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The Impact of Institutional Quality on Income Inequality in Southern African Development Community (SADC) Countries

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A B S T R A C T
The study seeks to assess the impact of institutional quality on income inequality in SADC countries from 1980 to 2020 using the pooled mean group (PMG) estimation technique. The study considers six dimensions of institutional quality: government effectiveness, the rule of law, control of corruption, quality, voice accountability, and political rights. The study indicates that different institutional quality measures disparate impact income inequality in SADC countries. Thus, institutional quality indicators such as the rule of law, government effectiveness, regulatory quality, voice accountability, and political stability negatively and significantly affect income inequality. Yet, other institutional quality indicators such as political rights, civil liberties, control of corruption, and corruption perception positively and significantly affect income inequality in SADC countries over the long run. This calls for the SADC governments and policymakers to be cautious about political rights and control corruption when addressing income inequality reduction policies.

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1. INTRODUCTION

Income inequality has long been a persistent challenge in many regions across the globe, impeding economic growth, social cohesion, and sustainable development (Park & Mercado, 2015; Silver, 2015; Ahmed, Abdul Hakim & Abdul Razak, 2021). Within the Southern African Development Community (SADC) countries, income disparities remain a pressing concern (Olivier, 2009; van der Berg, 2014; Dabla-Norris *et al.*, 2015) that demands rigorous examination. The current paper sheds light on the intricate relationship between income

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inequality and institutional quality within the SADC region, aiming to contribute to the ongoing discourse on equitable and inclusive development strategies (SADC Secretariat, 2020). This paper analyses the relationship between income inequality and institutional quality in SADC countries, recognizing that institutions act as drivers and outcomes of income distribution dynamics. By examining institutional factors such as the rule of law, government effectiveness, political rights, and voice accountability, the paper aims to comprehensively assess how these factors interact with income inequality levels in the region.

Income inequality is a significant disparity in income distribution between individuals, groups, populations, social classes, or countries (Kakwani, 1980; Howard & Carter, 2020). Income inequality is how unevenly income is distributed throughout a population. Thus, the less equal the distribution, the higher income inequality is. Income inequality is often accompanied by wealth inequality which is the uneven distribution of wealth (Binns, Lynch & Nel, 2018; Alfani, 2021). This study considers income inequality, which is regarded as a significant determinant of quality of life, health, and well-being, and varies by social factors such as sex, age, race, and others (Tran, Nguyen & Van Vu, 2018; Davidescu, Nae & Florescu, 2022). In this study, the Gini Index indicates income inequality, which measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. Thus a Gini index of 0 represents perfect equality, while an index of 1 implies perfect inequality (De Maio, 2007).

According to Olivera (2015), the difference in the preference for income distribution depends on persistent factors of the country, such as institutional quality, that shape the preferences of their citizens. Therefore, it is possible to identify the role of institutional quality in restoring equality by redistributing income. Indeed, Josifidis and Novica (2016) and Polanyi (2017) regard income distribution as an instituted process, meaning income inequality does not stem from natural market forces but from how particular markets are instituted. Milgrom, North and Weingast (1990) and Kunčič (2014) regard institutions as the humanly devised constraints that structure political, economic, and social interaction through incentives. Lin and Fu (2016) and Behnezhad, Razmi and Sadati (2021) advocate that if the institutions are a crucial determinant of incentives, they significantly affect economic outcomes such as income inequality. Consequently, economists and analysts are still uncertain whether institutions are critical determinants of economic outcomes or secondary arrangements that respond to others, such as economic interactions and culture. This paper examines whether institutional quality affects income inequality on income inequality in SADC countries.

Several studies have shown that institutional quality is indicated by the effectual rule of law, with the effectiveness of the government in formulating and implementing policies, constructive regulatory quality, human freedom, property rights, and judicial corruption control (Alonso & Garcimartin, 2013; Josifidis, Supić & Pucar, 2017; Náplava, 2020). As a result, the rule of law, government efficacy, political rights, and corruption control are among the six composite indicators used in this article to assess institutional quality. Butkiewicz and Yanikkaya (2006) prompt that a poor economic outcome, such as unequal distribution of resources, is associated with inadequate institutions. Moreover, Murphy, Shleifer, and Vishny (1993) indicate that the institutional framework is linked to how the resource income, wealth, and gains from production are distributed. More so, Acemoglu and Robinson (2010) posit that institutions matter because they shape the incentives of the key economic actors in society as they influence investments, the organization of production, and the distribution of income and resources in society. Thus, institutions determine how those in power can expropriate the economy's resources to their private advantage.

Studies (Malindini, 2021; Wandeda, Masai & Nyandemo, 2021) have focused much on the effectiveness of institutional quality on economic performance and growth. There is still a prevailing argument that increasing income inequality can be mitigated by improving the structure and quality of institutions (Chong and Calderón, 2000b; Ferrini, 2012; Asamoah, 2021). Prompted by such considerations, this study emphasises the effect of institutional quality on SADC income distribution from 1980 to 2020. The study's primary contribution is to examine the impact of institutional quality in various forms on the nature of income distribution in SADC countries. Therefore, it is crucial to look deeper and identify the most significant factors that influence income inequality and how they influence income inequality in the SADC countries in the long run. According to the African Development Bank (2016), the SADC has been one of the unequal regions globally. Increasing income inequality has been challenging since it can lead to a concentration of political and economic power, adversely affecting economic stability (Dabla-Norris et al., 2015). Indeed, the SADC regional indicative strategic development plan (RISDP) and the United Nations Sustainable Development Goals (SDGs) have considered income inequality as one of the core goals (Southern African Development Community (SADC, Secretariat, 2003, 2020).

The current study uses the pooled mean group (PMG) estimation technique to analyse institutional quality (in various forms) effects on income inequality in the SADC region. The study contributes to the literature by providing new findings on long-term income inequality and institutional quality for SADC nations. This research is crucial for policymakers, SADC governments, development practitioners, and scholars alike, as it aims to enhance an understanding of the complex interplay between income inequality and institutional quality in SADC countries. By illuminating the underlying factors contributing to income disparities, SADC governments and policymakers can identify effective policy interventions and institutional reforms that foster inclusive growth, social cohesion, and sustainable development across the region.

Increasing income inequality in developed and developing economies has led income redistribution issues to dominate academic and political debates, resulting in different interpretations of the causes and consequences of distributional effects. The theoretical framework on the impact of institutional quality on income inequality assumes that income distribution depends on how different social groups institutionalise their economic interests (Josifidis, Supić & Pucar, 2017). The importance of institutional quality on income distribution has been recognised in Smith's (1776) Wealth of Nations, which supports desirable effects of institutional quality in the form of the justice system, private property, and the rule of law in building the wealth of nations.

The relationship between income inequality and institutional relationship is explained by Acemoglu and Robinson's (2006) political theory of institution, which suggests that any economic system is embedded in a larger political system. The theory indicates that the institutions' impact on distribution depends on the existing political system's laws, institutions, and policies. The theory advocates that there are two types of institutions which are democratic (de jure) and nondemocratic (de facto). The democratic system is more evenly distributed as the majority has a greater say in the political process, policy formulation, and distribution of resources. While the de facto system, only the elite system has the political power and authority in policy formulation and allocation of resources and income through rent-seeking activities. Thus, if only a few select systems have authority over the political process policy formulation, the poor are not protected by an independent judicial system; for example, their ability to extract rents is inferior to that of the rich. Thus, the rent-seeking and quest to preserve future rents lead to inadequate allocation of resources from a welfare perspective, thereby increasing income inequality.

Proponents of institutional quality, such as Klitgaard (1988) and Enns et al., (2014) posit that biased institutions may produce significant disparity of incomes, where a small elite reaps most of the benefits of economic development while a large majority may have their incomes decline. Indeed, Valeriani and Peluso (2011), Barry and Tacneng (2014), and Asamoah (2021) claim that stronger and effective institutional quality is associated with high economic performances because they lower transaction costs by providing common legal frameworks such as contracts and contract enforcement, commercial norms and rules, and they encourage trust by providing policing and justice systems for the adherence to common laws and regulations.

Lee and Lee (2018) and Madni and Anwar (2021) argued that weak institutions deteriorate income distribution in developing economies. Consistently, Ménard and Shirley (2012), Kaya and Kaya (2020) and Khan, Khan and Zuojun (2022) suggest that economic development's key elements are policies and institutions. Thus, developing economies lack a well-developed structure of incentives to bring forth productive cooperation and these structures depend on economic policies as well as the quality of institutional arrangements such as legal systems that enforce contracts impartially and make property rights secure in the long term, political structures, constitutional provisions, and sound enforcement systems to monitor the extent of special-interest lobbies and cartels. Lin and Fu (2016) and Law and Soon (2020) argue that income inequality does not arise solely due to labor market developments but results from institutions and their development. This is because the distribution of property rights, costs, and power distribution in society plays a role because these factors determine how redistribution occurs in the economy.

Accordingly, Kunawotor, Bokpin and Barnor (2020) and Chong and Calderón (2000) advocate that weak institutions increase uncertainties that send mixed signals to the market, thus affecting productive processes and the distribution and allocation of resources. According to Chong and Calderon (2000), allocating resources and fair judgment will be less desirable when the institutions are weak, and the actual achievements will be less than the purported aim. Combined with micro-level studies, cross-country empirical analyses provide strong support for the overwhelming importance of institutions in predicting the level of development in countries around the world. In a study of institutions and income distribution, Chong, and Calderon (2000) found a quadratic relationship between institutions and income inequality. Their findings showed that institutions are positively linked to income inequality in developing countries, while institutions in advanced economies are negatively associated with income inequality. Furthermore, Acemoglu, Johnson, and Robinson (2001) and Chong and Gradstein (2007) argue that weak institutional factors such as government ineffectiveness and the absence of the rule of law could deteriorate the income distributions of developing countries. Indeed, weak institutions aggravate the poor's lack of judicial protection, deepening social and income inequalities. Acemoglu et al., (2005) and Bourguignon and Verdier (2000) argue that some augmented Kuznets curve may exist where institutional reform first increases inequality, but subsequent improvements lower it.

However, other studies indicate that income inequality does not result from institutions. For example, Blackburn and Forgues-Puccio (2009) find corruption less harmful in countries where individual rent-seeking behaviour is well-coordinated and more internalized. Notwithstanding this, employing cross-country and panel data specifications, Davis and Hopkins (2011) found no support for the commonly held belief that democratic political institutions are an important determinant of income inequality but reported strong evidence of a negative relationship between property rights and income inequality. Similarly, Dobson and Ramlogan-Dobson (2012) suggested that there may exist a trade-off between corruption and

income inequality such that at a lower level of corruption, income inequality may be at its highest in Latin America.

In contrast, Acemoglu and Robinson (2010) state that institutional quality determines economic performance, poverty, and inequality. Again leading authors such as Acemoglu and Robinson (2010) argued that poor institutional quality, mainly political institutions, and control of corruption could lead to increased income inequality where only a handful of elites have access to critical resources, which can benefit more from the country's financial development than people with low incomes. The system generalised method of moments(SGMM) by Perera and Lee (2013) indicates that improvements in corruption control, democratic accountability and bureaucratic quality are associated with high-income inequality in Asia from 1985 to 2009. However, a panel data analysis by Josifidis et al.,(2017) indicates that insufficient redistribution and high inequality might be interpreted as the consequence of institutional inertia to disruptive technologies and business changes in 21 OECD countries. Náplava (2020) who assessed the relationship between institutional quality and income inequality in chosen post-Soviet countries using the panel data from 2000 to 2017. The study indicates that increasing institutional quality is associated with growing income inequality, but only to a certain extent; higher institutional quality reduces income inequality from a certain level.

Kunawotor, Bokpin and Barnor (2020) examine the role of institutional quality on income inequality in Africa using the two-step general methods of moments (GMM) from 1990 to 2017). The study suggests that different measures of institutional quality have disparate effects on income inequality in Africa. Thus, institutional quality indicators such as control of corruption and the strict enforcement of the rule of law significantly reduce income inequality. Yet, other institutional quality indicators such as government effectiveness, voice and accountability, regulatory quality, and political stability have an insignificant effect on income inequality. Huynh (2021) postulate that institutional quality reduces income inequality in 36 Asian countries between 2000 and 2018. There is a dearth in the analysis of institutional quality and income inequality in the SADC region. The studies on institutional quality only assessed a single measure of institutional quality (governance index) and economic performance nexus. For example, Malindini (2021) employed the GMM estimation to evaluate the effect of institutional quality measured by government effectiveness on economic performance in SADC countries from 2009 to 2019. The empirical results indicate a negative and statistically significant coefficient for the governance index toward GDP growth.

Wandeda et al. (2021) argued that inclusive public institutions and governance could deliver quality services that improve people's welfare. Thus, inclusiveness could be determined by how the gains are distributed. While most studies have examined institutional quality and income inequality in different countries and regions, empirical research on the SADC region's institutional quality and income inequality is sparse. As a result, analysing a specific region, such as SADC, is crucial. Therefore, there is a need to assess the effectiveness of institutions on income distribution in developing economies such as SADC, whose income inequalities are above 50 (African Development Bank, 2016). This research examines short and long-run relationships for six institutional quality indicators (the rule of law, government effectiveness, regulatory quality, voice accountability, political rights, and corruption control) on SADC income inequality.

2. METHOD

The empirical specification aims to examine the effect of institutional quality on income inequality. The data for the variables used in the research is the secondary data over the period 1980 to 2020 that was obtained from electronic database sources such as the world income

inequality database (WIID), World Bank, PovCalnet, World Integrated Trade Solution (WITS), World Bank and Global economy electronic database World Penn tables. In analysing the income inequality effects of institutional quality, this study adapted and modified the Napalva (2020) model of the relationship between institutional quality and income inequality in post-Soviet countries between 2002 and 2017. The Náplava (2020) model is presented in Equation 1:

$$\boldsymbol{gini_{it} = \alpha + \beta_1 GM_{it} + \beta_2 GDP_{it} + \beta_3 educ_{it} + \beta_4 inv_{it} + \beta_5 open_{it} + \beta_6 gov_{it} + \epsilon_{it} \ldots\ldots\ldots (1)}$$

Where: the dependent variable for income inequality is the Gini coefficient. The main explanatory variable is the institutional quality (GM), which is the government matters indicator represented by six composite indicators of institutional quality, including voice accountability, government effectiveness, control of corruption, the rule of law, regulatory quality, and political. Other explanatory variables are, in addition to real GDP growth (GDP), government education expenditure (educ), net investment in government nonfinancial assets (inv), country openness measures as the volume of imports and exports divided by GDP (open) and government final consumption expenditure (gov). ϵ_{it} denotes the error term, and $i \; and \; t$ denotes country and period, respectively.

Even if the 2 staged least-squares were used by Naplava (2020) to control endogeneity, this study considers the panel autoregressive distributed lag (ARDL) estimator, which is more robust and effective when the time dimensions are greater than the cross-sections, control for endogeneity and also allow long-run relationship analysis. The panel ARDL estimation technique, which consists of the mean group (MG), dynamic fixed effect (DFE) and pooled mean group (MG) estimator, considering the country-specific heterogeneity problem (Samargandi, Fidrmuc & Ghosh, 2014; Pesaran, Shin & Smith,1999). The study modifies the Naplava (2020) model (see Equation 1) into a heterogeneous dynamic panel data model. Therefore, the model for the current paper is now transformed into a reparametrized ARDL (p, q…. q) model. The income inequality model for the present study is specified as

$$\boldsymbol{LINEQ_{it} = \theta\left[LINEQ_{i,t-1} - \lambda_i X_{it}\right] + \sum_{j=1}^{p-1} \zeta_{ij} \, LINEQ_{i,t-j} + \sum_{j=0}^{q-1} \beta_{ij} \, X_{i,t-1} + \omega_i + \varepsilon_{it} \ldots\ldots (2)}$$

$INEQ_{it}$ is the income inequality level for country i at time t measured by the Gini coefficient. the X_{it} represents the explanatory variables and are allowed to be purely 1(0) or 1(1). The explanatory variables include the main independent variable, which is institutional quality. More specifically, the institutional quality is assessed based on six composite indicators: the rule of law (rlw), government effectiveness (gve), regulatory quality (rq), voice accountability, political rights (por), and control of corruption (coc), other explanatory variables include real GDP growth (GDP), real trade openness (rto), financial development (fd), human capital index (hind), unemployment (unem) and inflation (infl). The λ_i is the vector of the long-run relationship. $\boldsymbol{\theta}$is the adjustment coefficient, $\left[INEQ_{i,t-1} - \lambda_i X_{it}\right]$ is the error correction term which represents the long-run information of the model. The error correction model comes with a different operator for the dependent variable. Meaning that once the ARDL is differenced, there will be a loss of lag length. Therefore, the lag length is now p-1 and q-1 ζ_{ij} and β_{ij} are short-run parameters. ω_i and ε_{it} denote the unit-specific fixed effects and the error term, respectively.

Studies (Dobson and Ramlogan-Dobson, 2012b; Lin and Fu, 2016; Náplava, 2020) that assessed the effect of institutions on income inequality have utilised a small number of observations and mostly small T and a bigger N. Hence, they used the pooled OLS, fixed effects and general methods of moments estimation techniques. It is crucial to consider control of endogeneity in the income inequality models, potentially caused by reverse causality, or omitted variables. Other studies, such as Malindini (2021), employed the GMM to assess the effect of institutional quality on economic performances in SADC. The GMM control for endogeneity, but they do not allow long-run relationships. This study employs 16 SADC countries for 41 years. Thus, the use of GMM will lead to instrument proliferation which will bias the inference of the regression result. Again, the GMM does not allow long-run relationships. Therefore, to control for this, this paper employs the panel autoregressive distributive lag estimation technique, which is the pooled mean group (PMG). The preferable estimator is the PMG because it is more informative than its counterparts (Pesaran *et al.,* 1999).

3. RESULTS AND DISCUSSION

3.1 Result

This section presents descriptive statistics, correlation coefficients, stationarity test results and the empirical findings on the effect of institutional quality on income inequality in SADC countries.

3.1.1. Descriptive Statistics

This section summaries the characteristics of the variables in the data set, such as variable mean and standard deviation. The presentation of the descriptive statistics in this section gives a clear picture and an understanding of the collective properties of the elements of the data set and the stylized characteristics of the sample.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ineq	467	.6546142	.0695477	.5279146	.8326869
rlw	352	-.4169886	.7291282	-2.13	1.08
rq	352	-.4867898	.7198118	-2.3	1.13
vac	352	-.2863352	.7265572	-1.73	1.01
gve	352	-.4857386	.7375547	-1.88	1.06
por	647	4.131376	1.827648	1	7
coc	352	-.3491193	.6929988	-1.72	1.23
rgdp	640	3.453979	4.775	-24	26.8
rto	635	43.63315	26.44985	2.064291	143.05
fd	584	22.57449	24.17033	.45	131.0482
hind	568	2.05886	1.38092	1.041064	12.3336
unem	354	12.03738	9.565821	.599	37.94
infl	640	83.97343	981.3996	-72.7	23773.1

Note: ineq is income inequality; rlw-rule of law; gve-government effectiveness; rq-regulatory quality; vac-voice accountability; por-political rights; coc-control of corruption; rgdp-real gross domestic product; rto-real trade openness; fd-financial development; hind-human capital index; unem-unemployment; infl-inflation
Source: *Author's compilation from STATA descriptive statistics results*

Table 1 describes the data for the variables used in the income inequality model. Most importantly, the table shows the standard deviations that show the sample's variations. A cursory look at the data reveals that the average income inequality is 0.66 in the SADC countries

between 1980 and 2021. Thus, the SADC countries make up the most significant proportion of high-income inequality. Again, the standard deviation is small (0.07) when looking at income inequality. This indicates that the levels of income inequality are persistent around the mean. However, the standard deviation for all other variables is large enough to explore the variance in the data. The correlation coefficient among the key determinants of economic growth is presented in the next section.

	lineq	lrlw	lrq	lvac	lgve	lpor	lcoc	lrgdp	lrto	lfd	lhind	lunem	linfl
lineq	1.0000												
lrlw	0.1493	1.0000											
lrq	0.1829	0.9084	1.0000										
lvac	0.1910	0.8961	0.8557	1.0000									
lgve	0.1458	0.9329	0.9122	0.8633	1.0000								
lpor	-0.0570	-0.8168	-0.7767	-0.9345	-0.7899	1.0000							
lcoc	0.3177	0.9146	0.8487	0.8371	0.9064	-0.7272	1.0000						
lrgdp	-0.0219	0.1012	0.1536	0.1221	0.0522	-0.1421	0.0463	1.0000					
lrto	0.1695	0.2268	0.1563	0.1093	0.3394	-0.1251	0.3829	0.0095	1.0000				
lfd	0.0756	0.5762	0.6116	0.5820	0.6836	-0.5542	0.5721	-0.1830	0.2750	1.0000			
lhind	0.0004	0.2517	0.0698	0.2766	0.2316	-0.2640	0.3600	-0.1267	0.2270	0.2189	1.0000		
lunem	0.5622	0.3723	0.4172	0.2609	0.3866	-0.2513	0.4248	0.0240	0.2736	0.2941	-0.0979	1.0000	
linfl	0.0903	-0.0407	0.0216	-0.0538	-0.0976	0.0776	-0.0928	0.1001	-0.1078	-0.2991	-0.3259	0.1115	1.0000

Figure 1. Correlation Coefficient
Source*: Author's Compilation from Stata Pairwise Correlation Regressions*

The coefficient of correlation in Figure 1 shows that the seven indicators of institutional quality and income inequality are positively correlated. The indicators of institutional quality are highly correlated. This means that there is linearity amongst the indicators of institutional quality. Therefore, this analysis does not include the indicators of institutional quality in the same regression model. Again, economic growth and income inequality are negatively correlated, while other explanatory variables positively correlate to income inequality. The correlation coefficient analysis shows negative correlations between economic growth and income inequality. However, real trade openness, financial development, human capital index, unemployment, and inflation positively correlate to income inequality. The other explanatory variables pass the correlation coefficient test because the values of the coefficient of correlation are not more than 0.8. This implies no exact or linear relationship between the variables of interest. They may thus be used in the same model of regression. The following table presents the stationarity test results for all the variables used to analyse income inequality and institutional quality in SADC countries.

3.1.2. Unit root test results

A variable is considered non-stationary if it has no apparent tendency to return to a constant value or a linear trend (Asteriou *et al.,* 2016). The study includes all 16 SADC countries in one panel. Therefore, cross-sectional dependence (see Appendix 5) must be verified before choosing the appropriate unit root tests. The p-values of the Pesaran and Friedman tests are greater than 0.05%. Therefore, the null hypothesis cannot be rejected, meaning no cross-sectional dependence exists in the data across the groups. The paper presents the first (Im Pesaran and ADF) and second-generation (CIPS and CADF) unit root test results (see Table 2) for robust results. The second-generation unit root tests are performed to overcome the shortcoming of the cross-sectional dependence in the first-generation panel unit root test (Hurlin and Mignon, 2007).

Table 2. First- and Second-Generation Panel Stationary Tests Results

	First Generation Unit Root Tests				Second-Generation Unit Root Tests			
	Im Pesaran		ADF		CIPS		CADF	
	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)
C-value					-2.2	-2.21		
Variable	t-stat	t-stat	t-stat	t-stat	t-stat	t-stat	t-stat	t-stat
Lineq	3.3633	-2.8617**	-2.9787**	-3.2506**	-2.925	-2.782	-3.962***	-3.268*
Lrgdp	-108744**	-177964**	-9.5936**	-23.3245**	-3.106	-5.398	-0.102	-4.577***
Lrto	0.1928	-10.6364**	0.5794	-8.4632**	-	-	-0.849	-1.708**
Lfd	-1.614***	-13.2695**	-2.2086***	-10.9661**	-	-	-0.873	-2.476***
Linfl	-5.5139**	-16.2761**	-4.9003**	19.0415**	-3.050	-5.227	-1.614**	-5.696***
Lunem					-	-	-1.075	1.992**
Lhind	3.1536	-0.7440*	0.9857	-0.5363	-	-	-0.294	-4.770***
Lrlw	0.4277	-8.2569***	0.5294	-13.948***	-	-4.309	3.323	-3.867***
Lgve	-2.1541**	-9.0402***	-3.6224***	-16.448***	-	-4.120	1.589	-3.928***
Lrq	-1.2342	-8.8903***	-1.9030**	-16.041***	-	-4.763	1.227	-2.572***
Lvac	1.2927	-7.3903***	1.1767	-11.793***	-	-3.727	1.068	-3.610***
Lpor	-2.916***	-14.993***	-3.8401***	-22.248***	-1.025	-3.268	2.685	-2.340*
lcoc	0.1182	-7.4811***	0.0454	-12.023***	-	-3.981	2.207	-1.745**

Note: C-value denotes critical value; CIPS- Pesaran Cross-sectionally Augmented Im Pesaran and Shin; CADF- Pesaran Augmented Dickey-Fuller (CADF)
*** p<0.01, ** p<0.05, * p<0.1
Source: *Author's compilation from STATA Unit root test result*

The first and second-generation unit root tests in Table 2 show that other variables are stationary at levels l (0) while others are 1(1) at first. The stationarity test results indicate that all the variables are not integrated into order 1(2), which justifies the long-run analysis. Therefore, the current study adopts the panel ARDL (such as PMG, MG, or DFE) estimation technique which is efficient and consistent where the series of variables are not integrated at order 1(1) (Pesaran and Smith, 1995; Pesaran, Shin and Smith, 1999). The models are estimated in ARDL (1) form, as shown in Appendix 1. Therefore, the most common lag for the voice accountability variable is 0. The ARDL dynamic panel model specification was selected by reference to Akaike's Information Criterion (AIC). As a result, the PMG coefficients are obtained by estimating a common ARDL (1,1,1,1,1,1,1,1,1,1,1, 0) (see Appendix 3) for all countries under study. The following section presents the empirical findings on the impact of institutional quality on income inequality based on the PMG estimation technique.

Table 3. The Long-run PMG estimation results on the impact of institutional quality on income inequality.

	(Model 1_rlw)	Model 2_gve	Model 3_rq	Model 4_vac	Model 5_por	Model 6_coc
VARIABLES	ECT	ECT	ECT	ECT	ECT	ECT
ECT	-0.202**	-0.183**	-0.167**	-0.194**	-0.062**	-0.124**
	(0.084)	(0.077)	(0.078)	(0.086)	(0.030)	(0.051)
	LR	**LR**	**LR**	**LR**	**LR**	**LR**
L.lrto	0.0189***	0.026***	0.034***	0.017***	-0.025***	0.021***
	(0.002)	(0.004)	(0.003)	(0.005)	(0.009)	(0.005)
L.lrgdp	0.005***	0.002*	-0.002	0.005***	0.005***	-0.002***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.000)
L.lunem	0.017***	0.004	-0.031***	0.030***	0.028	0.005***
	(0.004)	(0.004)	(0.006)	(0.003)	(0.018)	(0.002)
L.lfd	0.026***	0.025***	0.035***	0.038***	0.069***	0.057***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.009)	(0.004)
L.lhind	0.259***	0.328***	0.106***	0.406***	0.186***	0.063**
	(0.040)	(0.028)	(0.011)	(0.033)	(0.033)	(0.031)
L.linfl	-0.004***	-0.000	-3.00e-05	0.003*	-0.003	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
L.lrlw	-0.062***					
	(0.005)					
L.lgve		-0.062***				

		(0.007)				
L.lrq			-0.082*** (0.007)			
lvac				-0.029*** (0.004)		
L.lpor					0.022*** (0.005)	
L.lcoc						0.020*** (0.005)
Hausman p-value	0.930	0.999	0.989	0.999	1.000	0.997
Constant	0.002 (0.007)	-0.017*** (0.006)	0.041* (0.024)	-0.058** (0.025)	0.002 (0.005)	0.032** (0.015)
Observations	240	240	240	240	277	240

Note: ineq is income inequality; rlw-rule of law; gve-government effectiveness; rq-regulatory quality; vac-voice accountability; por-political rights; coc-control of corruption; rgdp-real gross domestic product; rto-real trade openness; fd-financial development; hind-human capital index; unem-unemployment; infl-inflation

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: *Author's compilation from STATA Panel ARDL Regression results*

Table 3 presents the speed of adjustment results based on the error correction term (ECT) and the short-run (SR) coefficients. The coefficients of the error-correction term are negative and not lower than –2 (that is, within the unit circle). This implies a cointegration relationship between the variables of interest, which means that the linkage between income inequality and the regressors is highly predictable. The spread movement is meanreverting in SADC countries. Table 3 presents the impact of institutional quality on income inequality in SADC countries from 1980 to 2021. The study employed six composite indicators of institutional quality. Therefore, study performed six models to check the effectiveness of institutional quality on income inequality in SADC countries.

The empirical estimation indicates that institutional quality is significant in explaining changes in income inequality in SADC countries. However, the effect is disparate across indicators of institutional quality. Thus, a 1% increase in the rule of law, government effectiveness, regulatory quality, voice accountability, and political stability is associated with 0.07%, 0.06%, 0.08%, 0.03%, and 0.02% reduction in income inequality at 1% significance level, ceteris paribus. This implies that the rule of law, government effectiveness, regulatory quality, voice accountability, and political stability reduce income inequality. The result accords with Huynh (2021) and Náplava (2020), who argue that institutional quality reduces income inequality.

In contrast, a percentage increase in political rights and control of corruption increases income inequality by 0.02% and 0.2%, at 1% significance levels holding other variables constant. This indicates that political rights and control of corruption exacerbate income inequality in SADC countries. The positive effect could be attributed to the weak political rights and control of corruption in the SADC countries, leading to the deterioration of income distribution in the region. Furthermore, the findings show that while SADC governments preach and provide political rights to their citizens, property rights and economic freedom are insecure. As a result, the upheaval is likely to be symptomatic of an institutional environment that fails to protect property rights, just as it fails to ensure orderly political rights, resulting in deteriorating economic freedom and high-income inequality in the region.

This also indicates a lack of well-developed political structure incentives, constitutional provisions, and sound enforcement systems to monitor the extent of special-interest lobbies, enforce contracts impartially, and secure property rights in the long term. This is in line with

Chong and Calderón (2000), who posit that weak institutions increase uncertainties and send mixed signals to the market, thus affecting productive processes and the distribution and allocation of resources. More so, the result is consistent with Acemoglu and Robinson (2012), Perera and Lee (2013) and Josifidis et al.,(2017) who suggest that improvement in institutional quality is associated with high income inequality and that high-income inequality is a result of institutional inertia.

The empirical results also indicate that real trade openness, economic growth, unemployment, financial development, and human capital index positively affect income inequality in SADC countries. However, inflation has a negative effect on income inequality. The positive impact of trade openness on income inequality implies that the benefits are not evenly spread among SADC's rich and poor. The result aligns with Kelbore (2015), who suggests that trade openness boosts demand for higher-skilled workers in lower-skilled economies whose exporting sectors are protected from foreign competition. As a result, they prefer capital production methods to labor production technologies. As a result, less-skilled workers will earn less than skilled workers.

Table 3 also indicates that economic growth increases with income inequality. This supports the Kaldor (1957) hypothesis that the richer have a high marginal propensity to save, which boosts economic growth and income inequality at the same time. The positive and significant effect accords Agusalim and Pohan (2018), who postulate that economic growth exacerbates income inequality in the long term in Indonesia. Again, the result accords with Baudrillard (2011), who advocates that economic growth only produces prosperity and poverty, where prosperity will be for the beneficial side and poverty for the marginal, hence creating wider income inequality.

The empirical results in Table 3 show that high unemployment exacerbates income inequality in SADC countries. The positive effect of unemployment is consistent with Nichols, Mitchell, and Lindner (2013), who postulate that when people become unemployed, they lose their earnings, reducing their income and leading to income inequality. The results accord Cysne and Turchick (2012), Muryani *et al.*, (2021) Zandi *et al.*, (2022)who contend that unemployment contributed to income inequality, particularly among people with low earning capacity.

Furthermore, Table 3 indicates that financial development and human capital index positively and significantly affect income inequality. The positive influence of financial growth on income inequality could thus be because capital market reforms benefit the rich more than the poor, particularly in developing economies such as SADC, thus worsening income inequality. This is because wealthy individuals are more inclined than deprived ones to exploit new opportunities (Coady & Dizioli, 2017). This result is in line with Clarke, Xu and Zou (2006) and Karlan, Ratan and Zinman (2014) who advocate that access to bank credit for people with low incomes may be impeded because of the high costs involved and that financial debt may be regressive for people with low incomes as such.

The positive impact of the human capital index on income inequality would be due to the fact that the level of education in SADC countries does not meet the requirements of economic development, so most educated people appear to be unemployed, depriving them of their income earnings, thus raising the inequality of income. Moreover, poor quality of education may be the cause, which is highly likely to contribute to fewer skills growth and, therefore, lower paid employment in the job market. In contrast, high-quality private education obtained by those who can afford it will lead to higher-paying jobs, increasing income inequality (Wells, 2006). This would be attributed to the early stages of development and the already existing production factor endowment, which means that many SADC countries might

be less skilled. Therefore, if education increases at this stage of development, most unskilled laborers will lose their jobs and earnings, leading to high-income inequality.

The negative effect of the inflation rate on income inequality is inconsistent with the expected apriori of the study. This result is consistent with Heer and Süssmuth (2003), who suggest that inflation reduces income inequality. This could be attributed to the fact that the overall impact of inflation operates through changing the rate of economic growth, the rate of real interest, and the value of wages in SADC countries. Hence, in cases of higher inflation, the interest-rate effect decreases, whilst the asset-value impact can be either negative or positive. Therefore, this could lead to a negative impact of inflation on income inequality.
Empirical estimations in Appendix 3 indicate no evidence of autocorrelation in 14 out of 16 countries. The model's functional form is well specified, and heteroscedasticity exists in all 16 groups. In terms of constancy, the stability of the selected ARDL model specification is evaluated using the CUSUM of the recursive residual test for structural stability, as shown in Appendix 4.

4. CONCLUSION

The study assessed the effect of institutional quality on income inequality in SADC countries using the PMG estimation in SADC countries from 1980 to 2020. The empirical findings indicate that institutional quality significantly affects income inequality in SADC countries. However, the effect is disparate across indicators. Thus, four indicators of institutional quality (the rule of law, government effectiveness, regulatory quality, and voice accountability) reduce income inequality, while the other two (political rights and control of corruption) exacerbate income inequality in SADC countries. This calls for the SADC governments and policymakers to independently treat the institutional quality indicators when addressing income inequality reduction policies. Thus, the SADC governments and policymakers should improve and maintain institutional indicators such as the rule of law, government effectiveness, regulatory quality, voice accountability, and political stability to reduce income inequality.

However, the SADC governments and policymakers should be cautious about political rights and control of corruption when addressing income inequality reduction policies. Thus, there is a need to monitor political rights and control of corruption to reduce income inequality. Indeed, in terms of political rights, SADC governments should not only focus on providing political rights to SADC citizens but there is a greater need to improve democratic rights, particularly economic freedom, in which every citizen should have both political, property and economic rights and freedom to reduce income inequality. Equal income distribution is impossible unless the SADC people are granted political and economic freedom to make a living.

Furthermore, the SADC's anti-corruption efforts are hampered by inequality in political power, with persons with political authority making the laws. Therefore, to enhance income distribution in the SADC region, more emphasis should be placed on corruption control and strict adherence to political rights and economic freedom for all SADC citizens. Again, SADC governments should improve independent institutional organizations that monitor corruption. The positive impact of trade openness, economic growth, financial development, and human capital on income inequality necessitates SADC governments to monitor their exports and imports, reducing inequalities in the financial and educational sectors and allowing all citizens to participate in economic growth activities such as providing financial support to small businesses, as well as increasing economic freedom to reduce income inequality in the region.

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