Corruption}_t) + \varepsilon_t \tag{5}$$

$$\ln\text{GDPemp}_t = \alpha_1 + \theta_1\text{PI}_t + \theta_2\text{corruption}_t + \theta_3\ln\text{investment}_t + \theta_4\ln\text{tourism}_t + \theta_5(\text{PI}_t * \ln\text{investment}_t) + \varepsilon_t \tag{6}$$

$$\ln\text{GDPemp}_t = \alpha_1 + \theta_1\text{PI}_t + \theta_2\text{corruption}_t + \theta_3\ln\text{investment}_t + \theta_4\ln\text{tourism}_t + \theta_5(\text{PI}_t * \ln\text{tourism}_t) + \varepsilon_t \tag{7}$$

The interaction terms ($\text{PI}_t * \ln\text{investment}_t$; $\text{PI}_t * \ln\text{tourism}_t$) are incorporated to look at the moderating role of political instability and thereby find out whether its growth effect is channelled through investment and international tourism.

3.2.3. Threshold regression model

The threshold regression model extends a linear framework and allows for parameter heterogeneity across different regimes that are identified by a threshold variable below or above a certain threshold value. In this paper, we apply a threshold regression to examine how the direct and interacting effects of political instability and corruption vary across different political instability regimes. The conditional least squares is used to estimate the parameters in the threshold regression. Specifically, we use the following two-regime threshold model:

$$\ln\text{GDPemp}_{t_i} = \beta X_t + \delta_1 Z_t * I(\text{PI}_t \leq T) + \delta_2 Z_t * I(\text{PI}_t > T) + \varepsilon_t \tag{8}$$

Where X_t are regime-invariant variables: $X_t = (\ln\text{investment}_t, \ln\text{tourism}_t)$ and Z_t is a vector of regime-varying (regime-specific) variables. PI_t is political instability, which is a threshold variable. T is a threshold value estimated by minimizing the sum of squared residuals (SSR) of the model. The estimated threshold splits our sample into regimes. The first (lower) regime is a regime that corresponds to the level of political instability below the threshold value, and the second (higher) regime is a regime above the estimated threshold value. It should be noted that if $\delta_1 \neq \delta_2$, it indicates the existence of two regimes, and the extent or direction of the effect of political stability may vary between the two regimes.

4. Results and discussion

4.1. Summary statistics

We present the summary statistics of the variables included in our econometric analysis (see Table 2). It is worth noting that we use the inverse of the PS index and the control of corruption index (CCI) to

directly measure political instability and corruption, and thus higher values of the transformed variables signify a higher degree of instability and corruption in the country.

4.2. Trends of our main variables

Fig. 1 presents the pattern of political instability, corruption, and inclusive growth (measured by GDP per person employed) in Ethiopia over 1992–2020. While corruption has shown a declining and volatile trend since 2005, we observe a clear and persistent trend in political instability. The country’s average political instability index over the last 20 years placed it among countries with low degrees of political stability. On the other hand, the trend in inclusive growth for Ethiopia has shown a persistent upward trend during the study period (see right panel of Fig. 1). This may suggest that the country is on track to achieve the SDG of promoting sustained, inclusive and sustainable economic growth. The average GDP per person employed for the country during the study period is \$2657.

4.3. Econometric results and discussion

Before proceeding to the main analyses, we carry out some preliminary tests.

4.3.1. Unit root test results

In this paper, two unit-root test results are performed to assess the unit root properties and determine the order of integration of the variables: Augmented Dickey-Fuller (ADF) test, and Phillips-Perron (PP) unit-root test. As presented in Table 3, the results of both unit-root tests confirm that all variables are non-stationary at levels and become stationary after the first differences. That is, all variables follow the I(1) process.

4.3.2. Johansen system of cointegration test

One way of dealing with non-stationary series is undertaking a cointegration test, which allows us to estimate the long-run parameters if there exists cointegration among the variables. Having confirmed that all variables are I(1), the Johansen co-integration technique is used to test for the existence of cointegration.

The Johansen cointegration tests reject the null hypothesis of no cointegration and detect the presence of a long-run cointegrating relationship in all three equations (see Table 4).

4.3.3. Seemingly unrelated regression (SUR) results

As previously stated, the SUR approach is applied to estimate the system of structural equations specified in Section 3.2.1. As shown in the lower panel of Table 5, the Breusch-Pagan test of independence indicates that the residuals of the three equations in the system are contemporaneously correlated, indicating that the equations in the system are statistically associated with one another. Such statistical association of the equations (the jointness of residuals) requires the use of the SUR model since it provides additional information that is not accessible when the individual equations are analysed separately (Srivastava and Giles, 2020).

Table 2
Summary Statistics.

Variables	Mean	Std. Dev.	Min	Max
ln GDPemp	7.808	0.391	7.314	8.536
PI	-0.710	0.145	-1.059	-0.529
Corruption	-1.649	0.539	-1.649	-0.362
ln investment	3.19	0.394	2.048	3.668
ln tourism	3.344	0.273	2.771	3.84

Note: the total observation for each variable is 29. PI stands for Political Stability.

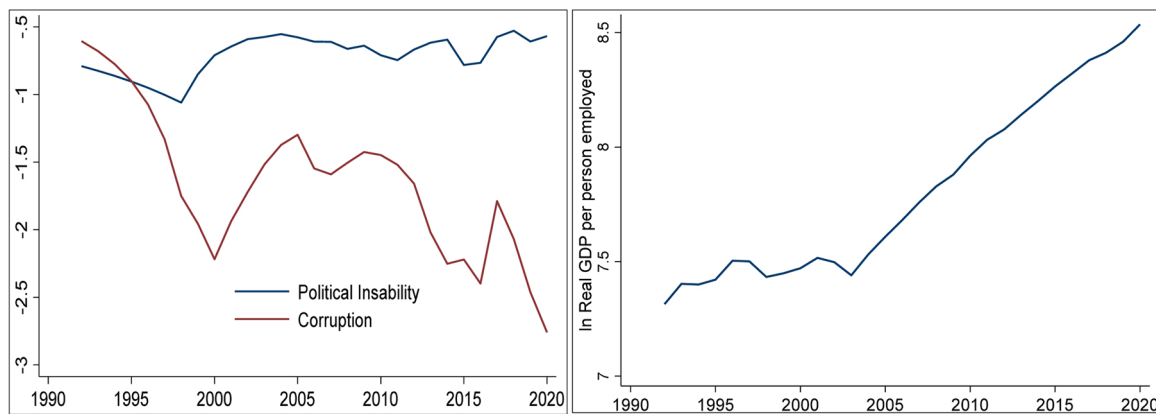


Fig. 1. Trends of Variables.
Source: Authors' own presentation.

Table 3
Unit-root test results.

Variables	ADF test	PP test	Order of Integration
ln GDPemp	I(0) (0.698)	-1.815 (0.929)	I(1)
	I(1) (0.011)	-3.945 ** -4.550 ***	
PI	I(0) (0.268)	-2.626 (0.489)	I(1)
	I(1) (0.004)	-4.262 *** -3.972 ***	
Corruption	I(0) (0.748)	-1.706 (0.595)	I(1)
	I(1) (0.019)	-3.751 ** -3.785 **	
ln investment	I(0) (0.733)	-1.739 (0.051)	I(1)
	I(1) (0.001)	-4.525 *** -8.266 ***	
ln tourism	I(0) (0.222)	-2.736 (0.607)	I(1)
	I(1) (0.018)	-3.239 ** -3.258 ***	

Note: Figures in brackets are MacKinnon approximate p-values. ***, ** and * indicate statistical significance at 1 %, 5 % and 10 % levels, respectively. I(1) at first difference.

4.3.3.1. *Political instability, corruption, and inclusive growth.* As reported in Table 5, the SUR estimation results from the first equation confirm a significant negative relationship between inclusive economic growth and political instability. This indicates that a rise in political instability and conflicts tends to significantly deteriorate the growth process of the

country (by 1.7 %, on average). Our finding is consistent with prior expectations and with the existing empirical studies (Aisen and Veiga, 2013; Okafor, 2017; Abdelkader, 2017; Murad and Alshyab, 2019; Ayessa and Hakizimana, 2021; Alhamran et al., 2022). Similarly, corruption appears to have a significant growth-diminishing impact in the Ethiopian context. A unit increase in the level of corruption would slow down inclusive growth by about 0.27 %. Alfada (2019); Belloumi and Alshehry (2021); Spyromitros and Panagiotidis (2022) also reported comparable findings.

In addition, the plots in Fig. 2 display how political instability and corruption negatively affect inclusive growth, with higher levels of political instability and corruption being associated with lower levels of inclusive growth.

4.3.3.2. *'Sanding' or 'Greasing' the wheel hypothesis?.* This study also tests the two opposing hypotheses in the corruption-growth relationship. Accordingly, the interaction term between political instability and corruption is included in Eqs. (1–3). The results indicate significant and negative interaction coefficients in all the equations, suggesting that a higher level of political instability is more likely to induce corruption to be harmful to economic activities (inclusive growth, investment, and tourism). Hence, our findings confirm the 'sanding the wheel' hypothesis—corruption negatively affects the three variables and becomes increasingly detrimental as instability gets worse. That is, corruption appears to sand (rather than grease) the wheels of growth, investment, and international tourism in Ethiopia over the period of analysis. Our findings look intuitive as the country has undergone a higher degree of corruption and an unstable political environment. Gründler and Potrafke (2019); Sharma and Mitra (2019); Nur-tegin and Jakee (2020); Osinubi et al. (2022); Xu et al. (2022); Paulo et al. (2022) are some of the

Table 4
Johansen tests of cointegration.

Eq. 1: lnRGDPemp = f(PI, Corruption, lntourism, lninvestment, PI * Corruption)						
Trace test	Trace Statistic	5 % Critical Value	P-value	Maximum Eigenvalue test	5 % Critical Value	P-value
Ho: No cointegration	130.48	95.75	0.000***	51.328	40.078	0.002***
Eq. 2: lninvestment = f(PI, Corruption, PI * Corruption)						
Trace test	Trace Statistic	5 % Critical Value	P-value	Maximum Eigenvalue test	5 % Critical Value	P-value
Ho: No cointegration	60.97	47.86	0.002***	33.612	27.584	0.007***
Eq. 3: lntourism = f(PI, Corruption, PI * Corruption)						
Trace test	Trace Statistic	5 % Critical Value	P-value	Maximum Eigenvalue test	5 % Critical Value	P-value
Ho: No cointegration	60.877	47.856	0.002**	37.547	27.584	0.002***

Note: *** and ** indicate acceptance of the alternative hypothesis of cointegration at 1 %, and 5 % levels.

Table 5
SUR Estimation Results.

Eq. 1: $\ln\text{RGDPemp} = f(\text{PI}, \text{Corruption}, \text{Intourism}, \text{Ininvestment}, \text{PI} * \text{Corruption})$		
PI	-1.706*** (0.18)	-3.945*** (0.319)
Corruption	-0.27*** (0.099)	-1.59*** (0.187)
In investment	0.337** (0.152)	0.501*** (0.092)
In tourism	1.516*** (0.118)	0.899*** (0.108)
PI*Corruption	-	-1.981*** (0.366)
R-squared	0.995	0.998
Chi2-stat [p-value]	58710 [0.000]	171161 [0.000]
Eq. 2: $\ln\text{investment} = f(\text{PI}, \text{Corruption}, \text{PI} * \text{Corruption})$		
PI	-1.891*** (0.277)	-2.863*** (0.249)
Corruption	-1.089*** (0.116)	-2.065*** (0.183)
PI*Corruption	-	-1.981*** (0.336)
R-squared	0.98	0.99
Chi2-stat [p-value]	1456.3 [0.000]	3234.9 [0.000]
Eq. 3: $\text{Intourism} = f(\text{PI}, \text{Corruption}, \text{PI} * \text{Corruption})$		
PI	-2.582*** (0.357)	-4.103*** (0.212)
Corruption	-0.873*** (0.149)	-2.40*** (0.156)
PI*Corruption	-	-3.099*** (0.286)
R-squared	0.97	0.99
Chi2-stat [p-value]	994.9 [0.000]	4897.9 [0.000]
Breusch-Pagan test of independence [p-value]	22.494 [0.000]	15.533 [0.001]

Note: figures in brackets are standard errors. *** and ** denote statistical significance at 1 % and 5 % levels.

recent empirical works documenting similar results and supporting the 'sanding the wheel' hypothesis.

4.3.3.3. *Transmission mechanisms: investment and tourism channels.* The coefficients of investment and international tourism are found to be significant and positive, suggesting the growth-enhancing role of these variables. In effect, an increase in gross fixed capital formation and international tourism induces a rise in RGDP per employed person by

0.34 % and 1.5 %, respectively. The findings in the second and third equations show the transmission channels that political instability and corruption influence through investment and international tourism. Accordingly, the results reveal that political instability and corruption have a significant impact on investment and international tourism with predicted negative signs. This implies that investment and tourism are the two important transmission channels through which economic growth is influenced by political instability and corruption. That said, political instability and corruption have also a negative impact on inclusive growth by decreasing the flows of investment and tourism in Ethiopia.

Furthermore, Fig. 3 demonstrates the positive relationship between inclusive growth, investment, and international tourism. Higher levels of investment and tourism are linked to higher levels of inclusive growth.

4.3.4. *FMOLS and DOLS estimation results*

We also investigate the moderating roles of political instability to see how it affects inclusive growth through investment and international tourism. Both FMOLS and DOLS results in Table 6 indicate the significant negative effect of political instability, while investment and tourism have a positive contribution to economic growth.

Regarding the moderating evidence, political instability has a significant and negative moderating role on investment and international tourism over the study period. This indicates that the worsening political situation indirectly impacts economic growth through investment and international tourism. The coefficient of the interaction between political instability and corruption is statistically significant and negative, implying that the 'sanding the wheel' hypothesis appears to be valid (see Table 6).

4.3.5. *Threshold regression model results*

In this section, we look at how inclusive growth does respond to political instability and corruption in a relatively low and high level of political instability. The threshold regression allows the estimated coefficients to vary in different regimes. Based on the estimated threshold value of political instability, we have two regimes: a lower regime (a regime with a level of political instability below the threshold value) and a higher regime (a regime above the threshold value). Table 7 presents the threshold regression results.

The first and second columns of Table 7 indicate that both political instability and corruption appear to have statistically significant growth-reducing effects in both regimes, but the effects appear to be pronounced

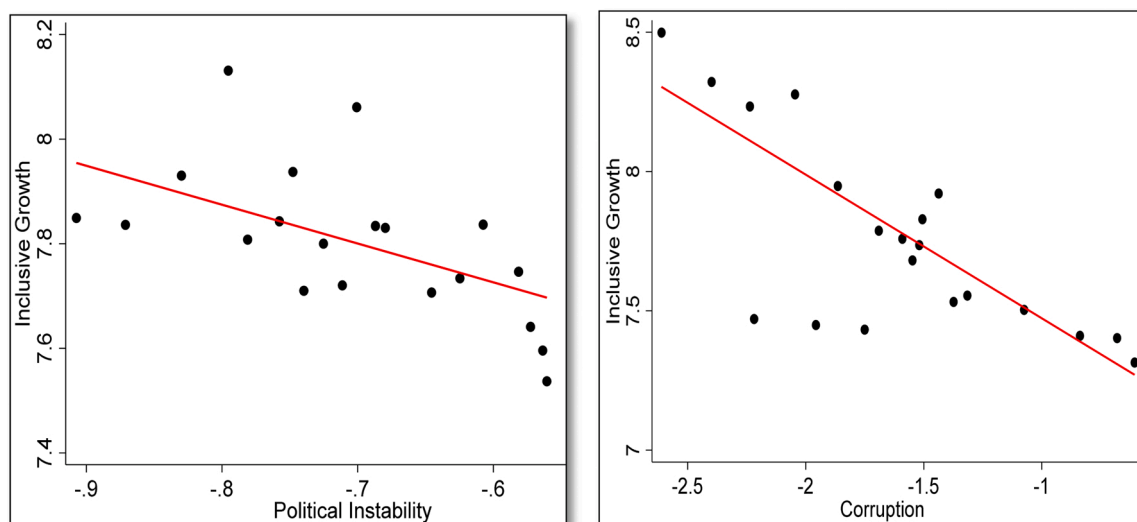


Fig. 2. Plots of Inclusive Growth, Political Instability, and Corruption (1992–2020).

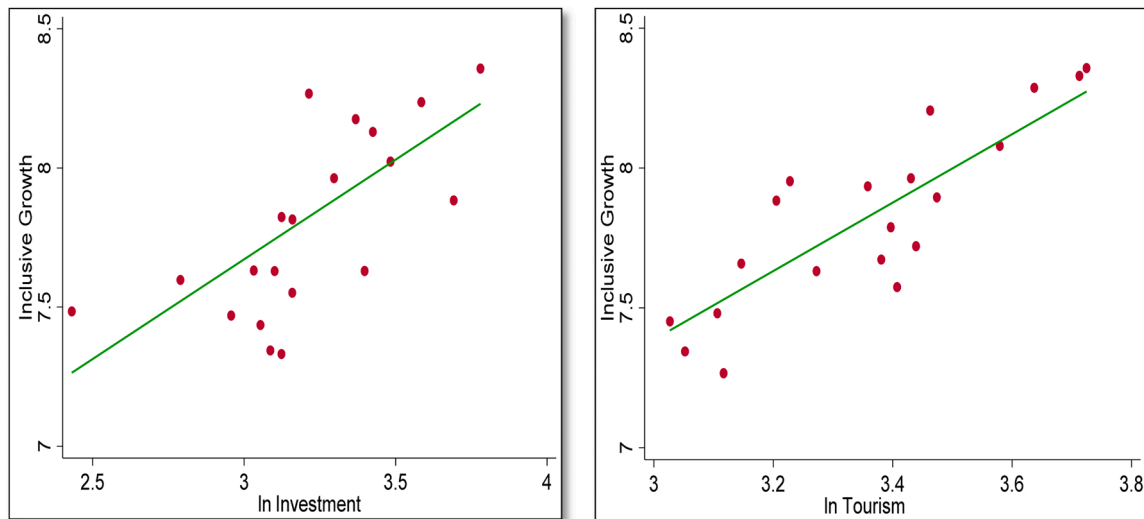


Fig. 3. Plots of Inclusive Growth, Investment, and Tourism (1992–2020).

Table 6
FMOLS and DOLS Results.

	FMOLS				DOLS			
PI	-1.7 *** (0.13)	-3.9 *** (0.29)	-	-	-0.96 *** (0.16)	-2.9 *** (0.47)	-	-
Corruption	-0.23 *** (0.08)	-1.59 *** (0.17)	-1.73 *** (0.376)	-1.26 *** (0.32)	-0.2 *** (0.04)	-0.85 ** (0.31)	-0.2 *** (0.042)	-0.2 *** (0.042)
In investment	0.41 *** (0.14)	0.51 *** (0.104)	0.5 *** (0.143)	0.41 ** (0.19)	0.32 *** (0.094)	0.69 *** (0.18)	0.07 (0.084)	0.31 ** (0.104)
In tourism	1.46 *** (0.11)	0.9 *** (0.12)	0.9 *** (0.13)	0.24 (0.29)	1.25 *** (0.069)	1.01 *** (0.20)	1.3 *** (0.07)	1.03 *** (0.09)
PI*Corruption	-	-1.96 *** (0.236)	-2.16 *** (0.588)	-1.42 *** (0.49)	-	-1.04 ** (0.41)	-	-
PI * In investment	-	-	-1.34 *** (0.312)	-	-	-	-0.3 *** (0.054)	-
PI * In tourism	-	-	-	-0.94 *** (0.263)	-	-	-	-0.29 *** (0.051)
R ² [Adj-R ²]	0.78 (0.76)	0.93 (0.92)	0.91 [0.89]	0.90 [0.88]	0.99 [0.98]	0.99 [0.98]		0.99 [0.98]
Hansen's Instability Test [p-value]	0.327 (>0.2)	0.883 (0.09)	0.657 [0.174]	0.566 [> 0.2]	0.217 [> 0.2]	0.039 [> 0.2]	0.222 [> 0.2]	0.187 [> 0.2]

Note: figures in brackets are standard errors. *** and ** indicate statistical significance at 1% and 5% levels. Hansen's Instability Test is used to check the existence of cointegration with the null hypothesis that the series are cointegrated.

Table 7
Threshold Model Results (political instability is a threshold variable).

	1		2		3		4	
	Lower Regime	Higher Regime	Lower Regime	Higher Regime	Lower Regime	Higher Regime	Lower Regime	Higher Regime
PI	-1.03 *** (0.243)	-1.24 *** (0.245)	-	-	-	-	-	-
Corruption	-	-	-1.33 *** (0.318)	-1.89 *** (0.569)	-	-	-	-
PI*Corruption	-	-	-1.5 *** (0.43)	-2.5 *** (0.892)	-	-	-	-
PI * In investment	-	-	-	-	-0.32 *** (0.078)	-0.4 *** (0.075)	-	-
PI * In tourism	-	-	-	-	-	-	-0.3 *** (0.076)	-0.4 *** (0.073)
Non-threshold variables								
In investment	0.52 *** (0.046)		0.42 *** (0.114)		0.26 *** (0.063)		0.52 *** (0.045)	
In tourism	1.01 *** (0.118)		0.9 *** (0.105)		1.01 *** (0.127)		0.75 *** (0.112)	
Threshold Value	-0.6095		-0.6116		-0.6095		-0.6095	

Note: figures in brackets are standard errors. *** indicates statistical significance at a 1% level. The coefficients of non-threshold variables are not reported in this table.

in higher regimes (higher levels of political instability). The higher regime clearly coincides with the recent political turmoil (since 2017) in Ethiopia. That said, both political instability and corruption have more adverse impacts in a more politically unstable environment.

Similarly, Fig. 4 roughly illustrates that the slopes of the lines relating inclusive growth with political instability and corruption are steeper in the higher regime of political instability, reflecting that more unstable political situation exacerbate the negative impacts of these factors on economic growth.

The coefficient of interaction between political instability and corruption is significant and negative in both regimes, with the coefficient being larger in the higher regime (see the second column of Table 7). This suggests that the evidence of the existence of the 'sanding the wheel' hypothesis is more likely to be stronger in a regime with a higher level of political instability. Further, as reported in the third and fourth columns of Table 7, political instability has a significant and negative moderating role on investment and international tourism, with the role being more pronounced in higher regimes—the estimated coefficients of interaction terms are negative and greater in the higher regime. Our findings suggest that political stability seems to hinder inclusive growth by decreasing the levels of investment and tourism, and its effects are more likely to worsen in more unstable situations.

5. Concluding remarks

Although Ethiopia has recently witnessed political instability and ethnic conflicts, the causal effects of political instability and corruption on economic activities have gained no attention in the Ethiopian context. Accordingly, this study investigates the direct and interacting impacts of political instability and corruption on tourism, investment, and inclusive growth in the country. Specifically, this study examines how inclusive growth responds to recent political instability and corruption, and the transmission channels from political instability and corruption to inclusive growth. We also test whether corruption sands or greases the wheels of inclusive growth and whether the impacts of political instability and corruption vary across the low and high regimes of political instability. To address these objectives, different methodological techniques were employed: the Seemingly Unrelated Regression (SUR) model, moderation analysis (two-way interactions), and two-regime threshold regression.

According to our key findings, both political instability and corruption appear to have negative impacts on inclusive growth. Investment and tourism are the two important transmission channels through which inclusive growth is indirectly influenced by political instability and

corruption. This implies that these two political factors tend to slow down the growth process by creating uncertainties and reducing the flow of investments and international tourism in the host country. Our findings agreed with the theoretical expectation and prior empirical evidence. The results also support the 'sanding the wheel' hypothesis—corruption negatively influences the three economic variables and becomes increasingly detrimental as political instability gets worse. To be more precise, corruption appears to sand (rather than grease) the wheels of growth, investment, and tourism in Ethiopia over the period of analysis. Hence, empirical results in this study strongly contradict the notion that corruption improves the performances of economic activities by avoiding excessive bureaucratic processes, norms, and formalities. It would rather impede tourism, investment, and, ultimately, inclusive growth in the Ethiopian context. Furthermore, our results in the threshold analysis reveal that the impact of political instability and corruption on economic activities seems to be more severe in a higher political instability regime. Worsening political conditions is more likely to foster corruption and other rent-seeking activities, which can lead to unfavourable long-term socioeconomic and political outcomes.

Hence, our results suggest that the government should make a serious effort to minimize any kind of political instability and control ethnic conflicts in the country. Economic agents will not have any motivation to make investment and production decisions in the absence of the protection of private property, enforcement of contracts, and an effective legal system. As Ethiopia is a heavily import-dependent country with an acute foreign currency deficit, the destructive impacts of political instability on economic activities would aggravate the country's dire situation. Similarly, the government and society must work hard to combat corruption and rent-seeking activities in the country. Increasing public awareness of the benefits of investment and the tourism industry will also help to protect the property of investors and the safety of visitors in the country. In general, it is quite essential to maintain political stability and build institutions that are resilient to political shocks. While we built our analysis on inclusive growth, we did not control for all dimensions of growth. As a result, future research controlling for other dimensions of growth would be particularly valuable in further developing literature on the link between political instability, corruption and growth. In particular, we suggest more studies on the topic by including the potential impact of political instability and corruption on income distribution and sustainable development.

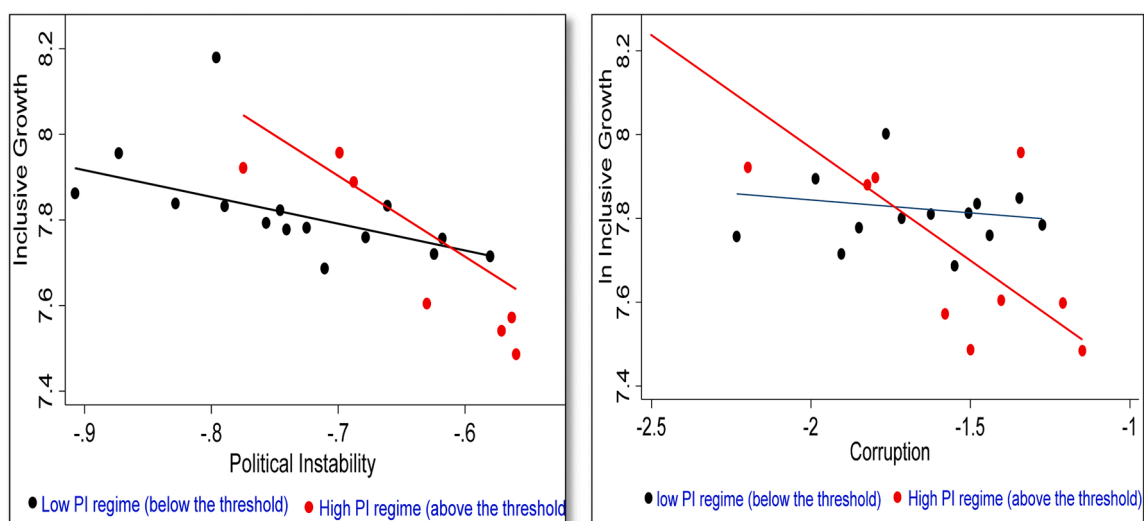


Fig. 4. Plots of Inclusive Growth, PI, and Corruption in two PI regimes (1992–2020).

CRedit authorship contribution statement

Hawitibo Alemu Lambamo: Writing – review & editing, Validation, Supervision, Methodology, Investigation, Formal analysis, Conceptualization. **Tenaw Dagmawe:** Writing – original draft, Visualization, Validation, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Assfaw Akalu:** Writing – original draft, Visualization, Validation, Supervision, Investigation, Formal analysis, Data curation, Conceptualization.

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Appendix

Table A1

summarizes some of the recent empirical studies on political instability, corruption, and economic growth.

Studies	Study country and time-period	Methodology	Key Finding
Aisen and Veiga (2013) Huang (2016)	169 countries (1960 –2004) 13 Asia-Pacific countries (1997–2013)	System GMM bootstrap panel Granger causality	Political instability adversely affects economic growth Mixed causality results
Abdelkader (2017)	Egypt (1972 –2013)	Error correction model	Political instability adversely affects economic growth
Ivanov et al. (2017) Okafor (2017)	Ukraine (survey) 15 ECOWAS member countries (2005 –2012)	Descriptive statistics Panel FE and GMM	political instability has negative impacts on the tourism industry Political instability adversely affects economic growth
Dalyop (2019)	52 African Countries (1980 –2013)	System GMM and Panel Granger causality	Inverse relationship between political instability and Channels: tax, government spending, inflation, and fiscal deficit
Murad and Alshyab (2019) Gründler and Potrafke (2019)	Jordan (1980 –2015) 175 countries (2012 –2018)	FMOLS Dynamic Panel Data model	Political instability adversely affects economic growth The negative effect of corruption on growth transmits through FDI and inflation.
Alfada (2019)	Provinces in Indonesia (2004 –2015)	Threshold regression model	Corruption adversely affects growth, and the effect becomes stronger above the threshold
Sharma and Mitra (2019) Ayessa and Hakizimana (2021) Garedow (2021) Belloumi and Alshehry (2021)	103 countries (1996 –2015) D. R. Congo (1986 –2017) Ethiopia (1980 –2019) Gulf Cooperation Council countries (2003 –2016)	System GMM ARDL ARDL model Panel FMOLS	The 'sanding-the-wheels' hypothesis is supported Political instability adversely affects economic growth political violence adversely affects economic growth in the short run Corruption adversely affects growth whereas positively influences domestic investment
Osinubi et al. (2022) Malanski and Póvoa (2021)	Nigeria (2002 –2018) 30 emerging countries (2000 –2017)	ARDL One-step System-GMM	Corruption and tourism: 'sanding the wheels' hypothesis is valid The 'greasing and sanding-the-wheels' hypotheses were confirmed in Latin America, while the latter is valid in Asia
Xu et al. (2022)	30 African Countries (1996 –2020)	FE and PCSE	Corruption and tourism: 'sanding the wheels' hypothesis is supported
Alhamran et al. (2022)	Gulf Cooperation Council countries (1980 –2019)	Panel Quantile regression	Political stability has a positive impact on economic growth
Iorio and Segnana (2022)	Emerging and transition countries (2012 –2014)	Endogenous switching regression model	The 'greasing and sanding-the-wheels' hypotheses can co-exist.
Paulo et al. (2022)	25 Latin American & Caribbean countries	Two-way FE and System GMM	The 'sanding-the-wheels' hypothesis is supported
Maria et al. (2022)	83 countries (2001 –2018)	The threshold regression model	the effect of corruption on tourism is positive (negative) in the low (high) corruption regime
Spyromitros and Panagiotidis (2022)	83 developing countries (2012 –2018)	Dynamic FE and FMOLS	Corruption adversely affects economic growth
Afonso and de de de Sá Fortes Leitão Rodrigues (2022)	48 countries (2012 –2019)	System GMM model	Corruption negatively affects economic growth, and its effect is transmitted via private investment
Kesar et al. (2022)	BRICS countries	Panel ARDL Model	In the long run, political stability, investment and consumption expenditure have a positive impact on economic growth.

Note: GMM=Generalized Method of Moments; FMOLS=Fully Modified Ordinary Least Square; ARDL= Auto-regressive Distributed Lag model; FE= Fixed Effects; ECOWAS=Economic Community of West African States; PCSE=Panel Corrected Standard Errors.

Data availability

Data will be made available on request.

public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare no competing interest.

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References

- Abdelkader, H.E.M., 2017. Political instability and economic growth in Egypt. *Rev. Middle East Econ. Financ.* 13 (2).
- Acemoglu, D., Gallego, F.A., Robinson, J.A., 2014. Institutions, human capital, and development. *Annu. Rev. Econ.* 6 (1), 875–912.
- Acemoglu, D., Johnson, S., Robinson, J.A., 2001. The colonial origins of comparative development: an empirical investigation. *Am. Econ. Rev.* 91 (5), 1369–1401.

- Adedoyin, F.F., Erum, N., Bekun, F.V., 2022. How does institutional quality moderates the impact of tourism on economic growth? Startling evidence from high earners and tourism-dependent economies. *Tour. Econ.* 28 (5), 1311–1332.
- Afonso, A., de Sá Fortes Leitão Rodrigues, E., 2022. Corruption and economic growth: does the size of the government matter? *Econ. Change Restruct.* 55 (2), 543–576.
- Aisen, A., Veiga, F.J., 2013. How does political instability affect economic growth? *Eur. J. Political Econ.* 29, 151–167.
- Alfada, A., 2019. The destructive effect of corruption on economic growth in Indonesia: a threshold model. *Heliyon* 5 (10), e02649.
- Alhamran, M., Loganathan, N., Sethi, N., Golam Hassan, A.A., 2022. Effects of political stability, oil prices and financial uncertainty on real economic growth of Gulf cooperation council countries. *Transnatl. Corp. Rev.* 1–14.
- Aoyagi, C., Ganelli, G., 2015. Asia's quest for inclusive growth revisited. *J. Asian Econ.* 40, 29–46.
- Ayessa, E.B., Hakizimana, J., 2021. Effects of political instability on economic growth in the Republic of Congo. *Mod. Econ.* 12 (12), 1896–1912.
- Belloumi, M., Alshehry, A.S., 2021. The causal relationships between corruption, investments and economic growth in GCC countries. *SAGE Open* 11 (4), 21582440211054425.
- Causevic, S., Lynch, P., 2013. Political (in) stability and its influence on tourism development. *Tour. Manag.* 34, 145–157.
- Dalyop, G.T., 2019. Political instability and economic growth in Africa. *Int. J. Econ. Policy Stud.* 13 (1), 217–257.
- Delgado, M.S., McCloud, N., Kumbhakar, S.C., 2014. A generalized empirical model of corruption, foreign direct investment, and growth. *J. Macroecon.* 42, 298–316.
- Gakpa, L.L., 2020. Political instability, FDI and economic growth in Sub-Saharan African Countries: evidence from modelling dynamic simultaneous equations. AERC.
- Garedow, F.A., 2021. Political institutions and economic performance in Ethiopia: an auto regressive distributed lag bound approach to co-integration. *J. Econ. Dev.*
- Gründler, K., Potrafke, N., 2019. Corruption and economic growth: new empirical evidence. *Eur. J. Political Econ.* 60, 101810.
- Heo, Y., Hou, F., Park, S.G., 2021. Does corruption grease or sand the wheels of investment or innovation? Different effects in advanced and emerging economies. *Appl. Econ.* 53 (1), 35–60.
- Hou, J., Zhao, Y., 2019. Some remarks on a pair of seemingly unrelated regression models. *Open Math.* 17 (1), 979–989.
- Huang, C.J., 2016. Is corruption bad for economic growth? Evidence from Asia-Pacific countries. *North Am. J. Econ. Financ.* 35, 247–256.
- Ianchovichina, E., Lundström, S., 2009. Inclusive growth analytics: framework and application. *World Bank Policy Res. Work. Pap.* (4851).
- Iorio, R., Segnana, M.L., 2022. Is paying bribes worthwhile? Corruption and innovation in middle-income countries. *Eurasia Bus. Rev.* 1–30.
- Ivanov, S., Gavrilina, M., Webster, C., Ralko, V., 2017. Impacts of political instability on the tourism industry in Ukraine. *J. Policy Res. Tour., Leis. Events* 9 (1), 100–127.
- Jordan, S., Philips, A.Q., 2018. Cointegration testing and dynamic simulations of autoregressive distributed lag models. *Stata J.* 18 (4), 902–923.
- Kesar, A., Kamaiah, B., Jena, P.K., Yadav, M.P., 2022. The asymmetric relationship between corruption, political stability and economic growth: New evidence from BRICS countries. *Indian Econ. J.* 70 (2), 249–270.
- Koutou, J., 2021. The impact of renewable energy consumption on inclusive growth: panel data analysis in 44 African countries. *Econ. Change Restruct.* 54 (1), 145–170.
- Llorca-Vivero, R., 2008. Terrorism and international tourism: new evidence. *Def. Peace Econ.* 19 (2), 169–188.
- Malanski, L.K., Póvoa, A.C.S., 2021. Economic growth and corruption in emerging markets: does economic freedom matter? *Int. Econ.* 166, 58–70.
- Maria, K.K., Ioanna, S., Salomi, D., 2022. Nonlinear nexus between corruption and tourism arrivals: a global analysis. *Empir. Econ.* 63 (4), 1997–2024.
- Mauro, P., 1995. Corruption and growth. *Q. J. Econ.* 110 (3), 681–712.
- Méon, P.G., Sekkat, K., 2005. Does corruption grease or sand the wheels of growth? *Public Choice* 122 (1), 69–97.
- Méon, P.G., Weill, L., 2010. Is corruption an efficient grease? *World Dev.* 38 (3), 244–259.
- Moon, H.R., Perron, B., 2006. Seemingly unrelated regressions. *N. palgrave Dict. Econ.* 1 (9).
- Murad, M.S.A., Alshyab, N., 2019. Political instability and its impact on economic growth: the case of Jordan. *Int. J. Dev. Issues.*
- Neumayer, E., 2004. The impact of political violence on tourism: dynamic cross-national estimation. *J. Confl. Resolut.* 48 (2), 259–281.
- North, D.C., 1989. Institutions and economic growth: an historical introduction. *World Dev.* 17 (9), 1319–1332.
- North, D.C. (2003). *The Role of Institutions in Economic Development*. UN.
- Nur-tegin, K., Jakee, K., 2020. Does corruption grease or sand the wheels of development? New results based on disaggregated data. *Q. Rev. Econ. Financ.* 75, 19–30.
- Okafor, G., 2017. The impact of political instability on the economic growth of ECOWAS member countries. *Def. Peace Econ.* 28 (2), 208–229.
- Osinubi, T.T., Osinubi, O.B., Tabash, M.T., Ajayi, A.O., Tran, D.K., 2022. The impact of corruption on tourism sector in Nigeria: Empirical insights by using an autoregressive distributed lag bounds (ARDL) testing approach. *Int. J. Hosp. Tour. Adm.* 23 (6), 1125–1144.
- Oyinlola, M.A., Adedeji, A., 2019. Human capital, financial sector development and inclusive growth in sub-Saharan Africa. *Econ. Change Restruct.* 52, 43–66.
- Paul, B.P., 2010. Does corruption foster growth in Bangladesh? *Int. J. Dev. Issues* 9 (3), 246–262.
- Paulo, L.D.D., Lima, R.C.D.A., Tigre, R., 2022. Corruption and economic growth in Latin America and the Caribbean. *Rev. Dev. Econ.* 26 (2), 756–773.
- Priewe, J., 2016. *Ethiopia's high growth and its challenges: causes and prospects (No. 70/2016). Working Paper.*
- Raheem, I.D., Isah, K.O., Adedeji, A.A., 2018. Inclusive growth, human capital development and natural resource rent in SSA. *Econ. Change Restruct.* 51, 29–48.
- Rahman, K., 2018. *Overview of Corruption and Anti-corruption in Ethiopia.* Transparency International.
- Rose-Ackerman, S., Palifka, B.J., 2016. *Corruption and Government: Causes, Consequences, and Reform.* Cambridge university press.
- Shabbir, G., Anwar, M., Adil, S., 2016. Corruption, political stability and economic growth. *Pak. Dev. Rev.* 689–702.
- Sharma, C., Mitra, A., 2019. Corruption and economic growth: some new empirical evidence from a global sample. *J. Int. Dev.* 31 (8), 691–719.
- Spyromitros, E., Panagiotidis, M., 2022. The impact of corruption on economic growth in developing countries and a comparative analysis of corruption measurement indicators. *Cogent Econ. Financ.* 10 (1), 2129368.
- Srivastava, V.K., Giles, D.E., 2020. *Seemingly unrelated regression equations models: estimation and inference.* CRC press.
- Stock, J.H., Watson, M.W., 1993. A simple estimator of cointegrating vectors in higher order integrated systems. *Econometrica* 61 (4), 783–820.
- Tanzi, V., 1998. Corruption around the world: causes, consequences, scope, and cures. *Staff Pap.* 45 (4), 559–594.
- World Bank, 2017. *Global economic prospects. June 2017: a fragile recovery.* World Bank, Washington, DC.
- World Bank (2022). *World Bank Open Data.*
- Xu, C., Yang, Y., Dossou, T.A.M., Berhe, M.W., Ndomandji Kambaye, E., 2022. Does corruption undermine tourism development in Africa? *Curr. Issues Tour.* 1–18.
- Zerihun, A., Wakiaga, J., Kibret, H., 2016. *Ethiopia. African Economic Outlook; African Development Bank.*