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Investigating the Income-Democracy Correlation and the Impact of Democracy on Financial Development in Sub-Saharan Africa

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Abstract

This paper investigates two relationships in Sub-Saharan Africa. First, it studies the link between income growth and democracy, and second, the connection between democracy and financial development. Using data from 1970 - 2018, the first analysis, applies pooled OLS, fixed-effects, and instrumental variables to 46 countries. Simple models suggest a positive GDP link with democracy, consistent with Modernisation Theory. However, significance disappears once endogeneity and structural controls are included. The second analysis focusses on 36 countries, employing an autoregressive distributed lag model with within and Arellano-Bond estimators. This study reveals a robust positive effect of democracy on the IMF's Financial Development Index, which was strengthened after correcting for endogeneity. Results indicate that income growth alone does not reliably drive democratisation, but democratic institutions can enhance financial sector development.

Keywords

Development, Sub-Saharan Africa, Institutions, Democracy, Financial Development, Emerging Economies

1. Introduction

The complex interplay between economic development and political institutions has long been at the core of development economic research. Lipset's modernisation theory states that rising incomes foster democratisation, implying that economic growth, improved education, and urbanisation lead to a more politically active and demanding middle class (Lipset, 1959).

The Sub-Saharan Africa region provides an interesting context to test this hypothesis. Having experienced a significant democratisation wave post 1990, the outcomes varied across the countries (Bates, Fayad, & Hoeffler, 2012). Thus, perhaps other factors, such as education, colonial legacies, and demographic trends, more effectively explain democratic trajectories. Moreover, building upon this earlier work, Acemoglu et al. (2014) refined the analysis by incorporating additional data and methodological improvements. They emphasised the complex dynamics between income and democracy, highlighting the interplay of economic crises, social pressures, and political reforms. This suggests that while economic growth alone is insufficient, it can contribute to democratisation when combined with specific social and institutional factors.

Concurrently, democratisation's influence on economic institutions, specifically financial development, warrants examination. Financial development, which is essential for investment and growth, can theoretically benefit from democratic governance due to enhanced transparency, accountability, and property rights (Huang, 2010). Conversely, democratisation without institutional strength could create volatility detrimental to financial stability (Roe and Siegel, 2011). Institutional strength beyond democracy generally refers to the robustness of governance structures, rule of law, property rights enforcement, and regulatory frameworks that help to maintain the stability of economic and political systems, extending beyond just democratic elections or polity scores. Research demonstrates a potential divergence between such institutional strength and democracy, where weak institutions in new democracies may lead to instability, as seen in some Sub-Saharan African cases. Thus, the empirical relationship remains contested.

This paper investigates two interconnected questions. First, whether rising income levels have promoted democracy in Sub-Saharan Africa, and second, whether higher democracy levels subsequently facilitated financial development. In line with Acemoglu et al. (2009), we interpret "long-run" trajectories as the sustained, multi-decade paths shaped by historical institutions that influence democratic outcomes beyond short-term income fluctuations. This study captures such long-run effects by analysing panel data spanning 1970 - 2018, employing dynamic models that control for lagged adjustments and endogeneity. Specifically, our second empirical analysis uses an Autoregressive Distributed Lag (ADL) model to estimate both short-run and long-run impacts of democracy on financial development.

2. Literature Review

Building upon the above-mentioned Lipset's 1959 paper, empirical studies generally support a positive correlation between income levels and democratic institutions (Barro, 1999). However, significant critiques exist, notably from Acemoglu et al. (2009), who argue that historical institutions and long-run trajectories, rather than current income levels, explain democratic transitions. Their instrumental variable (IV) analysis suggests that once historical factors are controlled, income does not independently lead to democracy.

Regionally, Sub-Saharan Africa's democratisation appears to be influenced by factors beyond economic growth. Studies underline the roles of colonial legacies and resource endowments, demonstrating that historical institutions significantly affect democratic outcomes (Michalopoulos and Papaioannou, 2020). Additionally, some research indicates non-linear effects, where income growth aids democratisation only at lower income thresholds, beyond which its influence diminishes (Moral-Benito & Bartolucci, 2012).

In theory, democratic institutions stimulate financial development by strengthening the rule of law, reducing corruption, and improving regulatory quality (North, 1990). Empirically, the evidence from cross-country analyses generally supports this assertion, demonstrating the positive effects of democracy on financial market depth, credit access, and regulatory environments, mitigating risks related to government expropriation ((Yang, 2011), (Beck, Demirgüç-Kunt and Levine, 2002)). Building on this, Rajan and Zingales (2003) argue that openness in political institutions limits the ability of incumbent elites to obstruct financial development. However, one can also find the conditionality of these benefits through the literature. Countries that are transitioning to democracy without strong institutional foundations can experience volatility and uncertainty, hurting their financial stability (Haggard & Kaufman, 1995). Finally, as per Keefer (2007), democratic transitions accompanied by

populist economic policies and/or weak governance structures might not yield significant improvements in financial sector outcomes. We must now turn to the data.

3. Dataset

The following empirical analysis is comprised of two distinct studies. The first study is built upon a sample of 46 Sub-Saharan African countries, using data from 1970 to 2000. The list of countries can be found in the appendix. In our first study, we observe the relationship between our chosen democracy index and GDP per capita. In 2000, the mean democracy score for our data set was 1, ranging from 10 for Mauritius to -6 for Mauritania. Additionally, in 2000, the mean GDP per capita adjusted for Purchasing Power Parity from our sample was \$2,773.63, ranging from \$14,637.96 in Seychelles to \$416.55 in Congo.

In our second study, we narrowed our dataset to 36 countries, using data from 1990 to 2018. The list of countries can be found in the appendix. In the second study, we replaced GDP per capita with our Financial Development Index, and inverted our model, regressing the effect of democracy upon it. In 2000, the mean democracy score for our data set was 1.36, ranging from 10 for Mauritius to -7 for Eswatini. Additionally, in 2000, the mean Financial Development Index score for our dataset was 0.116, ranging from 0.49 in South Africa, to 0.03 in Congo.

4. An Empirical Analysis

4.1. Basis - Acemoglu et al. (2008)

To measure the relationship between institutions and economic development, we compare how democracy correlates with GDP per capita. We use democracy as a proxy for institutional quality as it captures political competitiveness, constraints on executives and broad governance structures that underpin economic institutions (Giavazzi, F., & Tabellini, G.2005). Hence, democracy has significant explanatory power for institutional quality. The measure of democracy is drawn from the Polity IV Database(Our World in Data 2024) to ensure comparability between countries. We also use GDP per capita, adjusted for purchasing power parity, as a proxy for development as it reflects productivity levels and living standards and allows for cross-country growth analysis (Barro, R. J. 1991). We start by examining whether variations in income per capita have systematic influence on the level of democracy across 46 Sub-Saharan African countries, using data from 1970 to 2000, amounting to 279 observations. We estimate the following regression using a pooled OLS:

$$d_{i,t} = \beta_0 + \beta_1 \log(GDPPC)_{i,t-1} + \beta_2 d_{i,t-1} + \varepsilon_{i,t}$$

where i = country, t = time period (years)

We use a baseline specification that regresses a democracy index, $d_{i,t}$, on the lagged value of log income per capita $\log(GDPPC)_{i,t-1}$. We introduce the lagged value of democracy, $d_{i,t-1}$ to account for autocorrelation, and we use standard errors, $\varepsilon_{i,t}$, clustered at country level which are robust to heteroskedasticity and serial correlation of the error term. We first estimate this specification using ordinary least squares (OLS) and obtain the following results:

We first estimate this specification using ordinary least squares (OLS) and obtain the following results:

Democracy Index	Coefficient	Robust Std. Err.	t	P > t	[95% Conf. Interval]	
Lagged Democracy Index	0.6082479	0.0714822	8.51	0.000	0.4642754	0.7522204
Log GDP per Capita	0.0340768	0.0195328	1.74	0.088	(0.005264)	0.0734179
Constant	(0.134392)	0.1407606	(0.95)	0.345	(0.417898)	0.1491144

Table 1: Effect of GDP per Capita on Democracy, OLS Regression

We observe that there is a strong positive correlation between income per capita and democracy across Sub-Saharan African countries. The coefficient of $\log(GDPPC)_{i,t-1}$ suggests that a one-unit increase in log GDP per capita leads to a 0.03408 increase in the democracy index, and it is statistically significant at a 10% level. This result appears to support the “Modernization Theory” presented in Lipset, S. M. (1959), which suggests that as countries gather wealth, societies naturally progress towards democratic governance.

However, we cannot trust that $d_{i,t-1}$ and $\log(GDPPC)_{i,t-1}$ are exogenous in the model as we fail to control for country-specific factors that affect the level of democracy, meaning the regression likely suffers from omitted variable bias. This omitted variable bias would cause our model to become mis-specified, and thus would make our findings invalid. Acemoglu et al. (2008) presents the premise that simple correlations between income and democratic institutions can be misleading if there are underlying historical factors that simultaneously drive both political regimes and economic outcomes. Hence, we implement variables to control for differences in population, education levels and culture (through age), yielding 186 observations:

$$\text{Democracy}_{i,t} = \beta_0 + \beta_1 \log(GDPPC)_{i,t-1} + \beta_2 d_{i,t-1} + \beta_3 \logpop_{i,t} + \beta_4 educ_{i,t} + \beta_5 agemedian_{i,t} + \varepsilon_{i,t}$$

To mitigate the aforementioned omitted variable bias, we have used $\logpop_{i,t}$ to control for population, $educ_{i,t}$ to control for education levels and $agemedian_{i,t}$ to control for the median age of the population. We obtain the following regression results:

Democracy Index	Coefficient	Robust Std. Err.	t	P > t	[95% Conf. Interval]	
Lagged Democracy Index	0.5593136	0.0812785	6.88	0.000	0.3928222	0.7258050
Log GDP per Capita	0.0030926	0.0251772	0.12	0.903	(0.048481)	0.0546658
Log Population	(0.016047)	0.0172846	(0.93)	0.361	(0.051453)	0.0193586
Education	0.042113	0.0131299	3.21	0.003	0.015214	0.0690083
Median Age	(0.000787)	0.0129789	(0.06)	0.952	(0.027373)	0.0257994
Colony	<i>Omitted because of Collinearity</i>					
Constant	0.185438	0.2604467	0.71	0.482	(0.348063)	0.7189387

Table 2: Effect of GDP per Capita on Democracy, OLS Regression with Control Variables

The estimated coefficient of $\log(GDPPC)_{i,t-1}$ has reduced to 0.00309, which is 10% of the original value. Furthermore, the p-value has increased to 0.903, indicating that the relationship between income per capita and democracy is now statistically insignificant at a 10% level. This implies that the previous OLS regression did in fact suffer from omitted variable bias. Furthermore, we find that the control variables for population and education are statistically significant at this level, indicating that the new estimate for the relationship is more reliable.

To further improve the model, we look to account for any time invariant “fixed effects” that encompass factors that may influence the democracy score and are also allowed to be related to income per capita.

We use the following dummy variable regression:

$$\text{Democracy}_{i,t} = \beta_0 + \beta_1 \log(GDPPC)_{i,t-1} + \beta_2 d_{i,t-1} + \mu_t + \delta_i + \varepsilon_{i,t}$$

We use a period dummy variable, μ_t that captures global time effects to absorb global shocks and broader regional trends. We also incorporate the dummy variable δ_i for country fixed-effects such as geographical factors or deeply rooted non democratic institutions. In this analysis, we have 279 observations, with 46 separate groups, which allow us to obtain the following results:

Democracy Index	Coefficient	Robust Std. Err.	t	P > t	[95% Conf. Interval]	
Lagged Democracy Index	0.2916453	0.0691204	4.22	0.000	0.155436	0.427855
Log GDP per Capita	(0.0576003)	0.0602547	(0.96)	0.340	(0.176339)	0.061138
1970	(0.0820759)	0.1097318	(0.75)	0.455	(0.298315)	0.134163
1975	(0.0642424)	0.1090155	(0.59)	0.556	(0.279070)	0.150585
1980	0.0399153	0.1092156	0.37	0.715	(0.175306)	0.255137
1985	(0.0339458)	0.1091204	(0.31)	0.756	(0.248980)	0.181088
1990	0.0141987	0.1091892	0.13	0.897	(0.200971)	0.229368
1995	0.1521033	0.1094574	1.39	0.166	(0.063595)	0.367801
2000	0.1121882	0.1079931	1.04	0.300	(0.100624)	0.325001
Constant	0.5976075	0.4341273	1.38	0.170	(0.257889)	1.453104

Table 3: Effect of GDP per Capita on Democracy, OLS Regression with Control and Dummy Variables

We find that the estimated effect of income per capita on democracy is negative where the coefficient of $\log(GDPPC)_{i,t-1}$ is -0.0576, suggesting that a unit increase in GDP per capita leads to a 0.0576 decrease in Polity. This is still statistically insignificant at the 10% level. Although this regression controls for time-invariant fixed-effects, it does not control for country-specific time-varying omitted variables: population, education, and age.

Adding control variables and fixed time effects decreased the robustness of GDP per capita's correlation with democracy. However, we must proceed with caution since there remain potential concerns that GDP per capita may still be endogenous to the model, despite the previously added control variables. Therefore, we adapt our model to control for these endogeneity concerns.

Incorporating an IV for GDP capita helps to estimate the potential causal effect of GDP per capita on democracy (Acemoglu, et al. 2008). Our chosen IV is 'World Income', which represents the predicted income for a country using a trade-share-weighted average income of other countries. For an IV to be valid, it needs to be relevant and exogenous. World Income has significant explanatory power on GDP per capita, and hence is relevant. This is because Sub-Saharan African countries are embedded within the global economy through trade linkages, such that income fluctuations of major trading partners directly affect domestic output via numerous channels. Therefore, variations in World Income provide strong explanatory power for changes in domestic income levels. Furthermore, World Income should satisfy exogeneity once time-fixed effects are controlled for. While global income shocks may impact economic opportunities, they are not likely to shape political institutions or policymaker incentives through any channel excluding their impact on GDP per capita. Thus, exogeneity is upheld.

This IV choice follows Acemoglu et al. (2008), who employs a similar instrument to address the endogeneity of GDP in cross-country studies of democracy. This approach represents an accepted strategy to mitigate bias arising from omitted variables and reverse-causality in incomes relationship with democracy.

To add our IV, we use a 2 Stage Least Square (2SLS) regression, which is defined as follows:

$$d_{i,t} = \beta_0 + \beta_1 d_{i,t-1} + \beta_2 \hat{y}_{i,t-1} + \hat{u}_t + \delta_i + \varepsilon_{it}$$

Where our first stage regression is:

$$\hat{y}_{i,t-1} = \beta_0 + \beta_1 \text{WorldIncome}_{i,t-1} + \beta_2 d_{i,t-1} + u_t + \delta_i + \varepsilon_{it}$$

where i =country, t =time period (years)

In the above regressions, $d_{i,t}$ is democracy (dem_ind), $d_{i,t-1}$ is the democracy with a one-period lag (lag_dem_ind), $\hat{y}_{i,t-1}$ is the fitted value obtained from our first stage regression with a one-period lag (log_gddpc). Finally, $u_t + \delta_i$ are time fixed-effects and country-specific fixed-effects respectively and ε_{it} is the error term. As previously, we have 279 observations spanning 46 separate groups, attaining the results below:

Democracy Index	Coefficient	Robust Std. Err.	z	P > z	[95% Conf. Interval]	
Lagged Democracy Index	(0.3501046)	0.4114784	(0.85)	0.395	(1.156587)	0.456378
Log GDP per Capita	0.3248010	0.0860472	3.77	0.000	0.156152	0.493451
1970	(0.0146215)	0.1486566	(0.10)	0.922	(0.305983)	0.276740
1975	0.0306992	0.1747850	0.18	0.861	(0.311873)	0.373272
1980	0.1415061	0.1819967	0.78	0.437	(0.215201)	0.498213
1985	0.0843568	0.2004985	0.42	0.674	(0.308613)	0.477327
1990	0.1288107	0.1963556	0.66	0.512	(0.256039)	0.513661
1995	0.2691481	0.1992715	1.35	0.177	(0.121417)	0.659713
2000	0.2019562	0.1686958	1.20	0.231	(0.128682)	0.532594
Constant	2.6424270	2.8786560	0.92	0.359	(2.999635)	8.284490

Table 4: Effect of GDP per Capita on Democracy, Instrumental Variable Analysis

$$d_{it} = 2.642 + 0.3248d_{it-1} + 0.3501\hat{y}_{it-1} + \hat{u}_t + \delta_i + \varepsilon_{it}$$

From Figure 4, it is clear that the coefficient for lagged GDP per capita is -0.3501046 and the p-value is 0.395. This p-value exceeds the critical value at the 10% significance level, and thus is statistically insignificant. Therefore, even when controlling for the potential endogeneity of GDP per capita in our model, we conclude that correlation between GDP per capita and democracy is insignificant.

The potential caveat for this analysis is that despite introducing our IV, we have not truly removed endogeneity from this model, since it requires that the ‘relevance’ and ‘exogeneity’ conditions for our IV hold with certainty. Thus, while we have better estimated for the endogeneity concerns, we cannot say with certainty that our conclusions are valid. However, adding the IV does allow for more confidence that our findings are valid.

Our results for Sub-Saharan Africa reflect those in Acemoglu et al. (2008). While a simplistic analysis suggests a significant correlation between GDP per capita and democracy, more sophisticated analysis exposes the frailties of this link. However, it should be noted that despite the reduced robustness of the initial regressions results, we cannot rule out the possibility that certain reforms and economic conditions may harbour increased democratisation in the long-term.

Once we address the endogeneity of income per capita in our model, our results become insignificant. This suggests potential reverse causality in our model. Therefore, in the next section, we look at the relationship between institutions and development with institutions as the explanatory variable. This alters our analysis, to look at the effect of democracy on development.

4.2. Extended Model – Acemoglu et al. (2019)

We extend the dynamic panel model introduced by Acemoglu et al. (2019), which itself builds on the earlier work of Papaioannou and Siourounis (2008). While Acemoglu et al. use a broad cross-country panel dataset covering many world regions, we narrow the focus to 36 Sub-Saharan African countries to fit the scope of our study. The time period studied is from 1990 to 2018. The data is sourced from reputable organisations, including the IMF. We define the following ADL Model:

$$F_{c,t} = \beta_0 + \sum_{i=1}^4 \beta_i F_{c,t-i} + \beta_{i+1} Polity_{c,t} + \delta_c + \theta_t + \varepsilon_{c,t}$$

where c =country, t = time period, i = lag length (going from 1 to 4)

In this Model, F is the Financial Development Index¹ and $Polity$ is the Polity Index, which acts as a proxy for democracy. The regression also incorporates δ_c (country specific fixed effects), and θ_t (time-fixed effects) to control for omitted variable bias, unobserved time-invariant country characteristics and general time trends, to ensure validity of β . Additionally, using four lags allows us to control for serial correlation in the error term, $\varepsilon_{c,t}$, and to account for the decline in F that often precedes democratisation (Haggard and Kaufman, 1995). To have a causal interpretation of the ADL Model, we make the following two

¹Financial Development Index was developed by the IMF. It summarises the depth (size and liquidity), access (ability to access financial services), and efficiency (ability to provide financing at low cost) of financial institutions.

assumptions: (i) sequential exogeneity, i.e. $E[\varepsilon_{c,t}|F_{c,t-1}, \dots, F_{c,t}, Polity_{c,t}, \delta c, \theta t] = 0$, used to deal with linear dynamic panel models; (ii) stationarity, the distribution of data stays the same over time.

To estimate the ADL Model, we use two different methods: (1) the standard within estimator (Nickell, 1981); and (2) the Arellano-Bond estimator (Arellano and Bond, 1991). While method (1) accounts for fixed effects, it may be biased due to the dynamic nature of the model. Therefore, we use (2) to address endogeneity and correct the bias of the Nickell's method. We obtain results presented in Table 5.

	(A)	(B)	(C)	(D)	(E)	(F)
	Within Estimates			Arellano-Bond Estimates		
Polity	0.0003335** (0.0531961)	0.0003189** (0.0001349)	0.0002265** (0.0000407)	0.0019104*** (0.0005669)	0.0018201*** (0.0005703)	0.0014024*** (0.0005305)
1 st Lag of F	0.852907*** (0.0001275)	0.7711918*** (0.0629961)	0.7566923*** (0.0679888)	0.7014989*** (0.1101419)	0.656647*** (0.0824362)	0.6638922*** (0.0806551)
2 nd Lag of F		0.0769771 (0.0644672)	0.0506264 (0.0642269)		0.054433 (0.076891)	0.0442928 (0.0613167)
3 rd Lag of F			(0.0467733) (0.0733794)			(0.0502494) (0.0747389)
4 th Lag of F			0.088449 (0.0847512)			0.0777324 (0.0822163)
Significance Level at **5%, ***1% and (Std. Err.) ²						

Table 5: Effect of Democracy on Financial Development, ADL Model Output

For regression A, there is a strong positive correlation, as a one-unit increase in the Polity score leads to an increase in financial development by 0.0003335, holding other factors constant. The results for equations (B)-(F) could be interpreted in a similar manner. We observe that the Polity variable is statistically significant across all regressions at the 5% level, and in the Arellano-Bond estimations (D-F) at the 1% level. In regression (D), a one-unit increase in the Polity score increases financial development by 0.0019104, ceteris paribus. Comparing regression (A) with regression (D), it is clear that the size of the effect is notably larger in the latter. This suggests that once endogeneity is accounted for, the estimated impact of democracy on financial development becomes stronger. The Arellano-Bond estimator corrects for the downward Nickell bias in dynamic panel models, which arises in within estimators due to the correlation between the lagged dependent variable and the error term, leading to underestimated coefficients (Nickell, 1981; Arellano & Bond, 1991). By using the Arellano-Bond estimator, it illustrates a more accurate causal effect, often resulting in larger positive estimates as seen in studies like Acemoglu et al. (2019), where democracy's impact on growth (including financial channels) strengthens post-correction. This amplified effect from controlling for endogeneity underscores the role of institutional strength: higher-quality institutions, such as effective rule of law and corruption control, enhance democracy's benefits by fostering transparency and strengthening property rights, thereby boosting financial depth, access, and efficiency (Huang, 2010; Ghardallou & Boudriga, 2014).

However, the Model possesses certain limitations across both estimators. Firstly, the coefficient of Polity could be upward biased due to omitted variables such as Foreign Direct Investment (FDI) and trade openness, which could positively correlate with democracy. Secondly, the Polity Index and the Financial Development Index may suffer from measurement limitations, as they may not fully capture the complexity of democracy and financial systems, respectively.

Despite these caveats, our analysis reveals a positive correlation between democracy and financial development in Sub-Saharan African countries. Assuming the validity of our two key assumptions, this relationship could be interpreted as causal. Therefore, there is opportunity for future research, which could verify that the exogeneity condition, (i), holds and thus state that democracy causes financial development.

² Please note we are using the robust standard errors and not the typical homoscedastic standard errors.

5. Conclusion

This paper sets out to examine the relationship between income per capita and democracy in Sub-Saharan African countries and further assesses whether democratic institutions successfully foster financial development. Our empirical analysis first reveals a statistically significant positive correlation between income per capita and democracy using simple specifications, which supports the core notion of Lipset's "Modernisation Theory" (1959) that democratic governance can be facilitated through rising income levels. However, after implementing control variables, fixed-effects and an IV for GDP per capita to address endogeneity, the robustness of the correlation fell through. This aligns with the views of Acemoglu et al. (2008) that deeply rooted institutions, geographical and educational factors can simultaneously impact both democracy and income. Finally, replacing income per capita with the "Financial Development Index" and inverting the model to regress the effect of democracy on this index yielded a strong positive correlation between democratic institutions and financial development, concluding that enhanced governance in Sub-Saharan African countries can improve the regulatory environment in financial markets, which is essential for increasing income, as deduced in Acemoglu et al. (2019).

However, we must interpret the findings with caution since both the democratic and financial development outcomes may suffer omitted variable bias from factors such as FDI and trade openness, particularly in countries undergoing rapid institutional changes. Furthermore, despite implementing IV's and dynamic panel methods, we cannot entirely eliminate endogeneity, maintaining concerns of causal inference. Measurement errors of Polity and GDP per capita could also create bias over the estimates.

This report has produced interesting results regarding Sub-Saharan Africa. However, this region encountered a significant democratisation wave post 1990, which encompasses a large portion of our datasets. Hence, there is a possibility that this may have skewed our results. Therefore, future research could investigate our findings for various other regions, that were not subject to the aforementioned democratisation wave. This would help to improve the validity of our findings. Moreover, the first section of our empirical analysis, that regressed GDP per capita on democracy, used data from 1970 to 2000. This data is relatively old, and thus subject to validity concerns when being considered as relevant in the modern world. Therefore, future research could look to use our established model, with more recent data, to see if our findings remain relevant today.

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Appendix

A.1. STUDY 1 - Acemoglu et al (2008)

Data Sets:

World Bank. 2025. "World Development Indicators." DataBank. [Accessible here](#)

Polity 5. 2020. "Democracy Index." Our World in Data. [Accessible here](#)

International Monetary Fund (IMF). 2025. "Direction of Trade Statistics." IMF Data. [Accessible here](#)

International Monetary Fund (IMF). 2025. "International Financial Statistics." IMF Data. [Accessible here](#)

List of Countries: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Dem. Rep. of Congo, Rep. Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, South Sudan, Sudan, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Stata Commands:

- `reg dem_ind lag_dem log_gdppc, vce(cluster code)`
- `reg dem_ind lag_dem_ind log_gdppc log_pop educ age_median colony, vce(cluster code)`
- `tsset code year, yearly delta(5)`
- `xtreg dem_ind lag_dem_ind log_gdppc i.year, fe`
- `xtivreg dem_ind (log_gdppc = worldincome) lag_dem_ind i.year, fe`

A.2. STUDY 2 - Acemoglu et al (2008)

Data Sets:

Polity 5. 2020. "Democracy Index." Our World in Data. [Accessible here](#)

International Monetary Fund (IMF). 2023. "Financial Development Index Database." IMF Data. [Accessible here](#)

List of Countries: Benin, Botswana, Burundi, Cameroon, Central African Republic, Chad, Comoros, Dem. Rep. of Congo, Rep. Congo, Côte d'Ivoire, Ethiopia, Equatorial Guinea, Eswatini, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia

Stata Commands:

- `xtreg FinDev L.FinDev Polity i.year, fe vce(robust)`
- `xtreg FinDev L.FinDev L2.FinDev Polity, i.year, fe vce(robust)`
- `xtreg FinDev L.FinDev L2.FinDev L3.FinDev L4.FinDev Polity, i.year, fe vce(robust)`
- `xtabond FinDev L.FinDev Polity, i.year, vce(robust)`
- `xtabond FinDev L.FinDev L2.FinDev Polity, i.year, vce(robust)`
- `xtabond FinDev L.FinDev L2.FinDev L3.FinDev L4.FinDev Polity, i.year, vce(robust)`