THE CO-OPERATIVE UNIVERSITY OF KENYA

Proceedings of The Eighth Co-operative University of Kenya (CUK) Annual Scientific Conference & The Third Co-operative Movement stakeholders' Conference,

"THE JOINT CO-OPERATIVE CONFERENCE 2025"

ON

Co-operatives Build a Better World: Re-energizing the Collective Power of Co-operatives in Africa

July 22nd-24th, 2025

Isaac K. Nyamongo - Editor

COOPERATIVE-LED GROWTH AND INSTITUTIONAL QUALITY: EVIDENCE FROM THE GLOBAL NORTH-SOUTH REGIONAL ANALYSIS

Godfrey J. Joseph[1,*] & Alfred S. Sife[1]
[1]Moshi Co-operative University, Moshi, Tanzania,
[*]Corresponding email: godfreyjkweka@icloud.com

ABSTRACT: The role of cooperatives in fostering inclusive growth is unevenly distributed across countries and regions. This disparity is gauged by the World Cooperative Monitor (WCM) data which shows the top 300 performing cooperatives. Invoking the endogenous growth theory, this study analysed the effect of cooperatives on economic growth across Global North-South countries. Specifically, the study used largely available data but widely unused panel data from WCM to analyse the trends and patterns of cooperatives' performance from 2016 to 2023. Furthermore, comparative analysis on the role of cooperatives in bolstering inclusive economic growth was empirically analysed using descriptive statistics and a Bias-corrected linear dynamic fixed/rand effect model and findings were validated by a dynamic GMM estimator. The study sample was drawn from the 30 countries performing well in cooperatives in the world. Descriptively, the findings reveal that cooperatives in the Global South performed less than those in the Global North due to low institutional quality values. Cooperatives in African countries are marginally represented in the global rank. Further analysis shows that cooperatives have positive and significant effect on economic growth and once are supported with a strong institutional quality framework tend to elevate further economic development. The findings of this study shed light on the existing cooperative growth disparities across countries. In this context, members, cooperative leaders, and cooperative development partners are informed to foster contemporary cooperative transformative motives by emphasising policies related to bolstering institutional quality for inclusive growth to occur. An interesting topic for a follow-up study would be documenting and consolidating cooperatives data for the Global South countries which can further enhance empiric studies across regions.

Keywords: Co-operatives, Inclusive Growth, Institutional Quality, Cross Regions Evidence

INTRODUCTION

Cooperative movements are rooted in the 1844 Rochdale model that laid the foundational principles of democratic governance and member-driven equity. Cooperatives are set to put members at the foremost front in mobilising social-economic capital, increasing bargaining power in accessing essential inputs and markets, improving members welfare, creating employment creation, and community empowerment (Bharti, 2021). Generally, cooperatives have dual roles-as a business organisation and as a social entity because they strive for the economic and social welfare of their members. The degree to which cooperatives contribute to economic growth differs across countries and regions anchoring regional disparities (Gupta & Nath, 2024). These disparities underscore the collective initiative of reducing inequalities as emphasized by the Sustainable Development Goal number 10. The effect of institutional

quality on economic growth is well documented. For instance, Bah and Dumbuya (2022) and Rawashdeh *et al.* (2022), cemented the importance of institutional factors, such as control of corruption, in driving economic growth. By extension, Alexiou *et al.* (2020), Gasimov *et al.* (2023) and Nguyen *et al.* (2022) showed that institutional quality has a more substantial positive effect on economic growth compared to financial development. Building on the same argument scholars advocate for a strong institution (secure property rights, rule of law, limited corruption and good governance) in flourishing investment, entrepreneurship and innovation which in turn, increases efficiency in resource allocation and fosters long-term economic growth (Acemoglu *et al.,* 2019; Acemoglu and Robinson, 2021; Bardhan, 2022). However, there is limited studies exploring the role of most performing well cooperatives in the world on economic growth. Worldwide, cooperatives have evolved in terms of structure and formation. Lauer et al. (2024) describes cooperatives in the form of consumer and worker cooperatives, worker cooperatives, cooperative institutions, and health insurance cooperatives. The World Cooperative Monitor (WCM) categorises cooperatives according social and economic sectors namely agriculture and food industries (cooperatives that operate along the entire agricultural value chain starting from the cultivation of agricultural products and livestock farming to the industrial processing of agricultural products, animals and fishing), industries and utilities (It includes workers cooperatives that are active in the management of infrastructure for public services such electricity, rural gas and water), wholesale and retail trade (retailers cooperatives formed to purchase and supply goods and services in the interest of their members often falls under the category of producer and consumer cooperatives typology), insurance cooperatives, financial services (cooperative banks and credit unions), education, health and social work (cooperatives that emanates from educational or health sector services or social works) and other services (housing, cooperative business services, communication and transportation).The performance of cooperatives is often measured through various indicators including number of employees and GDP per capita turnovers. Globally, the number of cooperative employees differs significantly across countries in the global North and South. For example, according to the WCM reports 2018-2023, the number of employees in cooperative sectors in Brazil increased from 40,495 in the year 2027 to 227,036 in the year 2019. Although this figure declined to 165,221 in the year 2020, it rebounded to 215,518 in 2021. The rest of the countries in the Global South have on average less than 5,000 employees except Malaysia which had 6,022 in the year 2021 as shown in Figure 2. Cooperatives in the Global North countries have more strength in terms of employability. For instance, France and German cooperatives have on average 4 times the number of employees as compared to Brazil and 20 times compared to the rest of the global south countries. Cooperatives in other countries including Japan, Italy, Switzerland, the Netherlands United Kingdom and the United States as depicted in Figure have a good number of cooperative employees (see, Figure 1). It is worth noting that number in cooperatives in the Global North countries has been declining (Figure 1). With exception to Brazil, other countries in the Global South have very small number of cooperative employees, and some were ranked just once a year. A mare looks at the cooperative employees in the Global North, German had a total 1,038,926 cooperative employees in the year 2017. Other Global North countries hade below 500,000 number of employees (see Figure 1).

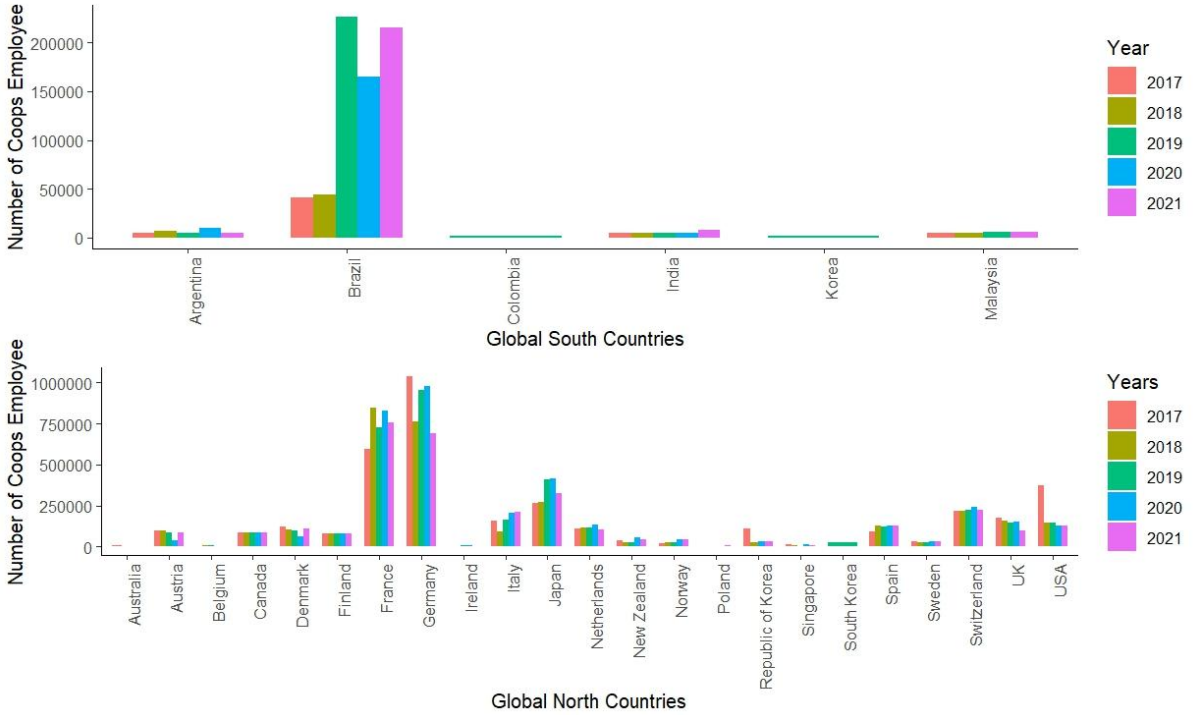

Figure 1: Number of employees in Global South and Global North Regions (WCM reports 2017-2023)

Looking at the cooperative turnover GDP per capita across the regions paints more picture of the role of cooperatives in fostering welfare and economic development. Figure 2 presents cooperative turnover as a proxy variable for cooperative performance over time across countries in the Global North and Global South. The overall picture reveals that cooperatives in the Global North perform better than cooperatives in the Global South. The dominance of Europe and North America in the global cooperative landscape is rooted in their historical cooperative traditions, enabling legal frameworks (Battilani, 2014; Mirabel & Lomuscio, 2025, 2025; Münkner, 2015), mature institutional ecosystems (Renting & Van Der Ploeg, 2001; Taylor, 2021), and well-established organizational infrastructure supporting a cooperative ideology (Boone & Özcan, 2014).

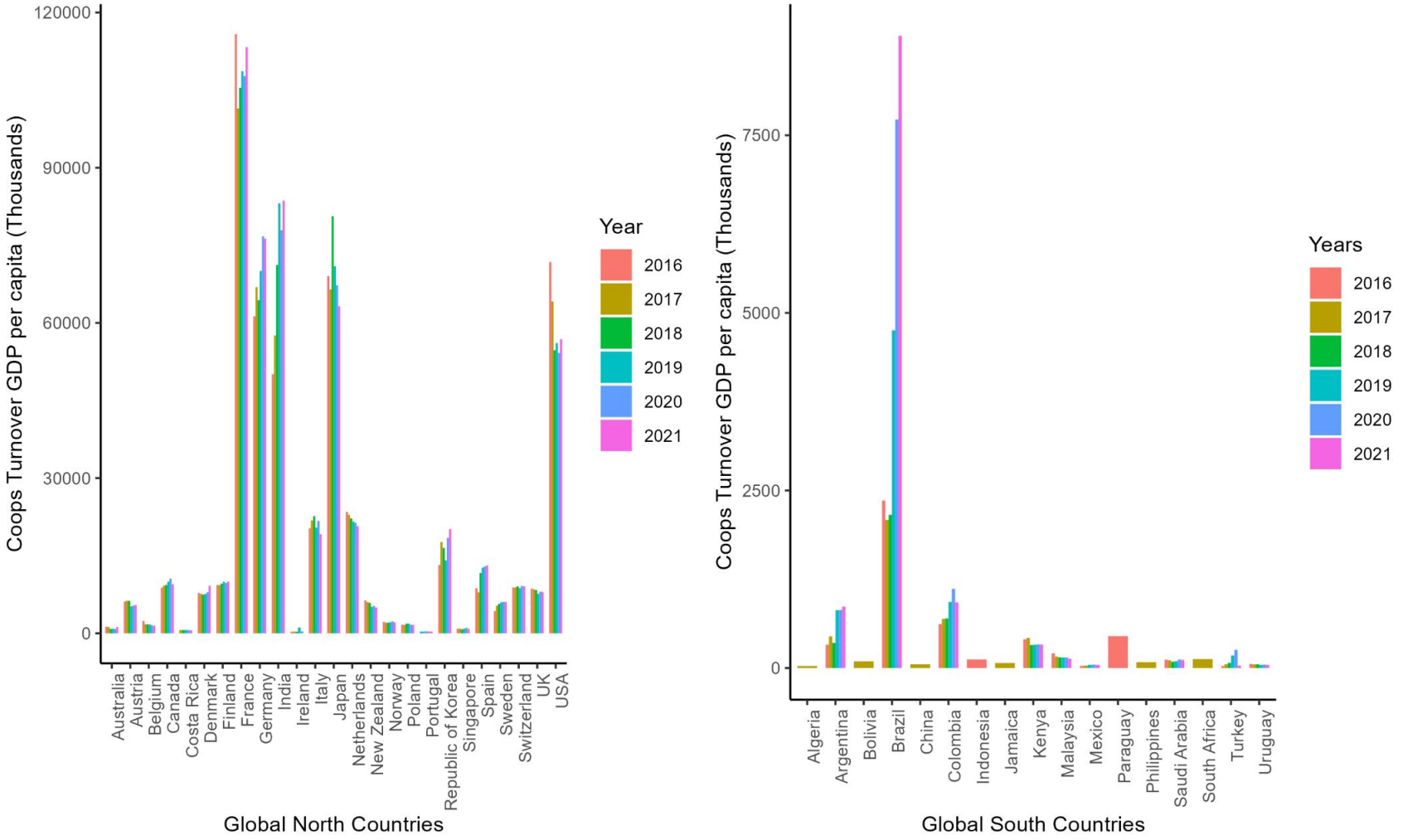
Coops Turnover GDP per capita (Thousands)
120000
90000
60000
30000
0
Year
2016
2017
2018
2019
2020
2021
Australia
Austria
Belgium
Canada
Costa Rica
Denmark
Finland
France
Germany
India
Ireland
Italy
Japan
Netherlands
New Zealand
Norway
Poland
Portugal
Republic of Korea
Singapore
Spain
Sweden
Switzerland
UK
USA
Global North Countries
Coops Turnover GDP per capita (Thousands)
7500
5000
2500
0
Years
2016
2017
2018
2019
2020
2021
Algeria
Argentina
Bolivia
Brazil
China
Colombia
Indonesia
Jamaica
Kenya
Malaysia
Mexico
Paraguay
Philippines
Saudi Arabia
South Africa
Turkey
Uruguay
Global South Countries

Figure 2: Cooperatives Turnover GDP per Capita: Global North and Global South regions (WCM report 2016-2023).

The WCM data further reveals that cooperatives with high turnover GDP per capita are unevenly distributed across regions and countries anchoring a significant regional disparity. Cooperatives in India, France Japan USA and Germany constitute higher turnover GDP per capita in aggregate as compared to other countries in the Global North. As shown in Figure 2 on the left panel, cooperatives turnover to GDP has portrayed a declining trend from the year 2016 to the year 2023 raising a notable concern regarding the contribution of cooperatives on economic growth. On the other hand, the Global South countries have less turnover GDP per capita. It is only Brazil whose cooperatives GDP per capita shows an increasing trend, setting a good example of countries in the Global South (Figure 3). Countries such as Algeria, Philippines, Russia and South Korea appeared only once in the years 2017 and 2018. Other countries in the Global South including Argentina, Colombia, Saud Arabia, Turkey and Uruguay have shown consistency in the cooperative's global ranking though with the low values of cooperative turnovers GDP per capita as compared to the rest of the Global North Countries. In Africa, Kenya is the only country featured in the global cooperative ranking. The large proportion of its cooperatives turnover to GDP came from the financial services sector while the rest of African countries are hardly seen in the global ranking. These imbalances are largely reflective of historical and structural factors. Lele (1981) documented that cooperatives in developed countries have been able to close the gap between growth, distribution and equity because of the well-established marketing, credit and production system. The other argument that in any case, a healthy cooperative movement in developing countries calls for institutional transformations. In similar vein, Pedersen (2002) recommended that developing countries leverage inclusive institutional frameworks and strategic engagement with dominant regional actors to transform cooperatives into agents of participatory regionalism and mitigate entrenched disparities through non-coercive, state-facilitated integration processes. Bianchi & Vieta, (2020), emphasized the reciprocal role of organisations and societies in shaping complex socio-political systems within co-operatives. Cooperatives with higher democratic values in the global North performed better than the cooperatives in the global south although social inclusiveness has an insignificant impact (Gupta & Nath, 2024). The contribution of this study to the body of knowledge is twofold. First, it explores the drivers of cooperatives' success across regions while ironing out the best practices and second, it uses a large but underutilized WCM data set to empirically analyse the way institutional quality indicators have shaped the role of cooperatives on economic growth across Global North-South regions.

MATERIAL AND METHODS

Theoretical thinking: Unlike the foundation assumptions of standard organisations, cooperatives operate under two core principles. Self-management and non-tradability. Under these principles, decisions regarding the cooperative's size, investment and capital are made collectively and directly by identical current workers. Historically, the formation of cooperatives started with the assumption that any period t begins with a set of incumbent cooperatives normalized as $i \hat{1} \; I_t$. An incumbent cooperative i is endowed with an inherent capital stock k_{it} and a set of former workers l_{it-1} . The workers produce output modelled as:

$$y_{it} = F\left(k_{it}, l_{it}\right) \tag{1}$$

Where l denote both the set and the number of workers. Principally, a share of the produced output (p) is immediately distributed to the former workers. Indeed, the current period workers decide how much of the cash flow should be invested to put in place capital to be used in the next period, k_{it-1}

The cooperative principle emphasizes that members should benefit from the cooperative success, therefore, all non-retained earnings are distrusted equally among current workers and retained earnings are set to caution against future uncertainty or to ensure long-term stability and sustainability. These assumptions result in the following consumption levels for a representative young worker of the incumbent cooperative i in the period t :

$$c_{it}^{Y} = \frac{(1-p)y_{it} - k_{it+1}}{l_{it}}, \quad and \quad c_{it+1}^{0} = \frac{py_{it+1}}{l_{it}} \tag{2}$$

The general rule is that the share p gives autonomy young workers an incentive to agree on the retention of earnings for investment that will lead to business turnover. Clearly from equation (1), $p = 0$ young workers will wish to set $k_{it+1} = 0$ as well a case commonly referred to as Forubotn-Peyovich's critique of traditional cooperatives. This critique largely explains why many traditional cooperatives tend to remain small over their life cycle while those with post-retirement attachment including the Mondragon system tend to flourish. To specify the typical production function for a cooperative by augmenting employment and capital accumulation into the production function. The production function with positive inputs takes the form of:

$$F(k,l) = Ak^{a}(l - \underline{l})^{b} \tag{3}$$

Where $A \succ 0, \underline{l} \hat{\imath} (0, L), a \succ 0, \quad and \quad b \succ 0$ are constant parameters. Compared to the familiar neoclassical growth model e.g., the AK model, the cooperative production function as shown in equation (3) is characterized slightly by the unusual property that there is fixed cost in the form of minimum $\underline{l}$ units of labour, which is required independently of the scale of operation. Therefore, the cooperative solves the following maximisation problem:

$$\max_{l_t, k_{t+1}} \log\left(\frac{(1-p)Ak_t^{a}(l_t - \underline{l})^{b} - k_{t+1}}{l_t}\right) + d\left(\frac{pAk_{t+1}^{a}(l_{coop} - \underline{l})^{b}}{l_t}\right) \tag{4}$$

The necessary and sufficient first-order conditions for this problem are presented in equations 5 and 6 as follows:

$$-\frac{1}{(1-p)Ak_t^{a}(l_t - \underline{l})^{b} - k_{t+1}} + \frac{ad}{k_{t+1}} = 0 \tag{5}$$

$$\frac{b(1-p)Ak_t^{a}(l_t - \underline{l})^{b-1}}{(1-p)Ak_t^{a}(l_t - \underline{l})^{b} - k_{t+1}} - \frac{1+d}{l_t} = 0 \tag{6}$$

Equation (5) entails the optimal reinvestment of earnings. The first term is the marginal utility loss from diminished current consumption from an extra unit of investment, whilst the second term is the marginal utility gain from the extra output that investment will deliver next period. The first-order condition in equation(6) determines the optimal current employment

level l_t . The intuition is that the current worker has a positive marginal impact on current output (first term) but also a negative marginal impact on the share of the workers both in the current period and in the next period both of which effects are captured in the second term. This system is easy to solve and yields to:

$$l_t = \frac{1+d}{1+d-b(1+ad)}\underline{l} \circ l_{coop} \quad and \quad k_{t+1} = \frac{ad}{1+ad}(1-p)Ak_t^a\left(l_t - \underline{l}\right)^b$$

(7)

The left side equation reveals that, when expecting a constant labour input in the next period, cooperatives choose a constant labour input in the current period. All this defines the equilibrium cooperative size l_{coop} . Further, the second equation characterizes the investment policy of cooperatives. This policy inherits the conventional proportionality to current income associated with log utility. Therefore, the steady state of the capital accumulation (k^*_{coop}) equation for cooperatives is expressed as follows:

$$k_{t+1} = \frac{ad}{1+ad}(1-p)A\left(\frac{b(1+ad)}{1+d-b(1+ad)}\underline{l}\right)^b k_t^a \qquad (8)$$

Empirical model: Referring to the conceptual model, workers in cooperatives (labour) are treated as an entrant and the entrant's investment policy must maximise the objective for cooperative equilibrium to occur. However, investment is determined by factors outside the basic AK model. It is therefore of interest to extend the AK model as others do to include the institutional quality variables and assess their impact on the success of cooperatives across regions. Other control variables such , trade openness, institutional index are also included. Following the Solow model, the production function in its functional form is specified as:

$$Y_{it} = A_{it}K_{it}^a L_{it}^b \qquad (8)$$

Y_{it} denotes the GDP per capita of the country i at time t . K_{it} is the Physical capital L_{it} stands for labour inputs and A_{it} denotes the total factor productivity which captures the effects of technology and social structures. Output elasticity of capital and labour are represented by a, b . Assume that total factor productivity is modelled by institutional quality, and cooperative strengths as shown in equation (9) and when purged into equation 8 leads to equation 10.

$$A_{it} = A_0 \cdot Coop_{it}^{s_1} . IQlty_{it}^{s_2} \qquad (9)$$

$$Y_{it} = A_0 \cdot Coop_{it}^{s_1} . IQlty_{it}^{s_2} . K_{it}^a . L_{it}^b \qquad (10)$$

Further assumption is made that:

$$s_1 = s_1^* + d.IQlty_{it}$$

(11)

The intuition behind equation (10) and (11) is that the cooperative success is not constant. It depends on other factors such as intuitional quality across regions and other factors encroaching on the vector c . Let now introduce the interaction terms following (Nawaz et

al., 2014; Pedersen, 2002; Siddiqui & Ahmed, 2013) in the log-linearized dynamic Cobb-Douglas growth model as follows:

$$\ln Y_{it} = q \ln Y_{it-1} + a \ln K_{it} + b \ln L_{it} + s_1 \ln Coop_{it} + s_2 \ln IQlty_{it} + d_1 (\ln Coop_{it} . \ln IQlty_{it}) + j \mathbb{C}_{it} + m_i + l_t + e_{it} \quad (12)$$

Data Types and Source: This study utilizes the available secondary data compiled by WCM. These data have been compiled since 2010. Due to data inconsistency in the WCM reports, we organize the data into panel set up only from the year 2016 to 2021. The data were compiled from the top 300 cooperatives in the world. The Turnover GDP per capita (a proxy variable for cooperative performance) were aggregated par cooperative sectors of the country. Thus, only 30 countries were used to inform the analysis.

Table :1 Data source and measurements

Variable	Measurement Unit	Type	Data Source
GDP per capita	Annual growth rate (%)	Growth Rate	WDI
Capital formation	Gross capital formation (% of GDP)	Percentage of GDP	WDI
Labor force	The annual growth rate of the labour force (%)	Growth Rate	WDI
Cooperative performance	Turnover/GDP per capita	Percentage of GDP	WCM
Trade openness	Trade (% of GDP)	Percentage of GDP	WDI
Institution Index	Additive index	0-100	WID

Estimation strategies: To examine the relationship between cooperative-led growth and institutional quality across regions, it is imperative to adopt an estimator capable of addressing endogeneity, feedback effects, and unobserved heterogeneity (Arellano & Bond, 1991; Arellano & Bover, 1995; Mehmood et al., 2023; Nawaz et al., 2014; Siddiqui & Ahmed, 2013; Ullah et al., 2021). By employing lagged levels of endogenous regressors as instruments, dynamic GMM corrects for simultaneity bias (Arellano & Bond, 1991; Khatib, 2025; Ullah et al., 2018). Unlike static estimators such as OLS or fixed effects models, which are limited in dealing with dynamic endogeneity biases (Khan et al., 2023; Kiviet, 1995), dynamic GMM offers consistent and efficient parameter estimates in panels with short time dimensions and persistent explanatory variables (Farzana et al., 2024). As suggested earlier by Arellano & Bover (1995) and Blundell & Bond (1998) the use of the dynamic GMM estimator improves estimation precision by incorporating additional moment conditions in both levels and first differences. The dynamic GMM estimator is particularly suited for modelling persistent variables such as institutional quality and cooperative development, while effectively addressing endogeneity and bidirectional causality in the cooperative-growth relationship (see, Arellano & Bond, 1991; Roodman, 2009). For a robustness check of the result, a bias-corrected linear dynamic model is also employed following (Breitung et al., 2022) and as applied by (Kweka, 2023, 2024).

FINDINGS AND DISCUSSION

Performance of Cooperatives across regions and sectors: Turnover GDP per capita from agriculture and food industries varies widely across regions and countries. Based on the data from WCM for 2016 to 2023, there are only five countries from the Global South whose cooperatives turnover GDP per capita were ranked high among the 300 cooperatives in the world. Figure 4 presents the cooperative's turnover GDP per capita coming from the agriculture and food industries whereby Brazil, Argentina Colombia, Turkey and Uruguay

have consistently ranked among the countries ranked with the top 300 cooperatives performing well in the world. However, their performance is less than the counterpart Global North Countries whose turnover GDP per capita are higher than that of the Global South. Furthermore, there are 21 countries whose cooperatives in agricultural and food industries consistently remain among the best 300 cooperatives.

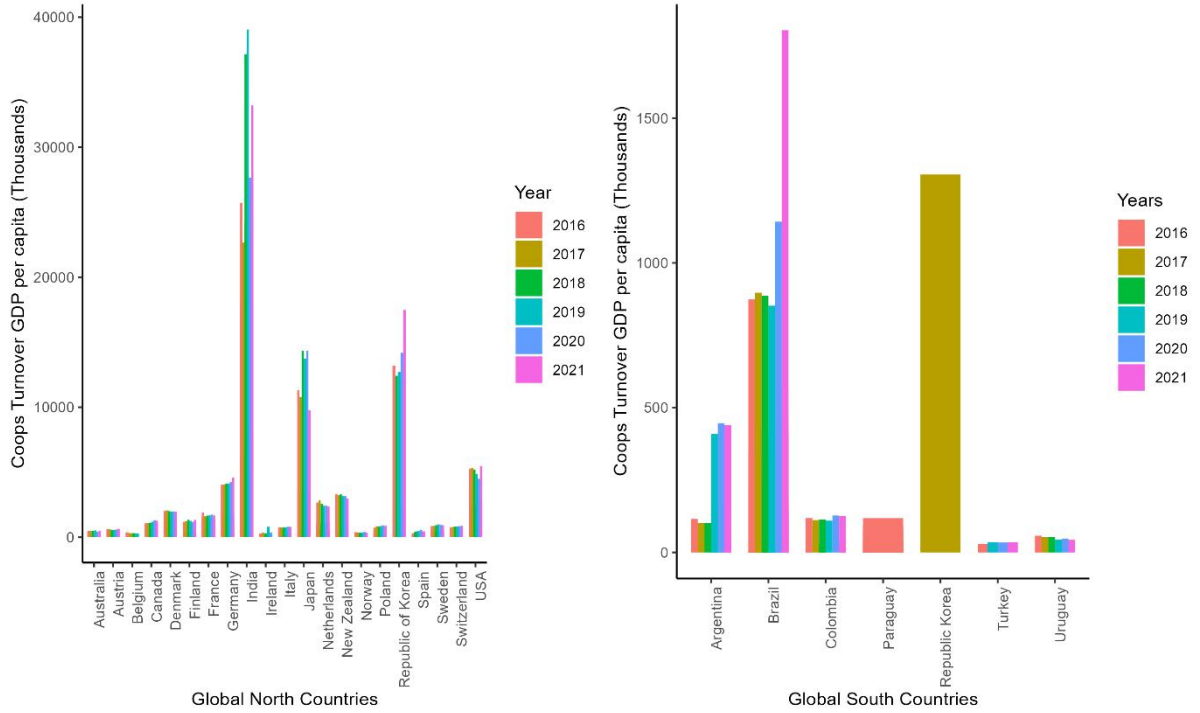

Figure 3: Agriculture and Food industries turnover GDP per capita: Global North and Global South regions(WCM report 2016-2023).

Global South Countries still performing below the Global North Countries. Figure 4 shows the contribution of insurance cooperatives to GDP per capita across Global South and Global North Countries. Interestingly, for the first time Kenya an East African Country was ranked among the top 300 cooperatives in the world. Insurance cooperatives in Kenya, contributed around 91,792.48 turnovers to GDP surpassing those of South Africa, Philips and Argentina in the year 2017. However, since then these countries could not maintain their status for the subsequent years. The contribution of insurance cooperatives to turnover GDP per capita in countries like Argentina, Colombia and Saudi Arabia has consistently improved, however, their performance is quite below the Global North countries. The turnover GDP per capita contributed by the insurance cooperatives are very robust in countries like Japan, Germany, France, the USA and the Netherlands, see Figure 4 on the left panel.

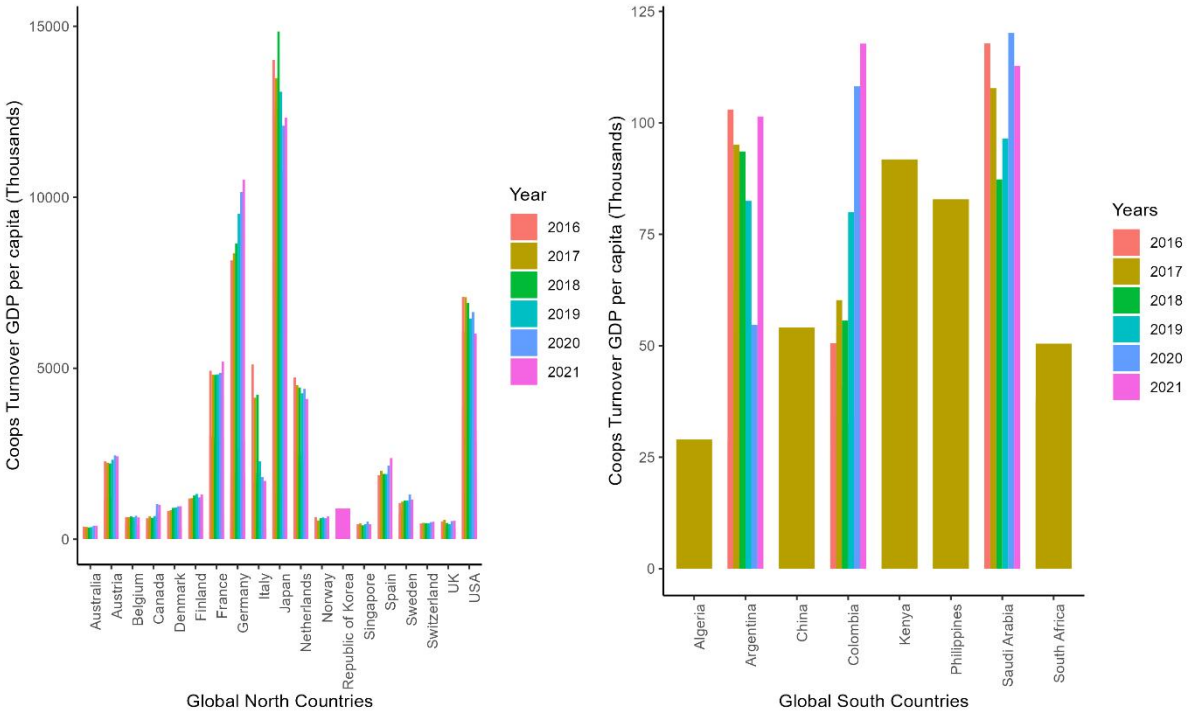

Figure 4: Turnover GDP per capita of Insurance Cooperatives: Global North and Global South regions (WCM report 2016-2023).

Further inspection of the performance of the turnover GDP per capita of cooperatives dealing with financial services reveals that five countries from the Global South (Brazil, Kenya, Malaysia, Argentina and Mexico) were ranked among the top 300 between the year 2016 to 2023. Though most cooperatives in the Global South are formal, however, somehow, they still operate in the dark economy which entail less compilation of cooperatives GDP per capita data. As shown in Figure 6, turnover GDP per capita emanating from the financial cooperatives in Brazil exhibit higher turnover GDP per capita rising from around 400,000 in the year 2016 to over 450,000 in the year 2021. This growth reflects the strength of the cooperative economy positioning Brazil as a leading example of cooperative development in the southern hemisphere. Interestingly, the cooperative turnover GDP per capita denote a stable performance in Kenya, again, the only African country that featured consistently among the top 300 in financial cooperatives. The turnover GDP per capita stood at 370,980.82 in the year 2016 but declined to 327,999 in the year 2019 which is equivalent to a 13% decrease over three years. This performance reflects that Kenya has strong cooperative infrastructures, and institutional resilience in cooperative enterprises, especially in the financial sector. As shown in Figure 6, turnover GDP per capita declined by 0.6% perhaps due to the impact of Covid-19 that disrupted the supply chain and income flows.

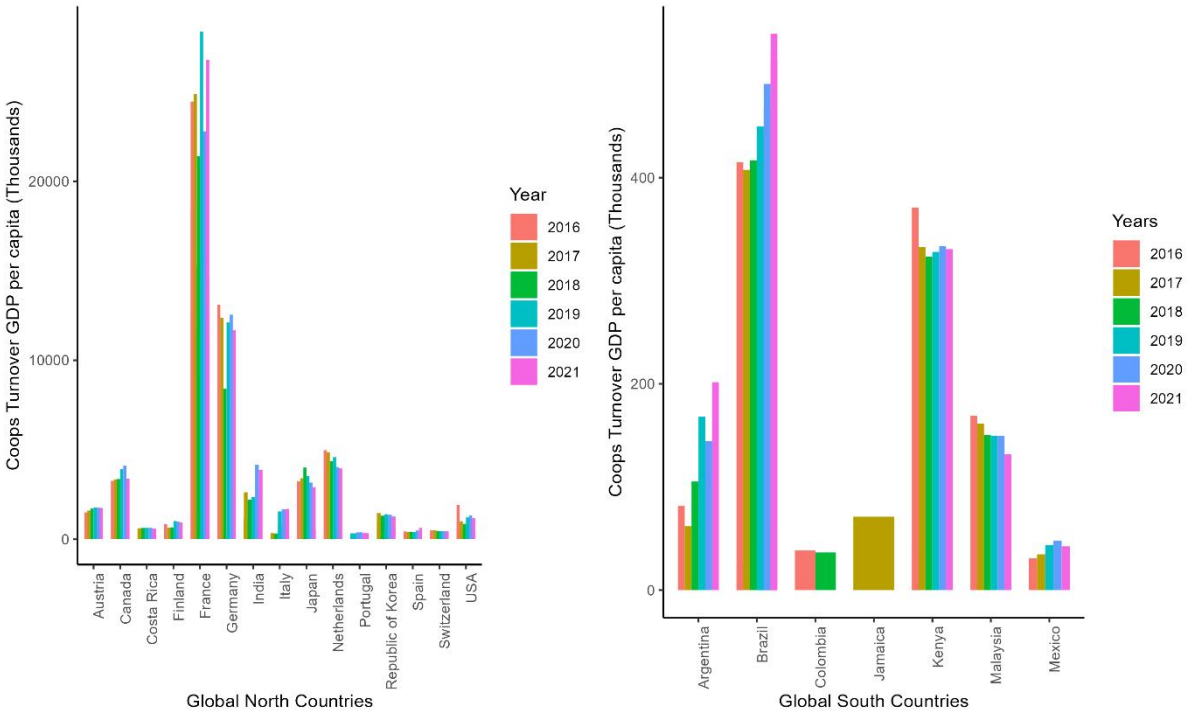

Figure 5: Financial Cooperative Turnover GDP Per capita: Global North and Global South regions, (WCM report 2016-2023).

Looking at the left-hand panel in Figure 5, the Global North Countries have more strength relative to the Global South countries though with country-specific heterogeneity. Consistently, countries such as France, and Germany have the highest values of turnover GDP per capita exceeding 10,000,000. Netherlands, Canada, India, Italy and Japan have turnover GDP per capita exceeding 20,000. The performance of financial cooperatives in the Global North is attributed to the strength and institutional maturity of their cooperative structure. Nevertheless, only a few countries making notable contributions to the total turnover GDP per capita which in aggregate might underscore the role of cooperatives in fostering regional economic development. Education, health and social work cooperatives are less common in both the Global North and South countries. There are only five countries in the World with notable cooperatives with turnover GDP per capita in the sector of education, health and social work though their performance is relatively low as shown in Figure 6. The USA is leading by examples followed by Spain and Japan from the Global North Countries.

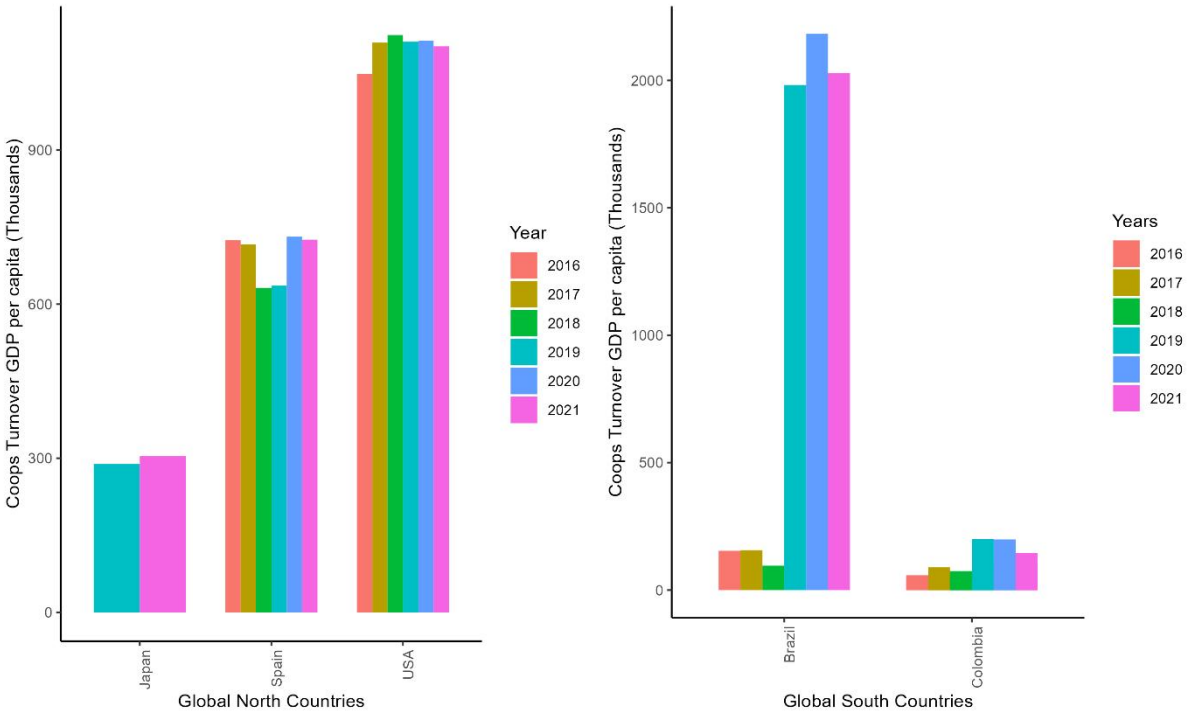

Figure 6: Education, health and social work Turnover GDP Per capita: Global North and Global South regions, (WCM report 2016-2023).

In the Global South Countries, only Brazil and Colombia were featured. Further analysis shows that African cooperatives in the sectors of education, health and social work are not among the top 300 cooperatives in the world. Industry and utility cooperatives ranked among the top 300 cooperatives using turnover GDP are skewed to the Global North countries. Indeed, there are only four (Spain, India, Italy and the USA) countries that have shown consistency from the year 2016 to 2023. Belgium appeared in 2017, and Japan was seen on the list in the years 2019,2018 and 2020.

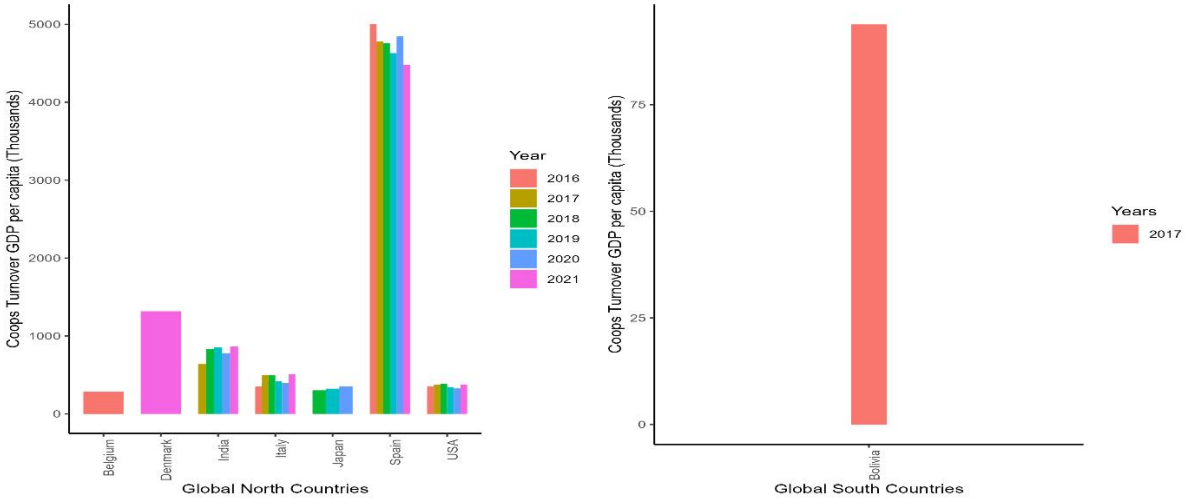

Figure 6: Industry and Utility Turnover GDP Per capita: Global North and Global South regions, (WCM report 2016-2023).

Industry and utility cooperatives turnover per capita data shows that Spain, India and USA have good performance from the Global North. It is noted Denmark re-emerged in the year 2021 in the global rank. In the Global South, only one country (Bolivia) appeared on the list in the year 2017. This shows that industry and utility cooperatives are less established in the Global South countries perhaps due to their focus on agricultural and informal services often entrenched with limited industrial capital and weak institutional quality indicators.

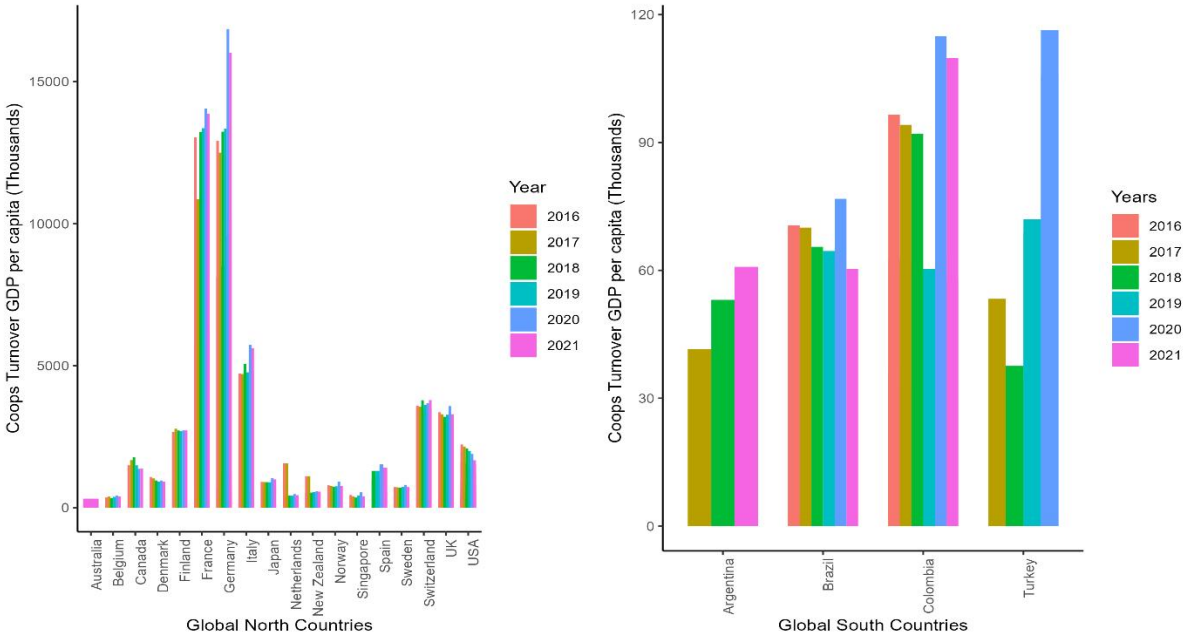

Figure 8: Wholesales and Retails Cooperative Turnover GDP per capita: Global North and Global South regions,(WCM report 2016-2023).

The performance of wholesale and retail cooperatives also shows huge disparities across regions see Figure 8. Wholesale and retail cooperatives in Global North countries have an average turnover GDP per capita ranging from 1,000,000 to over 15,000,000 while that of Global South ranges from 30,000 to 120,000. Wholesale and retail cooperatives in the Global South countries-maintained consistence in the global ranks, however, only four countries emerged though with very small values of cooperative turnover GDP per capita as compared to the Global North Countries. The cooperative turnover GDP per capita in the category of other services across the two regions, only four countries (Argentina, Brazil, Colombia and Turkey) from the Global south emerged in the cooperative global ranks. Further observation indicate that these countries appeared only once in the year 2016, however, with small values of turnover GDP per capita compared to the Global North countries (see, Figure 9).

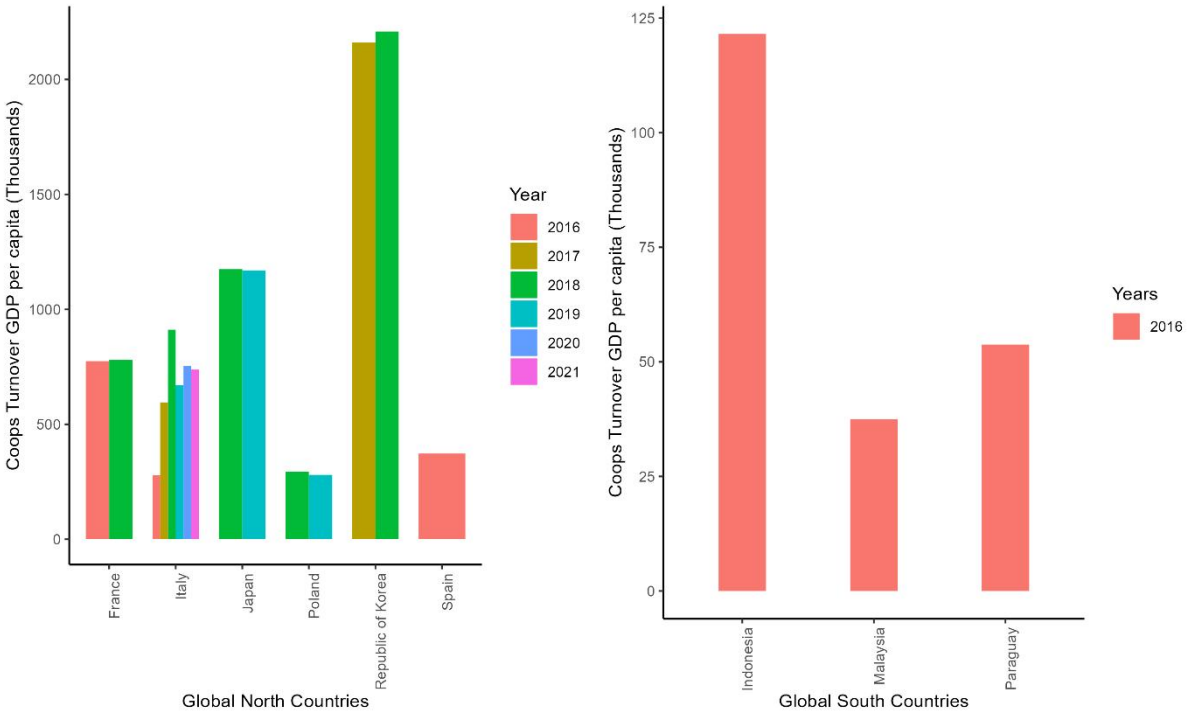

Figure 8: Other services Cooperative Turnover GDP per capita: Global North and Global South regions, (WCM report 2016-2023).

The performance of other services turnover GDP per capita is consistently noted to Italy while other countries in the Global North were ranked once and twice in the global cooperatives landscape. The intuition of this finding shows that the performance of other services turnover GDP per capita are notably low in global perspective.

Effects of cooperatives on economic growth: The diagnostic results from the Arellano-Bond dynamic panel estimation provide compelling evidence that supports the reliability of the estimated model. The Arellano-Bond autocorrelation test reveals significant first-order (AR (1)) and second-order (AR(2)) serial correlation in the first-differenced both rejecting the null hypothesis of no serial correlation. However, the Sargan-Hansen test of overidentifying restrictions indicates no evidence against the validity of the instruments. The null hypothesis of valid instruments is not rejected. This lends credibility to the choice of instruments and supports the internal consistency of the estimation procedure. Panel cointegration tests confirms the existent of long-run relation ship between cooperative growth and economic growth (see, appendix I)**.** The empirical findings indicate that the lagged GDP per capita variables have a negative and statistically significant coefficient. The intuition is that countries with higher income levels tend to grow more slowly. In context, a one-cent increase in GDP per capita in the previous year leads to a 0.35% to 0.49% reduction in current growth indicating the expected moderation in growth as economies mature. Consistent with the growth theories, Gross Fixed Capital Formation, a proxy variable for capital investment has a positive and significant effect on economic growth. This highlights the perseverance and importance of capital investment in countries with the highest cooperative turnover GDP per capita in the world.

Empirical findings

Table 4: Short-run Effects across Estimation Methods

	B-CLD-REM	B-CLD-FEM	Two Step-Dynamic-GMM
L.GDP per capita (Annual%)	-0.4199***	-0.3472***	-0.4966***
	(0.077)	(0.110)	(0.042)
Gross Fixed Capital Formation (Annual%)	0.0279***	0.0219**	0.0160**
	(0.005)	(0.009)	(0.007)
Population (% Total)	0.1844**	0.1888	0.6015
	(0.081)	(0.723)	(0.581)
Cooperative Growth (%)	0.2979**	0.3970**	0.6095***
	(0.116)	(0.176)	(0.123)
ln(InstIndesx)	-0.5350	3.1756	11.4730*
	(0.574)	(11.942)	(6.470)
Cooperative Growth ´ Labour Force	-0.2181	-0.0095	0.6316**
	(0.134)	(0.163)	(0.265)
Cooperative Growth ´ GFCF	0.0035**	0.0034**	0.0007
	(0.002)	(0.002)	(0.002)
Cooperative Growth ´ Trade	-0.0693***	-0.0743***	-0.0729**
	(0.019)	(0.020)	(0.035)
Cooperative Growth ´ ln(InsIndex)	2.6899*	0.1332	7.9890**
	(1.523)	(2.002)	(3.496)
Inflation	0.0230***	0.0442***	0.0494***
	(0.005)	(0.014)	(0.007)
Constant	-11.6173*	-35.9033	-
	(6.780)	(78.788)	-
Sargan Hansen Test (P-Value)			1.0000
AR(1)			0.0048
AR(2)			0.6346
N	149	149	149

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ and InsIndex denotes institutional index

The estimated coefficients of the interaction terms trade openness and cooperative growth reveal a negative and significant effect on economic growth. For instance, a one per cent increase in the interaction term leads to a reduction of GDP on average by 0.06 percent as shown by both bias-corrected linear dynamic random and dynamic GMM models. The intuition of these findings is that cooperatives may face competitive disadvantages and may not fully align with the repaid dynamics of global trade. In the same vein, the interaction terms (cooperative growth and fixed capital investment) have a positive effect on economic growth. Further analysis shows that cooperatives have a positive and significant effect on economic growth. Thus, one-point increase in the growth of cooperatives is associated with the 0.29, 0.39 and 0.60 percent respectively (see Table 4). Interesting findings emerged as institutional quality interacted with cooperative growth. The estimated coefficients have positive signs, and they are both statistically significant at 10 and 5 percent levels for B-CLD-REM and Two Step-Dynamic-GMM. These findings emphasize the important roles of good governance, regulatory quality, and institutional stability in general in helping cooperatives to function as effective contributors to economic growth. Intuitively, the findings suggest that cooperatives have huge potential to contribute to economic growth, however, their economic impact is highly dependent on the supportive institutional framework.

CONCLUSION AND POLICY RECOMMENDATION

This study explored the channel through which institutional quality affects economic growth using a pooled dataset for 30 countries with the top 300 performing well cooperatives in the

world. Due to data limitations, the study used estimators that are sensitive to low time horizons data. It was found that, cooperatives in the Global South hemisphere performed less than the cooperatives in the Global North and the disparities in terms of the number of employment and turnover GDP per capita is very huge. Cross-examination through turnover GDP per capita of cooperatives across sectors finding shows that the cooperatives in the Global South are left far away by counterpart cooperatives in the Global North though the magnitude differs across sectors. Brazil is a good example of the countries with cooperatives doing well in the Global South. Further observations reveal that turnover GDP per capita for the cooperative in African countries have not featured/ranked in the global cooperative landscape in aggregate from the year 2016 to 2123. One of the interesting findings when considering sectorial contribution is that insurance and financial cooperatives in Kenya emerged as an outlier in bolstering the success of cooperatives in African countries. Further empirical analysis showed that cooperatives have positive relationship with economic growth and the institutional quality indirectly influence the path of economic growth. These findings call for cooperatives in the Global South to widen their scope and improve their institutional quality indicators. African cooperatives have a huge potential mobilise workers across sectors to form strong cooperatives. An interesting topic for a follow-up study would be documenting and consolidating cooperatives data for the Global South countries which can further enhance empirical studies across regions.

REFERENCES

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, *58*(2), 277–297.

Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, *68*(1), 29–51.

Battilani, P. (2014). Features and Determinants of Co-operative Development in Western Countries. In C. Gijselinckx, L. Zhao, & S. Novkovic (Eds.), *Co-operative Innovations in China and the West* (pp. 11–28). Palgrave Macmillan UK. https://doi.org/10.1057/9781137277282_2

Bharti, N. (2021). Role of cooperatives in economic empowerment of women: A review of Indian experiences. *World Journal of Entrepreneurship, Management and Sustainable Development*, *17*(4), 617–631. https://doi.org/10.1108/WJEMSD-07-2020-0095

Bianchi, M., & Vieta, M. (2020). Co-operatives, territories and social capital: Reconsidering a theoretical framework. *International Journal of Social Economics*, *47*(12), 1599–1617.

Birchall, J. (2013). *Resilience in Downturn: The Power of Financial Cooperatives: International Labour Organization*. Geneva.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143.

Boone, C., & Özcan, S. (2014). Why Do Cooperatives Emerge in a World Dominated by Corporations? The Diffusion of Cooperatives in the U.S. Bio-Ethanol Industry, 1978–2013. *Academy of Management Journal*, *57*(4), 990–1012. https://doi.org/10.5465/amj.2012.0194

Borda-Rodriguez, A., & Johnson, H. (2020). Inclusive Development and Co-operatives. *The European Journal of Development Research*, *32*(4), 976–997. https://doi.org/10.1057/s41287-019-00249-9

Breitung, J., Kripfganz, S., & Hayakawa, K. (2022). Bias-corrected method of moments estimators for dynamic panel data models. *Econometrics and Statistics*, *24*, 116–132.

Chen, Y., Pei, W., Ma, T., & Xiao, H. (2023). Asymmetric Nash bargaining model for peer-to-peer energy transactions combined with shared energy storage. *Energy*, *278*, 127980.

Dickinson, P., Warhurst, C., Feliciano, I., Luigi, C., & Demetriades, S. (2019). *Cooperatives and social enterprises: Work and employment in selected countries*. Publications Office of the European Union. https://wrap.warwick.ac.uk/145062/

Farzana, A., Samsudin, S., & Hasan, J. (2024). Drivers of economic growth: A dynamic short panel data analysis using system GMM. *Discover Sustainability*, *5*(1). https://doi.org/10.1007/s43621-024-00612-9

Geffersa, A. G. (2024). Agricultural cooperative membership and welfare of maize farmers in Ethiopia: Insights from panel data analysis. *Annals of Public and Cooperative Economics*, *95*(4), 1223–1250. https://doi.org/10.1111/apce.12481

Gupta, D., & Nath, P. K. (2024). Why Do Cooperatives Succeed? A Comparative Analysis of the Global South and North. *International Journal of Rural Management*, *20*(1_suppl), S105–S122. https://doi.org/10.1177/09730052231224575

Herbel, D., Rocchigiani, M., & Ferrier, C. (2015). The role of the social and organisational capital in agricultural co-operatives' development Practical lessons from the CUMA movement. *Journal of Co-Operative Organization and Management*, *3*(1), 24–31.

International Cooperative Alliance & Euricse (2023). *World Cooperative Monitor 2017-2023: Exploring the cooperative economy. International Cooperative Alliance.*

Khan, H., Dong, Y., Bibi, R., & Khan, I. (2023). Institutional Quality and Foreign Direct Investment: Global Evidence. *Journal of the Knowledge Economy*, *15*(3), 10547–10591. https://doi.org/10.1007/s13132-023-01508-1

Khatib, S. F. (2025). An assessment of methods to deal with endogeneity in corporate governance and reporting research. *Corporate Governance: The International Journal of Business in Society*, *25*(3), 606–630.

Kiviet, J. F. (1995). On bias, inconsistency, and efficiency of various estimators in dynamic panel data models. *Journal of Econometrics*, *68*(1), 53–78.

Kweka, G. J. (2023). Terms of trade volatility and tax revenue in Sub‐Saharan African countries. *Annals of Public and Cooperative Economics*, apce.12455. https://doi.org/10.1111/apce.12455

Kweka, G. J. (2024). Electricity fluctuations and tax revenue in Sub-Saharan Africa: Insights from a bias-corrected linear dynamic panel model. *Cogent Economics & Finance*, *12*(1), 2361040. https://doi.org/10.1080/23322039.2024.2361040

Lauer, R., Merkel, S., Bosompem, J., Langer, H., Naeve, P., Herten, B., Burmann, A., Vollmar, H. C., Otte, I., Brand, A., Brand, H., Clemens, T., Geller, S., Hinzmann, A., Huhnt, J., Kerstan, L., Venne, J., & on behalf of the Coop4Health.NRW Consortium. (2024). (Data-) Cooperatives in health and social care: A scoping review. *Journal of Public Health*. https://doi.org/10.1007/s10389-024-02226-x

Lele, U. (1981). Co-operatives and the poor: A comparative perspective. *World Development*, *9*(1), 55–72.

Levi, Y., & Davis, P. (2008). Cooperatives as the "enfants terribles" of economics: Some implications for the social economy. *The Journal of Socio-Economics*, *37*(6), 2178–2188.

Ma, W., Marini, M. A., & Rahut, D. B. (2023). Farmers' organizations and sustainable development: An introduction. *Annals of Public and Cooperative Economics*, *94*(3), 683–700. https://doi.org/10.1111/apce.12449

Mehmood, W., Mohy Ul Din, S., Aman - Ullah, A., Khan, A. B., & Fareed, M. (2023). Institutional quality and economic growth: Evidence from SOUTH - ASIAN countries. *Journal of Public Affairs*, *23*(1). https://doi.org/10.1002/pa.2824

Mirabel, T., & Lomuscio, M. (2025). Explaining the rarity gap of worker cooperatives between France and Italy. *International Review of Applied Economics*, *39*(2–3), 306–330. https://doi.org/10.1080/02692171.2025.2478949

Münkner, H.-H. (2015). *Co-operative principles and co-operative law* (Vol. 34). LIT Verlag Münster. https://books.google.com/books?hl=en&lr=&id=ZxK5CgAAQBAJ&oi=fnd&pg=PA1&dq=The+dominance+of+Europe+and+North+America+in+the+global+co-operative++and+legal+frameworks&ots=5j1kK56qj5&sig=2zzq6WluIOPIeXDsefVPrwtNC9Q

Nawaz, S., Iqbal, N., & Khan, M. A. (2014). The impact of institutional quality on economic growth: Panel evidence. *The Pakistan Development Review*, 15–31.

Pedersen, T. (2002). Cooperative hegemony: Power, ideas and institutions in regional integration. *Review of International Studies*, *28*(4), 677–696.

Raniga, T. (2021). Role of economic development cooperatives in improving the livelihoods of women in Gauteng, South Africa. *Development Southern Africa*, *38*(4), 591–606. https://doi.org/10.1080/0376835X.2021.1906628

Renting, H., & Van Der Ploeg, J. D. (2001). Reconnecting nature, farming and society: Environmental cooperatives in the Netherlands as institutional arrangements for creating coherence. *Journal of Environmental Policy & Planning*, *3*(2), 85–101. https://doi.org/10.1002/jepp.75

Roodman, D. (2009). How to do Xtabond2: An Introduction to Difference and System GMM in Stata. *The Stata Journal: Promoting Communications on Statistics and Stata*, *9*(1), 86–136. https://doi.org/10.1177/1536867x0900900106

Siddiqui, D. A., & Ahmed, Q. M. (2013). The effect of institutions on economic growth: A global analysis based on GMM dynamic panel estimation. *Structural Change and Economic Dynamics*, *24*, 18–33.

Taylor, K. (2021). An analysis of the entrepreneurial institutional ecosystems supporting the development of hybrid organizations: The development of cooperatives in the US. *Journal of Environmental Management*, *286*, 112244.

Ullah, S., Akhtar, P., & Zaefarian, G. (2018). Dealing with endogeneity bias: The generalized method of moments (GMM) for panel data. *Industrial Marketing Management*, *71*, 69–78.

Ullah, S., Zaefarian, G., & Ullah, F. (2021). How to use instrumental variables in addressing endogeneity? A step-by-step procedure for non-specialists. In *Industrial Marketing Management* (Vol. 96, pp. A1–A6). Elsevier. https://www.sciencedirect.com/science/article/pii/S0019850120302078

Verhofstadt, E., & Maertens, M. (2015). Can Agricultural Cooperatives Reduce Poverty? Heterogeneous Impact of Cooperative Membership on Farmers' Welfare in Rwanda. *Applied Economic Perspectives and Policy*, *37*(1), 86–106. https://doi.org/10.1093/aepp/ppu021

APPENDIX 1

Variance inflation factor

	VIF	1/VIF
Inflation	1.238	.807
Institutional Index	1.222	.818
GCF	1.129	.886
Population	1.034	.967
Cooperative Growth	1.016	.984
Mean VIF	1.128	.

Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) GDP per capita	1.000					
(2) GCF	0.317	1.000				
(3) Population	0.097	-0.141	1.000			
(4) Cooperative Growth	-0.058	-0.114	-0.027	1.000		
(5) Institutional index	-0.070	0.135	-0.120	-0.042	1.000	
(6) Inflation	0.358	0.204	-0.002	-0.022	-0.357	1.000

Summary statistics

	Max	Min	Mean	Skewness	Kurtosis
GDP per capita	14.362	-11.374	1.28	-.435	4.764
GCF	157	1	75.55	.209	1.936
Population	78.031	55.98	65.948	.49	4.301
Cooperative Growth	3.227	-4.593	-.011	-.734	12.869
Institutional index	6.384	5.152	6.068	-1.123	2.972
Inflation	175	1	86	.04	1.765

Panel Cointegration Test

	Kao	Pedroni		Westerlund	
Modified Dickey–Fuller	- 1.4138 *	Modified Phillips–Perron	-7.4913 *	Variance ratio	-8.5754 *
	(0.0787)		(0.000)		(0.0000)
Dickey-Fuller	-9.4804*	Phillips–Perron	-26.5812*		
	(0.0000)		(0.0000)		
Augmented Dickey-Fuller	-4.3937 *	Augmented Dickey-Fuller	-8.584e+14 *		
	(0.0000)		(0.0000)		
Unadjusted- Modified Dickey–Fuller	-3.2206 *				
	(0.0000)				
Unadjusted- Dickey–Fuller	-10.3550 *				

	(0.0000)		

Note * p < 0.1, ** p < 0.05, *** p < 0.01 are the respective significant levels at 1%, 5% and 10%.

Countries involved in the analysis

Countries			
Argentina	Colombia	Italy	Norway
Australia	Denmark	Japan	Poland
Austria	Finland	Kenya	Republic of Korea
Belgium	France	Malaysia	Saudi Arabia
Brazil	Germany	Netherlands	Singapore
Canada	India	New Zealand	Spain
Sweden	Switzerland	Turkey	UK
USA	Uruguay		

The Co-operative University of Kenya
P.O. Box 24814-00502, KAREN, NAIROBI
TEL: +254 202430127/202679256
Mobile(office): +254 724311606
Conference link: https://conference.cuk.ac.ke/