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The impact of corruption on migration flows: evidence from Sub Saharan African countries

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Abstract[1]

This paper investigates the effect of corruption on the migration flows from SSA countries to the OECD countries between 2000 and 2019. Fixed-effects and system GMM (generalized method of moments) estimation techniques are used to establish a relationship between emigration and corruption. The empirical results indicate that when corruption increases, migration flows also increase, where corruption is measured on a scale of 0 (not corrupt) to 100 (totally corrupt). Splitting the sample by income inequality suggests that increased inequality doesn't reduce the ability to emigrate. Indeed, below and above the threshold the results are the same. Finally, splitting the sample by corruption level suggests that a high level of corruption in the home country doesn't affect the migration decision.

Keywords: corruption, migration, SSA countries

JEL: F22; O55; D73

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1 Introduction

In recent times there has been a substantial increase in the economic literature on migration. A vast amount of research has been conducted to determine the push and pull factors, such as the attraction to a higher wage (Borjas 1987), preferences of social networks (Beine et al. 2010) or demographic and climate changes (Dao et al. 2021; Burzynski et al. 2019; Beine et al. 2015). However, an aspect that is still neglected in the economic literature is the effect of corruption on migration choices. There exist few studies that show how a country's political institutions might impact migration decisions. A particular focus on the role of corruption is still scarce. However, as the World Bank (2013) has already stated "corruption is the public enemy number one and it is the primary obstacle to economic growth" and corruption can, directly and indirectly, increase migration. Directly because the prevalence of corruption is likely to worsen individual working and living conditions for most citizens (Dimant et al. 2013). Corruption has also an indirect effect on emigration through different channels. For example, corruption has a stronger impact on the poor and the most vulnerable because it increases the cost of public services (such as healthcare, education, and justice) and reduces access to them. Another channel is described by Gupta (2002) who argues that corruption at a high and steady level causes an increase in income inequality and poverty. In addition, corruption increases when it incentivizes investment in capital-intensive projects at the expense of labor-intensive ones. These investment distortions deprive individuals in low-income groups of employment opportunities and thus of income in-

flows.

Other studies have analysed the negative effects of corruption diverting resources away from economically productive objectives, undermining the efficiency of public spending and causing loss of output due to misallocation of resources. It has been shown that corruption changes the size and composition of public spending, moving it away from vital sectors - such as healthcare and education - towards sectors characterized by greater secrecy and less transparency such as defense (Mauro 1998; Wei 2001). These distortions might cause an increase in emigration flows. However, SSA is the poorest region of the planet (it includes almost 80 % of the countries classified as low-income by the World Bank) and as we know migration entails fixed costs (for example, cost of transport, obtaining permits, search for a new home and a job) that potential migrants will hardly be able to support. The only

possible alternative seems to be irregular migration. Even the presence of conflicts within the region does not facilitate regular migration.

In addition, examining the effects of corruption on emigration flows could be fundamental to reducing governmental failures and inefficiencies. Indeed, if corruption increases inequality or liquidity constraints, policies for the control of corruption should be implemented together with redistribution policies to reduce the increase in inequality.

As already anticipated there exist few studies about the effect of corruption on migration.

Dimant et. al (2013) estimate the migration impact of corruption in 111 countries for 16 years. The conclusion they obtained can be summarized as follows: corruption worsens life and work conditions increasing outflow migration. The most affected are the better-educated workers due to the negative impact that corruption has on return on education. For this reason and given the irreversibility of human capital investment, corruption influences migration decisions and mainly of highly skilled individuals. Poprawe (2015) with bilateral migration data covering 230 countries also affirms that highly corrupted countries favor emigration due to unsafe economic environments and unstable working conditions. Finally, Cooray and Schneider (2015) splitting the population into low, medium, and highly educated, demonstrate that as corruption increases the high-skilled emigration rate also increases, whereas the emigration rate of low and mediumskilled migrants increases for low levels of corruption.

Our contribution to the literature on corruption as a determinant of migration is threefold: (1) differently from the main literature, we use the emigration flows as outcome variable, (2) we take into consideration also the irregular migrants and (3) we consider are all the of SSA countries over the period 2000-2019.

The results show that if the corruption increases, the migration flows also increase and this result is statistically significant in both fixed-effects and GMM estimation.

The paper is structured as follows. Section 2 describes the data. Section 3 describes the methodology. Section 4 provides the empirical results. Section 5 concludes.

2 Description of the data

To empirically demonstrate the impact of corruption on migration flows we compile data on migration, corruption and other control variables for 48 countries (all SSA countries) between

2000 and 2019. The summary statistics are reported in Table 1.

Table 1: Summary statistics (2000-2019, yearly frequency)

	Obs	Mean	Min	Max	St. Dev.	p10	p50	p90
Emigration flow	900	.12	-.94	6.5	.5	-.2	.044	.4
CPI	735	-.0044	-.19	.21	.044	-.056	0	.043
Gdp per Capita	878	.016	-.65	.45	.055	-.029	.02	.057
Unemployment Rate	912	-.0011	-1.4	1.9	.13	-.077	.0019	.055
Popultion	904	.025	-.0062	.05	.009	.012	.027	.035
Climate Change	855	.032	-102	32	4.4	-.39	.051	.77
Inequality	912	-.14	-40	21	2.3	-26	0	.18
Institution	902	.041	-17	59	2.3	-.33	-.011	.31
Regime	875	.013	-1	3	.25	0	0	0
Trade openness	799	-.0021	-2.9	.68	.16	-.14	.0042	.14

Data Source: Own elaboration based on our data

As previously mentioned, instead of using the emigration rate every 5 years, we use emigration flows. Given the lack of data on migration outflows, we decided to obtain the necessary information in different steps. The destination countries considered are most of the OECD countries
(see list in Appendix), as they are the main destination countries for migration flows (UN DESA 2013). To create the data on migration flows from SSA countries to OECD countries as a single major destination region, we summed up the number of migrants arriving in OECD countries from each country concerned. To consider also irregular migrants the number of these was added to the above variable. These data come from the European Commission and refer to the detection of illegal border crossings. [2]

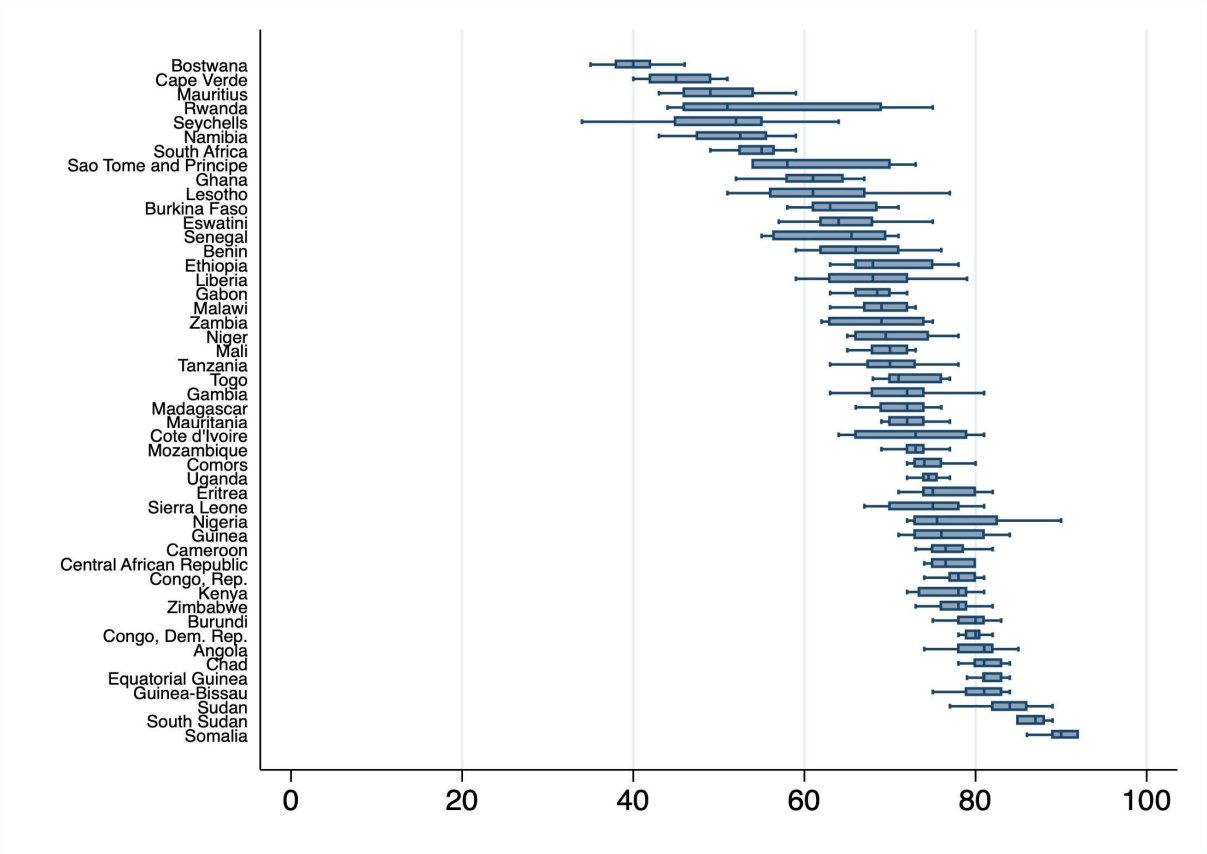
The main independent variable is corruption. Corruption is a difficult concept to define and following the definition of Transparency International we define it as "the abuse of entrusted power for private gain". The corruption considered is at the level of public administration.

[2] https://knowledge4policy.ec.europa.eu/dataset/ds00032_en

Therefore, as a measure of corruption, we use the Corruption Perception Index by Transparency International. The index ranks countries according to their perceived level of corruption. CPI is mesured on a scale of 0 (not corrupted) to 100 (totally corrupted).[3]

The first graph (Figure 1) shows the trend of the Corruption Perceptions Index in each SSA country from 2000 to 2019.

Figure 1: Corruption Perception Index

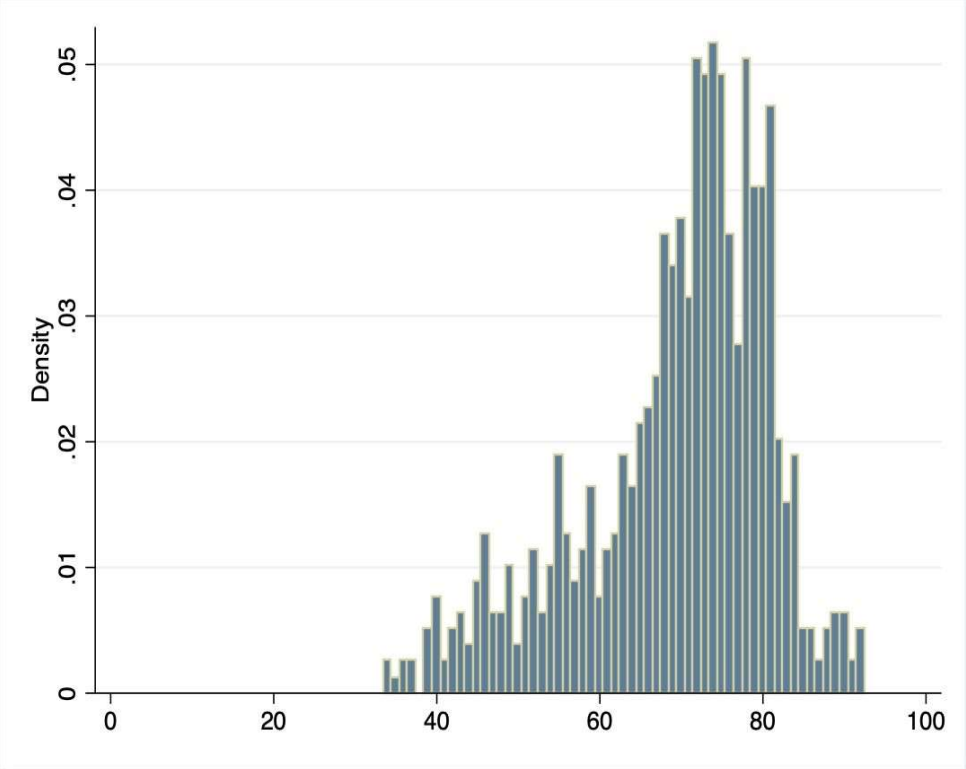


Data Source: Transparency International. The box is between the 75th (upper hinge) and 25th percentile (lower hinge). The line inside the box represents the median. The two segments starting from the box and extending upwards and downwards are called "whiskers" and indicate the dispersion of values below the first quartile and above the third quartile that are not classified as outliers. The highest value in the variable that does not identify an outlier defines the end of the upper whisker. Similarly, the lowest value, which does not identify an outlier, defines the end of the lower whisker. Isolated points indicate possible outliers.

[3] The CPI variation range was between 0 (highly corrupted) and 10 (not corrupted) until 2011. From 2012 onwards the range changed to 0 (highly corrupted) and 100 (not corrupted). To homogenize the index, we rescale the index and reverse it so that now a higher value of the index corresponds to a higher level of (perceived) corruption. [3] https://www.transparency.org/en/cpi/2021

Moreover, the second graph (Figure 2) highlights that the values of the CPI for these countries are between 40 and 90. This means that these countries are ranked as the countries with the highest level of perceived corruption. As an example, in 2021, South Sudan was ranked last in the CPI ranking. [3]

Figure 2: Frequency of Corruption Perception Index in SSA



Data Source: Transparency International

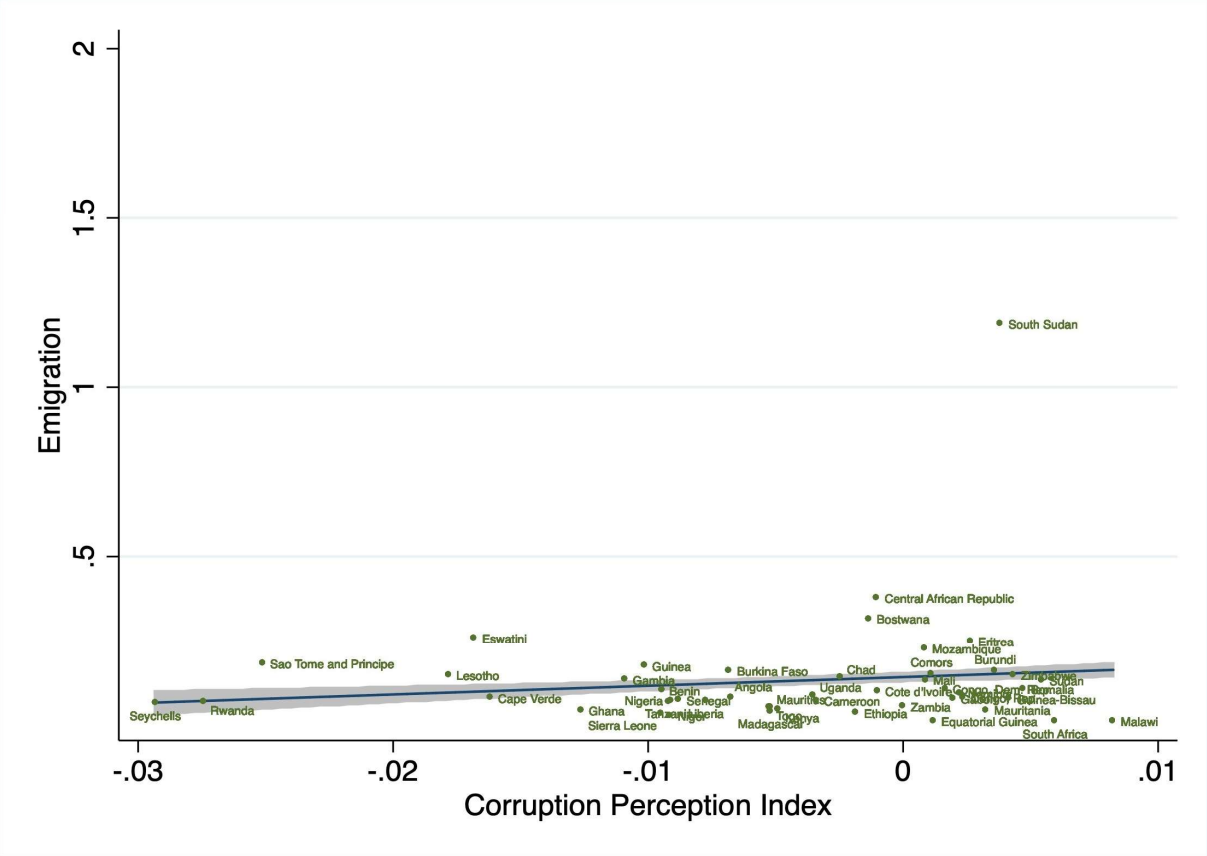
To capture whether the effect of corruption on migration is linear or nonlinear we also include the squared term for CPI as a control variable.

According to the literature on the determinants of migration, control variables have been included. The first is the GDP per capita which is used to control the development level of a country. In this case we also consider a squared term for per capita income due to an inverted U-shaped relationship between GDP and migration (Volger and Rotte 2000). Corruption within government institutions encourages the payment of bribes to access job opportunities by reducing the efficiency of the allocation between labour supply and demand (Bouzid 2016). This increases unemployment and thus reduce well-being, acting as a push factor for labour migration. For this reason, one of the independent variables is the unemployment rate. Contrary to previous studies (Dimant et al. 2013 Poprawe 2015; Cooray and Schneider 2015), it was not possible to consider the Gini index, as it was not available for

all countries and years considered. Therefore, wealth inequality (bottom 50% share) was used as a robustness check. As a robustness check, we ran different regressions adding one more variable at a time. We start with Institutions. It has been shown that different quality of institutions might favor or make more difficult corruption and thus migration (Cooray and Schneider 2015; Ariu et al. 2014). Kaufmann and Kraay governance indices are used, and we aggregate all institutions into their first principal component. In this way, we capture not only the effect of corruption but also the effect of the other governance indicators. The second is climate change. As Di Falco, B. Kis and Viarengo (2022) show in SSA the majority of the population relies on farming as its main source of income. Therefore, adverse effects of climate change influence decisions to migrate. To capture the climate change we consider the temperature change with respect to baseline climate. Population, regime type, and trade openness are also controlled for. The degree of commercial openness was derived from data on imports and exports by World Development Indicators (World Bank), and it is used as a proxy for the degree of freedom in the country (Razmi and Rafei 2013).

The following graph (Figure 3) shows the prediction for migration flows from a linear regression of migration flows on Corruption Perception Index and plots the resulting line, along with a confidence interval.

Figure 3: Corruption and Migration



Data Source: Own elaboration based on OECD data and Transparency International

3 The model

To empirically demonstrate whether the corruption in SSA between 2000 and 2019 is a determinant of migration, the fixed-effect estimation methodology is used. The general panel data model can be expressed as follows:

$$M_{i,t} = \beta_1 X_{i,t} + \alpha_i + \gamma_t + \epsilon_{i,t} \quad (1)$$

where M_{it} is the dependent variable that represents the emigration flows, $X_{i,t}$ is a vector of independent variables among which also the CPI and control variables, α_i represents the country specific effects and γ_t takes into account the time effects. To capture the trend the variable *year* was included instead of dummies. Finally, $\epsilon_{i,t}$ is a random error term.

The Hausman test confirms that a fixed-effects panel rather than a random-effects panel is the most appropriate model.

After the first estimation, we performed several robustness checks. In particular, five other estimates have been carried out by adding five variables to the original model (climate change, institution, inequality, population and regime).

However, the explanatory variables used in the empirical model may not be strictly exogenous. For example, Mariani (2007) shows that emigration can lead to a decline in rent-seeking in the home country, demonstrating the difficulty in establishing causal relationships between corruption and emigration. To control for the joint endogeneity of the explanatory variables, GMM estimation was also performed using internal tools (Arellano-Bover 1995; Blundell-Bond 1998). This approach involves using lagged prime differences as instruments for the equation in levels and lagged levels as instruments for the equation in prime differences so that full use can be made of all available moment conditions. Two diagnostic tests are performed, the Hansen test for over-identification restrictions under which the null hypothesis is that the instruments are uncorrelated with the residuals, and the Arellano-Bond test for second-order correlation in first difference residuals. Also, in this case we performed several robustness checks with almost all of the variables used in the fixed-effects estimation (climate change, institution, inequality and regime).

4 Empirical results

This section reports the results of the fixed-effects estimation and the GMM estimation respectively. Finally, we tested the effects of corruption on migration choices by dividing the sample by income inequality and by perceived levels of corruption.

4.1 Fixed-effects estimation

The results are reported in Table 1. It's important to emphasize that all variables are expressed in growth rates. The results show that corruption has a positive and statistically significant effect on migration outflows. In particular, if the CPI increases by one percent, the migration flows also increase by 5,7 percent. The quadratic term is also significant and negative suggesting a nonlinear effect of corruption on migration. Therefore, the migration flows increase at increasing rates at low levels of corruption but at decreasing rates beyond a certain point. If corruption increases, the costs of

migration could increase as well making it more difficult to leave the country of origin. The results also suggest that per capita income has a positive and statistically significant effect on migration outflows. When the income increases the capacity to sustain migration costs increases and so migration flows (Faini and Venturini 1994). The quadratic term of GDP is also significant but the sign is negative. This might suggest that in the long run, the individual develops a home preference (Volger and Rotte 2000). Finally, accordingly to the literature, the unemployment rate increase causes emigration to increase.
Several variables have been added to ensure consistency and robustness of the results. Their introduction does not change the strength of the results.

4.2 Robustness

Several variables have been added to ensure consistency and robustness of the results. Their introduction does not change the strength of the results. For this purpose, we use Kaufmann and Kraay's six indices (control of corruption, voice and accountability, rule of law, government effectiveness, quality of regulation, political stability and absence of violence). Table A.3 reports the results when the benchmark model (Table 2) includes a measure of the Control of Corruption. The results are the same with respect to the fixed-effects estimation and the control of corruption is statistically significant and positive, which means that if the control of corruption increases in the country of origin, there are no emigration flows. This result is in agreement with the sign of the CPI. Table A.4 also reports the results of the fixed-effects estimation that includes a Voice and Accountability measure. Since the Voice and Accountability Index is a perception of the extent to which a country's citizens can participate in the selection of their government, as well as freedom of expression, freedom of association and free media, if this is true, migration flows decrease. For this reason, the sign of the variable is positive. Finally, Table A.8 reports the results of fixed-effects estimations that include a measure of government effectiveness. The government effectiveness index is based on the quality of public services, civil service, policy formulation, policy implementation and credibility of a government. This variable is significant, and the sign is positive. The other tables show the same results. The impact of corruption on migration flows remains unchanged, but the other corruption indices are not statistically significant.

Table 2: Fixed-Effects estimation. Dependent variable: migration flows

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Lag migration	-0.208***	-0.211***	-0.208***	-0.209***	-0.216***	-0.204***
	(0.034)	(0.033)	(0.034)	(0.034)	(0.041)	(0.035)
CPI	5.714***	5.484***	5.709***	5.750***	6.079***	5.490***
	(1.705)	(1.812)	(1.709)	(1.704)	(1.871)	(1.978)
CPi Square	-3.136***	-3.013***	-3.133***	-3.151***	-3.336***	-3.063***
	(0.867)	(0.915)	(0.868)	(0.866)	(0.975)	(0.997)
Gdp per Capita	1.780**	1.817**	1.780**	1.780**	2.425**	1.757**
	(0.776)	(0.698)	(0.778)	(0.776)	(1.184)	(0.816)
GDP Square	-0.961**	-0.936**	-0.961**	-0.960**	-1.241**	-0.968**
	(0.441)	(0.412)	(0.441)	(0.440)	(0.596)	(0.461)
Unemployment Rate	0.087**	0.089**	0.087**	0.089**	0.082*	0.081**
	(0.040)	(0.040)	(0.041)	(0.041)	(0.042)	(0.039)
year	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Climate Change		-0.000				
		(0.001)				
Institution			0.001			
			(0.003)			
Inequality				-0.005		
				(0.007)		
Popultion					-10.336	
					(9.897)	
Regime						-0.057*
						(0.029)
Constant	9.268**	10.629**	9.272**	9.351**	10.465**	9.054**
	(4.172)	(4.296)	(4.176)	(4.225)	(5.013)	(4.352)
Observations	703	665	703	703	703	678
R-squared	0.066	0.068	0.066	0.066	0.070	0.066
Number of country	48	46	48	48	48	47

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

4.3 GMM estimation

Subsequently, we carried out the GMM estimation and Table 2 reports the results. The outcomes indicate once again that corruption has a statistically significant and positive effect on migration flows. In particular, if the CPI increases by one percent, the migration flows also increase by 6,8 percent. Also, in this case the results show that corruption has a nonlinear effect on migration flows. Indeed, the square of CPI is significant but the sign is negative. The difference between the fixed-effect estimation and the GMM estimation is that in the last case per capita income and the square of per capita income are not statistically significant but the signs of the two coefficients are the same as in the fixed-effects estimation. Finally, the unemployment rate has a significant and positive effect on migration. As already mentioned, several robustness checks were performed for the GMM estimation through the inclusion of additional variables

Table 3: GMM estimation. Dependent variable: migration flows

VARIABLES	(1)	(2)	(3)	(4)	(5)
Lag migration	-0.110***	-0.125***	-0.117***	-0.123***	-0.137**
	(0.040)	(0.041)	(0.039)	(0.039)	(0.041)
CPI	6.799***	6.463***	6.828***	6.805***	6.434***
	(1.595)	(1.602)	(1.595)	(1.613)	(1.791)
CPI Square	-3.702***	-3.518***	-3.720***	-3.700***	-3.586***
	(0.853)	(0.858)	(0.853)	(0.856)	(0.966)
Gdp per Capita	-0.212	-0.100	-0.195	-0.246	-0.272
	(1.454)	(1.451)	(1.427)	(1.424)	(1.431)
GDP Square	0.204	0.156	0.195	0.238	0.213
	(0.895)	(0.895)	(0.883)	(0.890)	(0.887)
Unemployment Rate	0.125**	0.128**	0.124**	0.128**	0.122**
	(0.050)	(0.049)	(0.051)	(0.051)	(0.047)
year	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Climate Change		-0.000			
		(0.001)			
Institution			0.003		
			(0.002)		
Inequality				-0.012*	
				(1.052)	
Regime					-0.070*
					(0.041)
Constant	5.969	6.747	6.081	6.145	5.708
	(3.965)	(4.119)	(3.971)	(4.116)	(4.107)
Observations	703	665	703	703	678
Number of country	48	46	48	48	47

Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

4.4 Inequality heterogeneity

Gupta (2002) argues that corruption at a high and steady level causes an increase in income inequality and poverty. Cooray and Schneider (2015) taking into account only the emigration

Table 4: Splitting the sample by income distribution. Dependent variable: migration flows

	(1)	(2)
VARIABLES	Low income inequality	High income inequality
Lag migration	-0.193***	-0.020
	(0.042)	(0.035)
CPI	6.586***	6.870**
	(2.569)	(3.169)
CPI Square	-3.543***	-3.669**
	(1.142)	(1.748)
Gdp per Capita	-3.217***	3.543
	(1.408)	(4.204)
GDP Square	2.422**	-2.063
	(0.922)	(2.081)
Unemployment Rate	0.033	0.217***
	(0.048)	(0.028)
year	-0.000	-0.006**
	(0.004)	(0.002)
Constant	0.765	11.850**
	(7.848)	(4.622)
Observations	361	342
Number of country	23	25

Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

rate of a population with medium and low levels of education and splitting the sample with respect to a Gini index show that in the countries with low levels of income inequality (below the threshold value) the migration rate increases and then decreases, while in the countries with high levels of the income

inequality the corruption reduces the ability of individuals to emigrate. In this research, we use data on emigration flows and consider both regular and irregular migrants from SSA countries to OECD countries. As Cooray and Schneider (2015), we split the sample using our Inequality variable. Table 3 shows the results. In our research in both countries with low and high levels of income inequality, the CPI and the square of the CPI are significant but of opposite signs. Therefore, as for fixed-effect and GMM estimations, when the corruption increases, the migration flows also increase. Since the sign of the square of CPI is negative, for a high level of corruption the impact of the migration starts to decline. Therefore, in this analysis regardless of the level of inequality in income corruption influence the migration decision probably because we consider also irregular migrants.

4.5 Corruption heterogeneity

The SSA countries have the highest levels of perceived corruption. For this reason, we have divided the sample into two groups according to CPI (below and above the average of CPI) to observe once again whether and how corruption influences migration choices. The results are reported in Table 4. For countries below the threshold, the results do not change. The coefficient of the CPI is positive and significant, so if corruption increases by 1%, migration flows increase by about 7%. However, the square of CPI is significant and negative, indicating that above a certain level of corruption, migration flows increase at decreasing rates. In contrast, for countries above the threshold, corruption is not significant. The explanation for this result might well be that in countries with a high level of corruption in public administration, obtaining visas to emigrate becomes very difficult. Indeed, for these countries, the costs (monetary and non-monetary) to migrate to OECD countries may be excessively high, given also the high level of poverty. Moreover, SSA is also characterized by strong internal migration, especially from rural to urban areas (Fumagalli and Schaefer 2022). Therefore, given the high level of poverty and the costs of migration, individuals may choose to migrate internally or to migrate illigally. Figure A.1 and Figure A.2 in the appendix show the trends of corruption and migration for countries above and below the threshold value.

5 Conclusions

The paper demonstrates that corruption is an important determinant of migration in the developing countries. Using a panel data model in which the dependent variable is migration flows instead of migration rate and considering the limitations due to the availability of data for the selected countries,

it has been possible to demonstrate that as the perceived level of corruption in the country increases, emigration flows increase. The analysis remained robust even to further specifications in both fixed-effect and GMM estimation methods. Additionally, splitting the sample in two groups using the Inequality variable, we have shown that in both groups, as corruption increases also the migration flows increase. Finally, we also split the population using the Corruption Perception Index to investigate how migration choices change in countries above and below the threshold level. In this case, in countries below the threshold, if corruption increases, migration also increases.

Table 5: Splitting the sample by level of corruption. Dependent variable: migration flows

	(1)	(2)
VARIABLES	Low level of CPI	High level of CPI
Lag migration	-0.158**	-0.122***
	(0.069)	(0.041)
CPI	7.121***	17.956
	(1.521)	(11.036)
CPI Square	-3.779***	-9.468
	(0.906)	(5.612)
Gdp per Capita	11.015	-0.489
	(12.848)	(1.461)
GDP Square	-5.199	0.280
	(6.234)	(1.015)
Unemployment Rate	0.170***	0.065
	(0.059)	(0.050)
year	-0.006**	-0.001
	(0.003)	(0.003)
Constant	12.064**	2.011
	(5.365)	(6.722)
Observations	371	332
Number of country	24	24

Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

However, for countries above the threshold, this does not appear to have a significant effect on migration flows.

It is important to observe that the reported results may suffer from some limitations due to lack of data. Indeed, the choice to consider all SSA countries from 2000 to 2019 involved that some variables are not available. In addition, we decided to use migration flows as the dependent variable in our analysis although it had to be derived as it was not available. However, it is important to clarify that data collection is a key tool for policies to be implemented.

Therefore, we can conclude that individuals living in a country with a high level of corruption in public administration prefer to migrate to less corrupted and transparent countries. Indeed, corruption has many negative consequences including, for instance, the assignment of jobs not based on merit, the deterioration of the quality of essential services (health and education), or a reduction in the share of public expenditure on healthcare and education. This worsens the living and working conditions of many citizens, who will feel forced to leave their country. Consequently, it can be concluded that the adoption of policies to reduce the level of corruption could also reduce migration. In this paper, due to the lack of data, it was not possible to take into account the education levels of individuals who migrated, but we can deduce that those with higher qualifications have a greater incentive to leave their country. However, the *brain drain* can have negative effects on the country's economy and growth.

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6 Appendix

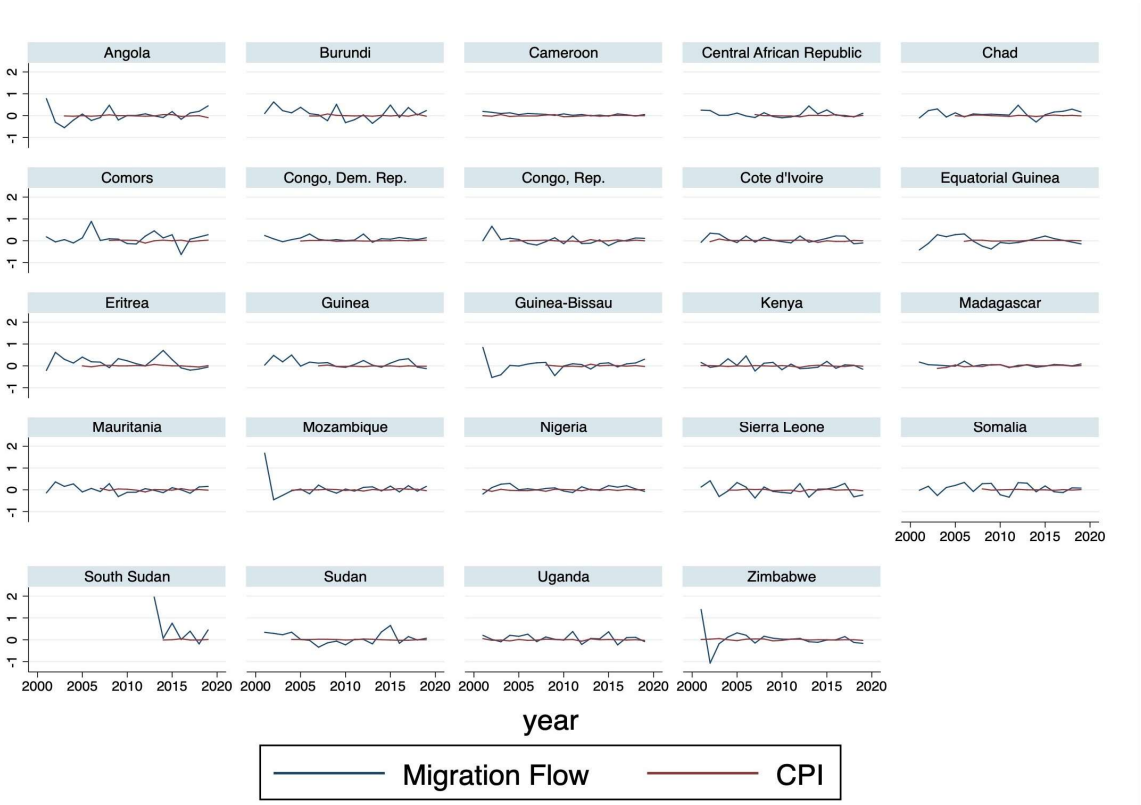
Table A.1: Countries list

Origin Countries
Angola, Benin, Bostwana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comors, Congo Dem Rep, Congo Rep, Cote d'Ivoire, Equatorial Guinea, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychells, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe
Destination Countries
Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Israel, Italy, Japan, Korea, Latvia,Lithuania, Luxembourg , Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States

Table A.2: Data sources

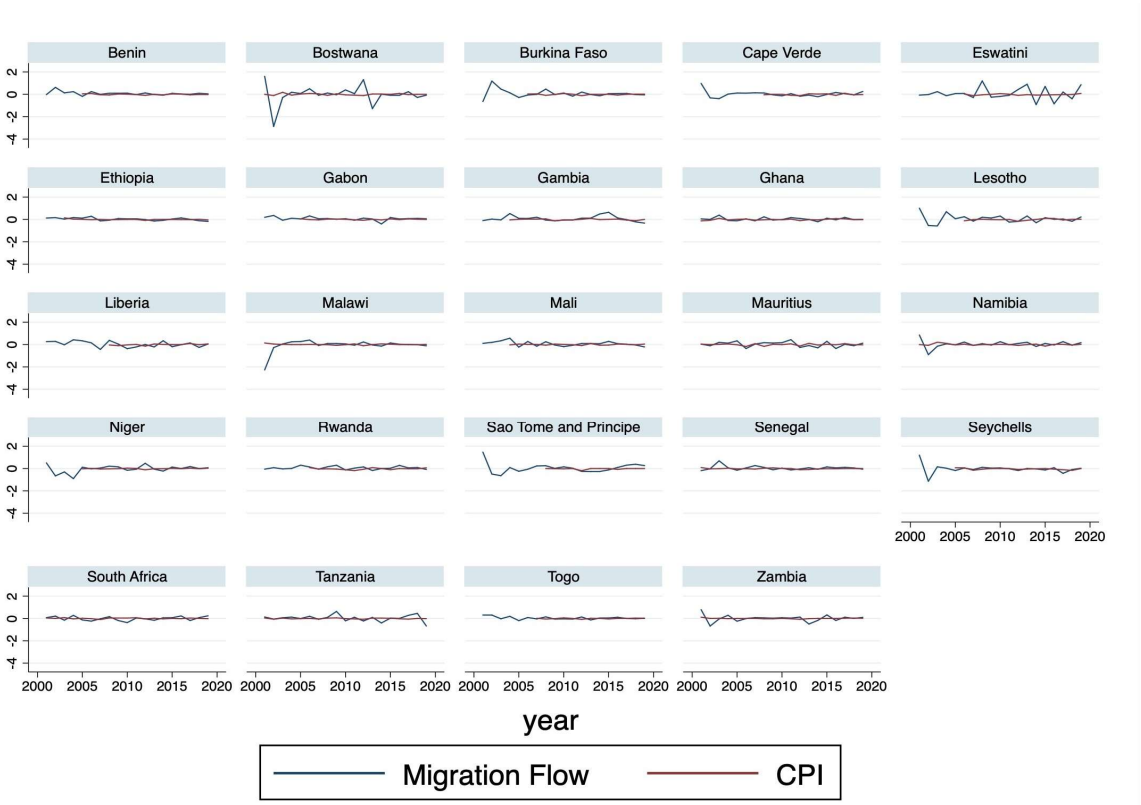
Variable	Source
Migration Flows	OECD
Corruption Perception Index	Transparency International
GDP per capita (constant 2005 US $)	WDI
Unemployment Rate	WDI
Population	WDI
Climate Change	FAOSTAT
Institution	Calculated from Kaufmann et al. (2013)
Regime	Bjørnskov et al. (2019)
Trade openness	Calculated from WDI
Inequality	WID

Figure A.1: Relationship between corruption and migration for countries above the threshold value



Data Source: Own elaboration based on OECD data and Transparency International

Figure A.2: Relationship between corruption and migration for countries below the threshold value



Data Source: Own elaboration based on OECD data and Transparency International

Table A.3: Robustness check for potentially corruption indicators

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Lag migration	-0.208***	-0.212***	-0.208***	-0.209***	-0.216***	-0.204***
	(0.034)	(0.033)	(0.034)	(0.034)	(0.041)	(0.035)
CPI	5.709***	5.486***	5.703***	5.745***	6.075***	5.487***
	(1.702)	(1.810)	(1.705)	(1.701)	(1.869)	(1.976)
CPI Square	-3.133***	-3.013***	-3.130***	-3.148***	-3.334***	-3.061***
	(0.865)	(0.914)	(0.867)	(0.865)	(0.974)	(0.996)
Gdp per Capita	1.797**	1.837**	1.797**	1.798**	2.446**	1.774**
	(0.776)	(0.698)	(0.777)	(0.776)	(1.185)	(0.815)
GDP Square	-0.972**	-0.949**	-0.972**	-0.971**	-1.255**	-0.979**

	(0.441)	(0.411)	(0.441)	(0.460)	(0.440)	(0.460)
Unemployment Rate	0.093**	0.095**	0.092**	0.094**	0.088**	0.086**
	(0.041)	(0.040)	(0.042)	(0.041)	(0.042)	(0.040)
year	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Control of Corruption	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Climate Change		-0.000				
		(0.001)				
Institution			0.001			
			(0.003)			
Inequality				-0.005		
				(0.007)		
Popultion					-10.380	
					(9.909)	
Regime						-0.057*
						(0.029)
Constant	9.425**	10.824**	9.429**	8.801**	10.634**	9.219**
	(4.215)	(4.345)	(4.219)	(4.158)	(5.058)	(4.399)
Observations	703	665	703	703	703	678
R-squared	0.066	0.068	0.066	0.066	0.071	0.067
Number of country	48	46	48	48	48	47

Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

Table A.4: Robustness check for potentially corruption indicators

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Lag migration	-0.208***	-0.211***	-0.208***	-0.209***	-0.216***	-0.204***
	(0.034)	(0.033)	(0.034)	(0.034)	(0.041)	(0.035)
CPI	5.694***	5.463***	5.689***	5.739***	6.060***	5.474***
	(1.697)	(1.804)	(1.701)	(1.696)	(1.865)	(1.975)
CPI Square	-3.130***	-3.006***	-3.127***	-3.145***	-3.330***	-3.059***

	(0.864)	(0.912)	(0.865)	(0.863)	(0.973)	(0.997)
Gdp per Capita	1.788**	1.826**	1.788**	1.789**	2.434**	1.769**
	(0.782)	(0.705)	(0.784)	(0.782)	(1.191)	(0.822)
GDP Square	-0.967**	-0.943**	-0.967**	-0.966**	-1.249**	-0.977**
	(0.445)	(0.416)	(0.445)	(0.444)	(0.600)	(0.465)
Unemployment Rate	0.085**	0.087**	0.084**	0.087**	0.080*	0.079*
	(0.041)	(0.040)	(0.042)	(0.041)	(0.043)	(0.040)
year	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Voice and Accountability	0.006*	0.006*	0.006*	0.006**	0.006*	0.006*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Climate Change		-0.000				
		(0.001)				
Institution			0.001			
			(0.003)			
Inequality				-0.005		
				(0.007)		
Popultion					-10.354	
					(9.901)	
Regime						-0.057*
						(0.029)
Constant	9.601**	10.981**	9.606**	9.684**	10.805**	9.408**
	(4.222)	(4.350)	(4.226)	(4.277)	(5.065)	(4.406)
Observations	703	665	703	703	703	678
R-squared	0.066	0.068	0.066	0.066	0.071	0.067
Number of country	48	46	48	48	48	47

Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

Table A.5: Robustness check for potentially corruption indicators

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Lag migration	-0.208***	-0.212***	-0.208***	-0.209***	-0.216***	-0.204***
	(0.034)	(0.033)	(0.034)	(0.034)	(0.041)	(0.035)

CPI	5.793***	5.566***	5.788***	5.830***	6.165***	5.575***
	(1.730)	(1.843)	(1.734)	(1.730)	(1.903)	(2.009)
CPI Square	-3.176***	-3.054***	-3.173***	-3.191***	-3.379***	-3.105***
	(0.879)	(0.930)	(0.880)	(0.879)	(0.990)	(1.011)
Gdp per Capita	1.811**	1.847**	1.811**	1.812**	2.460**	1.787**
	(0.778)	(0.701)	(0.779)	(0.778)	(1.186)	(0.818)
GDP Square	-0.979**	-0.953**	-0.979**	-0.978**	-1.262**	-0.986**
	(0.442)	(0.413)	(0.443)	(0.442)	(0.598)	(0.462)
Unemployment Rate	0.089**	0.090**	0.088**	0.090**	0.084*	0.082**
	(0.041)	(0.040)	(0.042)	(0.041)	(0.042)	(0.040)
year	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Rule of law	0.003	0.003	0.003	0.003	0.003	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Climate Change		-0.000				
		(0.001)				
Institution			0.001			
			(0.003)			
Inequality				-0.005		
				(0.007)		
Popultion					-10.361	
					(9.912)	
Regime						-0.057*
						(0.029)
Constant	9.391**	10.747**	9.395**	9.474**	10.599**	9.172**
	(4.236)	(4.364)	(4.241)	(4.290)	(5.084)	(4.418)
Observations	703	665	703	703	703	678
R-squared	0.066	0.068	0.066	0.066	0.071	0.066
Number of country	48	46	48	48	48	47

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.6: Robustness check for potentially corruption indicators

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Lag migrations	-0.209***	-0.212***	-0.208***	-0.210***	-0.216***	-0.205***
	(0.034)	(0.032)	(0.034)	(0.033)	(0.041)	(0.035)
CPI	5.619***	5.380***	5.612***	5.655***	5.984***	5.380***
	(1.697)	(1.806)	(1.701)	(1.696)	(1.864)	(1.968)
CPI Square	-3.093***	-2.967***	-3.090***	-3.109***	-3.294***	-3.014***
	(0.861)	(0.910)	(0.862)	(0.861)	(0.970)	(0.990)
Gdp per Capita	1.796**	1.833**	1.795**	1.796**	2.440**	1.772**
	(0.778)	(0.701)	(0.779)	(0.778)	(1.185)	(0.818)
GDP Square	-0.971**	-0.946**	-0.971**	-0.970**	-1.251**	-0.978**
	(0.442)	(0.414)	(0.443)	(0.442)	(0.597)	(0.462)
Unemployment Rate	0.088**	0.089**	0.087**	0.089**	0.083*	0.081**
	(0.040)	(0.039)	(0.041)	(0.040)	(0.042)	(0.039)
year	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Political Stability and Absence of Violence/Terrorism	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Climate Change		-0.000				
		(0.001)				
Institution			0.001			
			(0.003)			
Inequality				-0.005		
				(0.007)		
Popultion					-10.330	
					(9.903)	
Regime						-0.057*
						(0.029)
Constant	9.393**	10.752**	9.399**	9.473**	10.588**	9.185**
	(4.168)	(4.290)	(4.172)	(4.219)	(5.015)	(4.350)

Observations	703	665	703	703	703	678
R-squared	0.066	0.068	0.066	0.066	0.071	0.067
Number of country	48	46	48	48	48	47

Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

Table A.7: Robustness check for potentially corruption indicators

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Lag migration	-0.208***	-0.211***	-0.208***	-0.209***	-0.215***	-0.204***
	(0.034)	(0.033)	(0.034)	(0.034)	(0.041)	(0.035)
CPI	5.683***	5.483***	5.678***	5.719***	6.045***	5.463***
	(1.689)	(1.811)	(1.693)	(1.688)	(1.856)	(1.960)
CPI Square	-3.113***	-3.012***	-3.111***	-3.128***	-3.311***	-3.042***
	(0.859)	(0.914)	(0.861)	(0.859)	(0.967)	(0.988)
Gdp per Capita	1.782**	1.815**	1.782**	1.783**	2.431**	1.759**
	(0.774)	(0.698)	(0.775)	(0.774)	(1.181)	(0.813)
GDP Square	-0.962**	-0.934**	-0.962**	-0.961**	-1.244**	-0.969**
	(0.439)	(0.411)	(0.440)	(0.439)	(0.594)	(0.459)
Unemployment Rate	0.088**	0.089**	0.087**	0.089**	0.083*	0.081**
	(0.041)	(0.040)	(0.041)	(0.041)	(0.042)	(0.039)
year	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Regulatory Quality	-0.003	-0.001	-0.003	-0.003	-0.003*	-0.002
	(0.002)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
Climate Change		-0.000				
		(0.001)				
Institution			0.001			
			(0.003)			
Inequality				-0.005		
				(0.007)		
Popultion					-10.386	
					(9.908)	

Regime						-0.057*
						(0.029)
Constant	9.264**	10.631**	9.269**	9.347**	10.466**	9.048**
	(4.178)	(4.304)	(4.182)	(4.122)	(4.232)	(4.358)
Observations	703	665	703	703	703	678
R-squared	0.066	0.068	0.066	0.066	0.071	0.066
Number of country	48	46	48	48	48	47

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table A.8: Robustness check for potentially corruption indicators

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Lag migration	-0.209***	-0.212***	-0.209***	-0.210***	-0.217***	-0.205***
	(0.034)	(0.033)	(0.034)	(0.034)	(0.041)	(0.035)
CPI	5.727***	5.542***	5.722***	5.764***	6.100***	5.506***
	(1.707)	(1.820)	(1.711)	(1.707)	(1.875)	(1.981)
CPI Square	-3.143***	-3.041***	-3.141***	-3.159***	-3.348***	-3.072***
	(0.869)	(0.920)	(0.870)	(0.869)	(0.978)	(1.000)
Gdp per Capita	1.807**	1.843**	1.807**	1.807**	2.468**	1.785**
	(0.783)	(0.703)	(0.784)	(0.783)	(1.198)	(0.823)
GDP Square	-0.979**	-0.953**	-0.979**	-0.978**	-1.268**	-0.987**
	(0.444)	(0.413)	(0.445)	(0.444)	(0.603)	(0.464)
Unemployment Rate	0.089**	0.090**	0.088**	0.090**	0.084*	0.082**
	(0.040)	(0.040)	(0.041)	(0.041)	(0.042)	(0.039)
year	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Government Effectiveness	0.007***	0.006***	0.007***	0.007***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Climate Change		-0.000				
		(0.001)				

Institution			0.001			
			(0.003)			
Inequality				-0.005		
				(0.007)		
Popultion					-10.547	
					(9.954)	
Regime						-0.057*
						(0.029)
Constant	9.660**	11.013**	9.664**	9.747**	10.926**	9.468**
	(4.285)	(4.416)	(4.290)	(4.341)	(5.170)	(4.479)
Observations	703	665	703	703	703	678
R-squared	0.066	0.068	0.066	0.067	0.071	0.067
Number of country	48	46	48	48	48	47

Robust standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1

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