The impact of globalization on domestic growth in Africa

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Abstract

Research into the impacts of globalization on domestic growth in Africa has been scarce and the results of the research that does exist have been mixed. This research addresses this gap in the literature by using the newly revised KOF Globalization Index to determine the impact of social, political, and financial globalization on African economies. The KOF Index was revised substantially in 2019. Our full data set includes 40 years of data, from 1980-2019. Findings indicate that the relationship between globalization and GDP is best represented by a non-linear cubic model. With that model, social globalization has become Africa's most important predictor of GDP, particularly in the most recent ten-year period. Economic globalization was also a small, but significant, predictor. Implications for policymaking are also discussed.

The Impact of Globalization on Domestic Growth in Africa

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Abstract

Research into the impacts of globalization on domestic growth in Africa has been scarce and the results of the research that does exist have been mixed. This research addresses this gap in the literature by using the newly revised KOF Globalization Index to determine the impact of social, political, and financial globalization on African economies. The KOF Index was revised substantially in 2019. Our full data set includes 40 years of data, from 1980-2019. Findings indicate that the relationship between globalization and GDP is best represented by a non-linear cubic model. With that model, social globalization has become Africa's most important predictor of GDP, particularly in the most recent ten-year period. Economic globalization was also a small, but significant, predictor. Implications for policymaking are also discussed.

Keywords: KOF Index, nonlinear regression model, GDP growth, economic development

Introduction

Globalization has increased over the past several decades as the flow of goods, services, labor, and capital across international boundaries has intensified with barriers to entering national markets declining. The primary motivation for a country to open its markets to foreign participants would be the belief that *playing by global rules* would lead to greater national economic growth. Furthermore, as national economies grow and develop, the standard of living of their citizens should rise. There are many potential benefits to a country that allows greater access to its markets. (International Monetary Fund et al., 2017). Friedman (1999) argued for the positive effects of globalization on economic development. He posited that globalization acts as a transformative force that opens markets, promotes efficiency, and engenders prosperity. It often gains greater access to foreign labor, capital, and natural resources as a result.

A country would normally weigh these benefits against the potential costs such as increased global competition and the potential harm to domestic industries (and workers), and harmful environmental impacts. Stiglitz (2002) argued that globalization, in its existing form, has disproportionately benefited wealthy nations at the expense of developing countries. His arguments are especially relevant to Africa, where the asymmetry in the distribution of benefits from globalization has been conspicuous. Stiglitz (2002) postulated that without fair trade policies, effective regulation, and participatory governance, globalization could exacerbate inequality and undermine social welfare. Another influential framework for understanding economic development and globalization in Africa is the dependency theory, which finds its roots in the

works of Prebisch (1950) and Frank (1967). This theory suggests that economic activities in the periphery (including most African nations) serve to enrich the core (developed) nations. Consequently, this perspective holds that internationalization policies can often lead to a form of neo-colonialism where developing countries become overly reliant on developed nations for technology, expertise, and market access, leading to an exploitative economic relationship.

There is, then, a need to examine the extent to which a country's progress in globalizing its economy may have aided its economic growth. There have been several studies over the past few decades that help us better understand the globalization-growth relationship. These studies have often focused on specific countries or global regions and have used a variety of economic metrics to measure the benefit that a country has received (or not) from their globalization initiatives, as well as a number of different proxies for globalization itself. As the availability of data from countries around the world has increased, researchers have taken a broader view of a country's efforts by examining three aspects of globalization: the social, political, and economic or financial dimensions. This development should help determine national policy areas that have had a larger impact on the economic growth of the country. There have been several studies over the past several decades that attempted to shed light on the question of whether a country's progress in social, political, and financial policies and practices also helps improve the overall standard of living for its people via greater economic growth and development. The expectation is that a country's steps toward a higher level of social, political, and financial integration with the global community (i.e., a higher level of *globalization*) should lead to a more prosperous nation.

For example, Dreher (2006) found a positive relationship between globalization and growth in general for all countries, especially strong in developing countries. There is, therefore, an expectation that the relationship between a country's efforts to become more globalized would yield future benefits for its economic growth and, hence, the prosperity of its people. In an earlier study, Loots (2003) found globalization aided economic growth in emerging markets to different degrees in different regions of the world, but showed that South Africa, in particular, owed most of its recent economic growth to its efforts to reduce trade and capital barriers. There is also an expectation that this relationship would vary across global regions and across time, meaning that this question should be examined for different countries and regions over a period of several decades to determine the precise nature of the relationship and how it has changed over that same time period.

Background

Globalization-GDP growth studies have examined the question for many global regions and use a variety of metrics used to *measure* the changing degree of progress in social, political, and financial issues. [There are also similarly, intentioned studies that use the level of Foreign Direct Investment (FDI) as the primary measure of economic success for a country rather than overall economic (GDP) growth. Those are included in the discussion as well.] Since there are likely greater economic benefits from becoming more world-centric for countries in the earlier stages of economic development, it is important to study *emerging* and *frontier* markets. Most African and sub-Saharan Africa (SSA) countries are considered *frontier* markets, which are usually smaller developing economies characterized by less economic infrastructure and greater instability. Since most of the countries in Africa are very early in their economic development, the authors have chosen to focus this examination on African markets to shed light on whether globalization efforts

in those countries appear to have aided their economic development in the past. The results of this study will help determine the strength of the globalization-GDP growth relationship in African countries and whether the relationship has changed over the past four decades. It was also helpful to compare these results to prior studies of this relationship in Africa, and to examinations involving developing markets in other global regions. In contrast to expectations of a positive relationship between globalization efforts and a country's economic growth, most of the prior studies show that increased social, political, and financial integration had an insignificant, but positive impact on economic growth in African countries. Anyanwu (2012) noted the importance of this issue: "Globalization - the complex process of economic, political, social, and cultural integration which takes place as capital, trade, goods, persons, ideas, images, values, environmental toxins and even micro-organisms move across state boundaries – presents both opportunities and challenges to African countries." (p. 53).

Anyanwu (2012) analyzed 33 countries in Africa (1970-2000) by testing the impact of globalization on the economic growth of these nations. He concluded that the overall index of globalization had no impact on economic growth and that among the three dimensions of globalization, only social integration was positive and significantly related to growth; while both political and financial/economic integration were not significant. In a later study, Barry (2010) analyzed 41 countries (1995-2005) in SSA to determine whether globalization was a significant factor in economic growth in these countries and concluded that the relationship was positive but statistically insignificant. Barry (2010) notably used the same KOF Globalization Index that our study utilized; though the index has changed substantially since 2010.

In recent studies that have utilized the Swiss Economic Institute (Konjunkturforschungstelle [KOF]) index as the primary measure of globalization, Elmawazini and Nwankwo (2013) found no evidence that globalization had reduced the income gap between developing countries and SSA countries for the 1980-2009 period; and Shittu et al. (2020) concluded that only political integration had a positive impact on FDI and greater economic prosperity during 1996-2016. Adeleke (2014) concluded, however, that although political integration was the primary determinant of FDI, that political governance in most SSA countries is too weak to attract substantial FDI, rendering it difficult to promote economic growth during the 1996-2010 period. Bataka (2019) found that both the economic and social dimensions of globalization positively affected growth in African countries, while political globalization's impact was significant and negative. Two additional studies focused on the FDI attracted to a country as the primary generator of GDP growth examined how level of social, political, and financial integration into the global economy encourage, or discourage, foreign investors. Adams and Opoku (2015) examined SSA countries for the 1980-2011 period and found that the economic growth effect of FDI in this region was stimulated by effective regulation of business, labor, and the financial markets in the stronger performing African countries. Adams and Opoku (2015) and Awolusi et al. (2017) discovered that a country's governmental policies played a significant role in facilitating FDI, hence, economic growth in Africa. Both research concluded that SSA countries needed not only to strengthen business regulations, but to develop long-term institutional economic development strategies.

The question of whether the SSA countries have increased their level of social, financial, and political integration over the past several decades is clearer, but many researchers have recently sought to determine whether the level of integration has increased enough to boost the national economy. Zahonogo (2018) studied SSA countries (1980-2012) and concluded the relationship

between globalization and economic growth was *not linear* and the effect had decreased over this time. Other studies have examined specific aspects of globalization and their impact on a country's economic prosperity. Le Goff and Singh (2014) looked specifically at how trade liberalization in African countries (1981-2010) had reduced poverty and found that it had made minimal impact, and that a more comprehensive focus on other aspects of globalization is needed in Africa.

In summary, there is mixed evidence of the economic benefit to countries in African countries from their attempts to be more integrated in the global economy, or more *globalized*. There is a need for government policymakers in these countries to understand and appreciate the long-term benefit of policies favoring greater global integration and strengthening commercial regulation. Finally, the political governance infrastructures should be overhauled: The culture of accountability and transparency should be promoted, while all efforts should be made to improve the stability in the political environment to increase investor confidence in African economies (Shittu et al., 2020).

The goal of this study was to determine the current nature of the relationship between the globalization index and economic growth in emerging and frontier economies in Africa by analyzing the economic data from the past four decades (1980-2019). Using the KOF index, each of the three dimensions of globalization (social, financial, and political integration) included in the index were examined to determine whether all were positively related to growth in African markets. The authors analyzed the countries in Africa included in the KOF index for a 40-year period to examine the impacts of greater global integration on the economic prosperity of the continent (see Table 1).

Table 1. Countries Included in This Study

Country	Country	Country	Country
Algeria	Côte d'Ivoire	Mali	South Sudan
Angola	DR Congo	Mauritania	Sudan
Benin	Egypt	Mauritius	Tanzania
Botswana	Equatorial Guinea*	Morocco	Togo
Burkina Faso	Eswatini	Mozambique	Tunisia
Burundi	Ethiopia	Namibia	Uganda
Cabo Verde	Gabon*	Niger	Zambia
Cameroon	Gambia	Nigeria	Zimbabwe
Central African Republic	Ghana	Rwanda	Kenya
Chad	Guinea	Senegal	Lesotho
Comoros	Guinea-Bissau	Sierra Leone	Madagascar
Congo	Malawi	South Africa	

Note. *Variables removed in this study due to large Cook's D scores

Methods

To determine the importance of globalization to continued economic growth in Africa, the authors used the KOF Globalization Index (Dreher, 2006). The KOF index provides an indication of the levels of economic, political, and social globalization present in a country. The KOF index was completely redesigned in January 2019. Most notably, the number of variables in the index has nearly doubled, from 23 to 43 (Gygli et al., 2019). The new KOF index variables are shown in Table 2. Although there are alternative indices available (i.e., the Maastricht Globalization Index), the KOF index was used to maintain consistency and comparability with previous studies.

Table 2. Structure of the KOF Globalization Index

Globalization Index, de facto	Weight	Globalization Index, de jure	Weight
Economic Globalization, **de facto**	**33.3**	*Economic Globalization, de jure*	**33.3**
Trade Globalization, de facto	50.0	*Trade Globalization, de jure*	50.0
Trade in goods	38.8	Trade regulations	26.8
Trade in services	44.7	Trade taxes	24.4
Trade partner diversity	16.5	Tariffs	25.6
		Trade agreements	23.2
Financial Globalization, de facto	50.0	*Financial Globalization, de jure*	50.0
Foreign direct investment	26.7	Investment restrictions	33.3
Portfolio investment	16.5	Capital account openness	38.5
International debt	27.6	International Investment Agreements	28.2
International reserves	2.1		
International income payments	27.1		
Social Globalization, **de facto**	**33.3**	*Social Globalization, de jure*	**33.3**
Interpersonal Globalization, de facto	33.3	*Interpersonal Globalization, de jure*	33.3
International voice traffic	20.8	Telephone subscriptions	39.9
Transfers	21.9	Freedom to visit	32.7
International tourism	21.0	International airports	27.4
International students	19.1		
Migration	17.2		
Informational Globalization, de facto	33.3	*Informational Globalization, de jure*	33.3
Used internet bandwidth	37.2	Television access	36.8
International patents	28.3	Internet access	42.6
High technology exports	34.5	Press freedom	20.6
Cultural Globalization, de facto	33.3	*Cultural Globalization, de jure*	33.3
Trade in cultural goods	28.1	Gender parity	24.7
Trade in personal services	24.6	Human capital	41.4
International trademarks	9.7	Civil liberties	33.9
McDonald's restaurant	21.6		
IKEA stores	16.0		
Political Globalization, **de facto**	**33.3**	*Political Globalization, de jure*	**33.3**
Embassies	36.5	International organizations	36.2
UN peace keeping missions	25.7	International treaties	33.4
International NGOs	37.8	Treaty partner diversity	30.4

Source. Gygli et al., 2019

Based on a review of the index, the authors posited the following model:

$$G = \beta E + \gamma P + \mu S + \varepsilon \tag{1}$$

Where:
- G = GDP per Capita in constant \$2,010
- E = Economic Globalization
- P = Political Globalization
- S = Social Globalization
- ε = Error

For this study, the authors began with data for 47 African countries for the years 1980-2020 as this period contains a full dataset for most of these nations. Several countries were not included due to large amounts of missing data (Djibouti, Eritrea, Libya, Liberia, and Somalia) and two small island nations were not included (Sao Tome, and Seychelles). The first procedure performed was Cook's D to look for influential outliers in the dataset. Of the 47 countries in the data set, only two (Equatorial Guinea and Gabon) had a large number of outliers with Cook's D ranging from .01 to .07. Indeed, these two cases were the largest outliers in the data set. For this reason, Equatorial Guinea and Gabon were removed and analysis proceeded for the remaining 45 countries.

Most studies that have examined the relationship between international trade and economic growth have used ordinary least squares (Singh 2010), so the same method this study for consistency with prior research. Analysis of the full data set resulted in the model shown in Table 3.

Table 3. Full African Dataset OLS Regression Results 1980-2019

			Model Summary[b]	
Model	*R*	*R²*	Adjusted *R²*	Std. Error of the Estimate
1	.687[a]	.473	.472	1,185.38016

a. Predictors: (Constant), Social globalization index (0-100), Political globalization index (0-100), Economic globalization index (0-100)
b. Dependent Variable: GDP per capita, constant $2,010

			ANOVA[a]			
Model		Sum of Squares	df	Mean Square	*f*	Sig.
1	Regression	2,121,557,047	3	707185682.	503.29	< .001[b]
	Residual	2,367,637,521	1,685	1405126		
	Total	4,489,194,568	1,688			

a. Dependent Variable: GDP per capita, constant $2,010
b. Predictors: (Constant), Social globalization index (0-100), Political globalization index (0-100), Economic globalization index (0-100)

		Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		β	Std. Error	*B*	*t*	*Sig.*	Tolerance	*VIF*
1	(Constant)	-1,117.969	128.901		-8.67	< .001		
	Economic globalization	19.523	3.581	.131	5.45	< .001	.542	1.846
	Political globalization	-5.583	1.736	-.060	-3.22	< .001	.910	1.099
	Social globalization	68.293	2.720	.608	25.10	< .001	.534	1.873

a. Dependent Variable: GDP per capita, constant $2,010

The model was highly significant (f = 503.3, $p < .001$) with an R^2 of .473. The *t*-tests on individual coefficients showed that economic globalization was significant and positively related to GDP (t = 5.45, $p < .001$), political globalization was significant but negatively related to GDP (t = -3.21, $p = .001$), and social globalization was significant (t = 25.1, $p < .001$) and positively related to GDP. A variance inflation factor (*VIF*) test for multicollinearity was also performed. The *VIF* value of each of the three independent variables was in the range of 1.1 to 1.9, well below the threshold for significant multicollinearity (*VIF* > 5). This result appeared to demonstrate that while all three variables were significant, political globalization had an inverse relationship with GDP.

Next, the authors performed a residual analysis on the full dataset. According to Table 4, both the Kolmogorov-Smirnov ($p < .001$) and Shapiro-Wilk ($p < .001$) tests indicated that the residuals did not follow a normal distribution. Further investigation of the plots showed that the data appeared to be nonlinear, so a set of curve estimations was performed on the data.

Table 4. Residual Analysis of OLS Regression Full African Dataset 1980-2019

	Tests of Normality					
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Standardized Residual	.118	1,689	< .001	.924	1,689	< .001

a. Lilliefors Significance Correction

The curve estimation procedure shown in Table 5 indicates that the relationship between GDB and globalization followed a cubic trend for each of the three variables (Economic: R^2 =.35, $p < .001$; Political: R^2 = .07, $p < .001$; Social: R^2 = .59, $p < .001$).

Table 5. Curve Fitting Full African Dataset 1980-2019 – Model Summary and Parameter Estimates

	Model Summary					Parameter Estimates			
Equation	R^2	f	$df1$	$df2$	Sig.	Constant	$b1$	$b2$	$b3$
Economic Globalization Index									
Linear	.275	641	1	1,687	< .001	-1594	78.2		
Log	.222	480	1	1,687	< .001	-8271	2687.9		
Cubic	.350	302	3	1,685	< .001	812	-7.4	-.29	.02
S	.244	546	1	1,687	< .001	8	-51.9		
Exp	.307	749	1	1,687	< .001	172	.04		
Dependent Variable: GDP per capita, constant $2,010									
Political Globalization Index									
Linear	.022	38	1	1,687	< .001	846.836	13.800		
Log	.016	27	1	1,687	< .001	-599.413	557.800		
Cubic	.072	44	3	1,685	< .001	-2,024.900	254.200	-5.6	.04
S	.014	24	1	1,687	< .001	7.194	-10.900		
Exp	.048	85	1	1,687	< .001	584.473	.011		
Dependent Variable: GDP per capita, constant $2,010									
Social Globalization Index									
Linear	.461	14423	1	1687	< .001	-879.7	76.30		
Log	.334	845	1	1687	< .001	-4917.1	1931.90		
Cubic	.593	817	3	1685	< .001	80.5	66.50	-2.2	.04
S	.328	823	1	1687	< .001	7.9	-22.80		
Exp	.483	1573	1	1687	< .001	270.3	.04		
Dependent Variable: GDP per capita, constant $2,010									

Based on the curve fitting analysis, the authors revised the model and proceeded with nonlinear regression:

$$G = \beta E^3 + \gamma P^3 + \mu S^3 + \varepsilon \tag{2}$$

Where:
- G = GDP per Capita in constant 2010 USD
- E = Economic Globalization
- P = Political Globalization
- S = Social Globalization
- ε = Error

Since f and t tests are not relevant with nonlinear models, 95% confidence intervals were used instead. The confidence interval should not contain zero. Since the model is cubic (predicting a strong effect for even small values), parameter estimates were expected to be small *but non-zero* throughout the confidence interval. Cubic regression analysis of the full dataset resulted in an R^2 of .593 and the following parameter estimates which are also shown in Table 6(a):

$$G = 577 + .002E^3 + .000P^3 + .016S^3 + \varepsilon \tag{3}$$

The parameter estimates for economic and social globalization are non-zero throughout their range which means they are significant with 95% confidence. Since the value of political globalization is predicted to be near zero, it was dropped. The model was estimated again with the remaining two variables resulting a model with an R^2 of .592 and the following parameter estimates which are also shown in Table 6(b).

$$G = 521 + .002E^3 + .016S^3 + \varepsilon \qquad\qquad (4)$$

Table 6a. Nonlinear (Cubic) Regression Full African Dataset 1980-2019 – Model Summary and Parameter Estimates

Parameter	Estimate	Std. Error	95% Confidence Interval Lower Bound	Upper Bound
a	576.976	46.803	485.179	668.774
b	.002	.001	.001	.003
c	.000	.000	-.001	-5.764E-5
d	.016	.001	.015	.017
ANOVA[a]				
Source	**Sum of Squares**	**df**		**Mean Squares**
Regression	6,897,437,104	4		1,724,359,276
Residual	1,825,477,445	1,685		1,083,369
Uncorrected Total	8,722,914,549	1,689		
Corrected Total	4,489,194,567	1,688		

Dependent variable: GDP per capita, constant $2,010
$R^2 = 1 -$ (Residual Sum of Squares) / (Corrected Sum of Squares) = .593

Table 6b. Nonlinear (Cubic) Regression Full African Dataset 1980-2019 - Parameter Estimates

Parameter	Estimate	Std. Error	95% Confidence Interval Lower Bound	Upper Bound
			441.819	599.256
a	520.537	40.134	.001	.003
b	.002	.001	.015	.017
c	.016	.001		
ANOVA[a]				
Source	**Sum of Squares**	**df**		**Mean Squares**
Regression	6,891,527,677	3		2,297,175,892
Residual	1,831,386,872	1686		1,086,231
Uncorrected Total	8,722,914,549	1689		
Corrected Total	4,489,194,567	1688		

Dependent variable: GDP per capita, constant $2,010
$R^2 = 1 -$ (Residual Sum of Squares) / (Corrected Sum of Squares) = .592

Conclusion

The primary purpose of this study was to determine the extent to which each African country's social, political, and economic integration has contributed to their national economic prosperity and whether those relationships have changed during the most recent decade compared to earlier decades. With the development of more and better data (40 years of globalization data considered) containing metrics for many African country's globalization efforts and activities (via the KOF index) allowed a broader and more comprehensive examination of the changes that have occurred in these emerging markets; especially, providing valuable insights into the past decade. The comparisons of the recent integration efforts in African markets to those that existed over the past several decades allow an inspection of the current nature of the relationship between market growth and the three components of globalization, and how/ or f it has changed. The data also allowed an examination of the specific impacts that each globalization component had on the growth and prosperity of individual African countries, as well as the continent as a whole.

As expected, social and economic globalization were significantly and positively related to GDP growth. This result is in line with predictions but contradicted several prior studies that had insignificant results. In particular, social globalization had the largest impact of any variable. While the effect of economic globalization was modest, the effect of social globalization was stronger than it may appear. To illustrate this, the authors plotted the full range of integer values

of social globalization contained in the dataset (5-80) vs. GDP while holding economic globalization constant at its mean value of 40 (see Figure 1).

Figure 1. Relationship Between Social Globalization and GDP With Economic Globalization Held Constant Full African Dataset 1980-2019
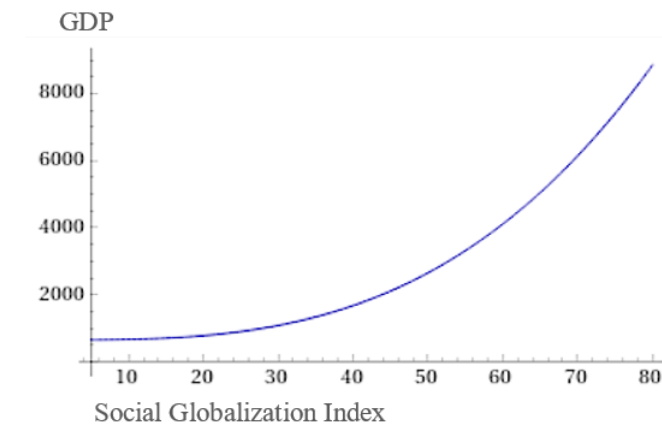
For example, all else equal, increasing social globalization from its mean of 31 by one standard deviation to 45 results in nearly doubling predicted GDP from $1,126 to $2,107. Increasing it again to 59 raises predicted GDP to $3,935. Having a social globalization index at the top of the range at 79 results in a predicted GDP of $8,537 while holding economic globalization constant at 40.

Theoretical Implications

Political globalization was not significant. This result seems counterintuitive, so the authors considered the variables that comprise political integration in the KOF index. One of the component variables of political integration is *UN peacekeeping missions*. If a country requires a UN peacekeeping mission, one might expect that a substantial degree of political instability exists in that country. Higher political instability would tend to suppress economic growth and as a result, this variable may be one explanation for the insignificant relationship between the political component and GDP.

Another component variable of political integration is *international NGOs*. In more developed economies, international NGOs are often specialists that focus on underserved populations and marginalized communities. However, in less developed economies, much of the population could be considered *at risk*. Therefore, the presence of a many NGOs may indicate that a greater percentage of the population is living in poverty resulting in a lower correlation with GDP in these countries.

Based on the findings, at least some aspects of political integration may be a lagging indicator of GDP growth and, therefore, are less important than economic and social globalization. Future research should examine this relationship between political globalization and economic prosperity in more detail, with particular emphasis on less developed societies.

Practical Implications

Policy makers in Africa should continue to focus on expanding globalization of social aspects of their societies to improve national GDP growth with a primary focus on social globalization. Particular emphasis should be placed on those items that had the heaviest weights in the Social Globalization Index such as expanding internet access (42.6), investing in human capital (41.4), expanding telephone and television access (39.9 and 36.8), increasing total internet bandwidth (37.2), and protecting civil liberties (33.9). Subtle changes in these areas have been shown to be strongly linked to GDP growth across Africa.

Limitations and Future Research

This study looked at the influence of the KOF Globalization Index on national GDP growth. However other measures of both globalization and economic growth are available. For example, Martens and Raza (2009) developed the Maastricht Globalization Index (MGI), which incorporates ecological and technological factors into its model as separate components of the index. Additionally, some authors have argued that GDP is too unidimensional and does not differentiate well between societies with high and low levels of income inequality (Stern et al., 2021). They have called for alternative measures of economic growth such as the Social Progress Index, a multidimensional indicator of the quality of life in a country. Incorporating either or both indices could provide a fuller understanding of the intricate relationship between globalization and economic growth.

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