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MASTER THESIS IN ECONOMICS

FINANCIAL DEVELOPMENT, INSTITUTIONS AND POVERTY REDUCTION

AN EMPIRICAL EVIDENCE FROM SUB-SAHARAN AFRICA



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Abstract

This paper examines the relationship between financial development and poverty for a sample of SSA countries while taking into account an interaction effect between the financial sector and the institutional framework, which is thought to be causing some omitted variable bias in previous studies. The study covers the period 2000–2019. These relationships are investigated using fixed effects. The results show that financial development had a statistically significant and positive impact on poverty reduction. Also, the estimates reveal that institutional quality has a significant and positive impact on poverty reduction. However, it was discovered that where institutions perform better, the pro-poor impact of financial development is also better. These findings support the theory that finance, and institutions have a complementary effect. The study recommends, amongst others, that a judicious allocation of resources between financial development and strengthening the quality of institutions will be critical to reducing poverty and boosting economic growth in the region.

Key words

Financial Development, Institutions, Poverty, Sub-Saharan African, Fixed Effects



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1 Introduction

Poverty alleviation is a large concern for all governments, particularly emerging ones. Poverty reduction is a goal that most international institutions, such as the United Nations, World Bank, and the International Monetary Fund, have included in their development initiatives. In fact, the first of the UN sustainable development goals is “ending poverty in all its forms everywhere”. As a result, and in order to combat this scourge, pro-growth policies were given top priority, as research has shown that countries with high rates of economic growth are more likely to reduce poverty rates. Since the pioneering work of McKinnon (1973) and Shaw (1973), it is widely held that the development of a financial system stimulates economic activity, resulting in economic growth. Africa remains the world's poorest continent. At the same time, countries in Sub-Saharan Africa have made progress in terms of financial development. The large gains envisaged from the developed financial industry appear to have been constrained in Africa, particularly for the poor. In recent years, there has been considerable and inconclusive literature on the relationship between financial development and poverty reduction on both theoretical and empirical fronts. Theoretical predictions are contradictory, and empirical findings are equally mixed. Some think that financial development enhances capital allocation by allowing more businesses to receive funding, which benefits the poor in particular, while others contend that advancements in the financial system largely benefit the wealthy and politically connected (Singh & Huang, 2015). According to theory, financial progress can affect poverty in two ways. Everything being equal, the first channel demonstrates how financial development has a direct impact on poverty by enhancing poor people's access to financial services (Odhiambo, 2009; and Pradhan, 2010). The second channel suggests that financial development has an indirect impact on poverty by spurring economic expansion through higher investment rates (King & Levine, 1993; Levine, 2005).

The absence of a clear link between financial development and poverty may be due to the fact that financial development almost always requires the



implementation of other policies that promote poor people's access to financial services and investment, allow for effective conflict resolution, and promote human capital accumulation. As a result, institutions can assist in explaining the variation in the relationship between financial progress and poverty. Furthermore, the core idea is that the financial and institutional systems interact to influence the poverty rate since they can complement or substitute one other. The pro-poor effect of financial development is strengthened by the operation of a sound institutional framework if financial systems and institutions complement each other. If, on the other hand, finance and institutions function as substitutes, the impact of financial development on poverty alleviation diminishes as the number of institutions grows. Compton and Giedeman (2011) have focused on the relationship between finance and institutions in connection to the process of economic growth, following a similar line of reasoning to ours. The growth effect of financial development lessens as institutional quality improves, according to the authors. They regard these findings as evidence for a financial development and institution substitution effect.

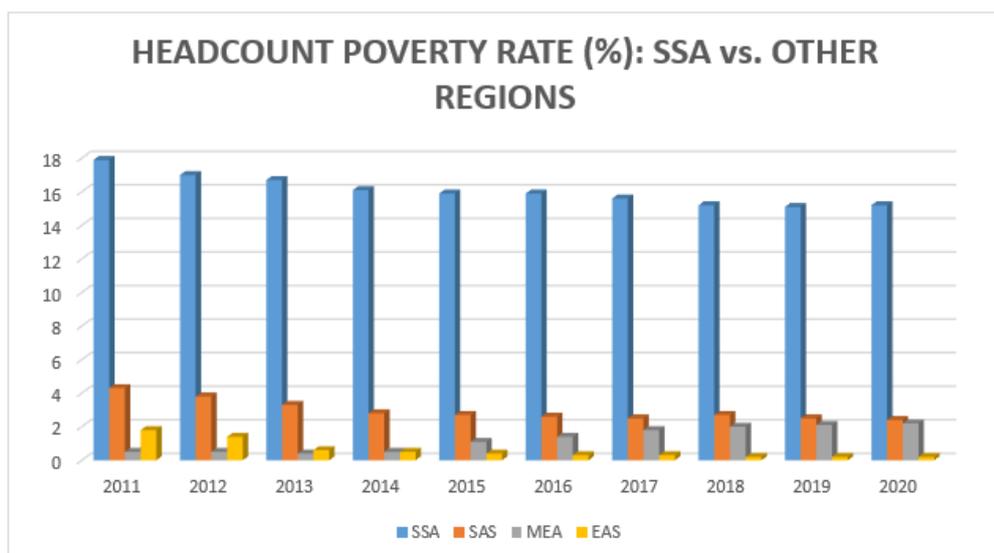


Figure 1

Source: Author's construction, with data from World Bank, 2022



Where SSA, SAS, MEA, and EAS means Sub-Saharan Africa, South Asia, Middle East & North Africa, and East Asia & Pacific respectively.

Owing to the extremely poverty rate that is prevalent in the SSA region as depicted in Figure 1, The purpose of this study is to see if financial development and institutional quality have any interactions in terms of poverty reduction. The data for the 46 Sub-Saharan African countries covers the years 2000 to 2019, and an all-encompassing financial measure will be used with an institutional variable to test whether the impact of financial development on poverty differs depending on the quality of the institutions. Panel analyses of Fixed effects models will be used to determine this differential effect.

This research adds to the body of knowledge on poverty reduction by allowing for a flexible functional form based on a financial development and institution interaction term. Assessing whether institutions influence the impact of financial development on poverty has substantial policy implications; it is no surprise that the development of the financial sector and institution-building are two of the World Bank's top goals. Knowing whether and how financial development and institutional quality interact in their effects on poverty is therefore critical in determining the most efficient allocation of available resources between these two priorities. If the financial sector complements the functioning of institutions in terms of poverty alleviation, then the countries with the best institutional set-up will see the highest pay-out in terms of poverty alleviation from improvements in the financial system; in this case, policymakers will decide to invest in both finance and institutions. As a result, policymakers will see it as more prudent to invest only in one of the two dimensions.

The rest of the paper is organized as follows: Section 2 is a review of related theoretical underpinnings, overviews, and Literature. The research methodology and data sources are described in Section 3. Section 4 presents the results, while section 5 concludes.



2 Literature Review

2.1 Financial Development

Figure 2 shows that while Sub-Saharan African countries have achieved significant progress in financial development over the last decade, there is still a lot of room for improvement, especially when compared to other regions. Indeed, until around a decade ago, a considerable number of Sub-Saharan African countries' financial progress had actually declined in comparison to the early 1980s. Both financial market depth and institutional development are lower in the region than in other developing regions, with the exception of the region's middle-income countries. Although the region's degree of financial development is below the benchmark, empirical estimates imply that financial development has aided growth and reduced volatility in Sub-Saharan Africa. Financial development has aided in the mobilization and allocation of financial resources, as well as the implementation of other economic policies that have boosted growth and stabilized the economy.

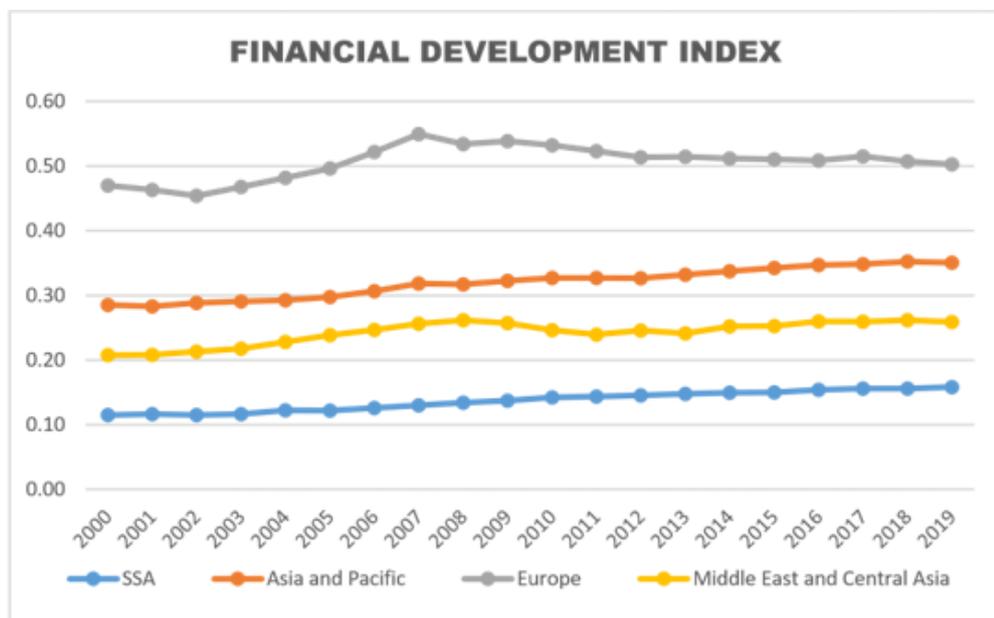


Figure 2

Source: Author's Construction with data from the IMF's database (2021).



While the literature suggests that there is a point beyond which financial development has a negative influence on growth and volatility (Sahay et al., 2015b), all of the nations in the area are well below this point. Given that the region's financial development is below the benchmark, boosting the median of the financial development index to the benchmark level is linked to increased growth and institutional factors. If the necessary institutional policies are appropriately calibrated for sub-Saharan Africa, by providing solid legal and institutional frameworks as well as enabling effective corporate governance, financial development will be accelerated. Strengthening legal and institutional frameworks, such as protecting minority shareholders' interests and supporting contract enforcement and judicial independence, is crucial for maintaining a climate in which the financial sector can grow and thrive. Improving corporate governance and information disclosure, particularly by harmonizing accounting, auditing, and financial reporting requirements with global best practices, would help close the gap between the financial development benchmark and the negative gap.

2.2 Financial Development and Poverty Reduction

Poverty is always associated with a lack of resources and the inability to live comfortably. Poverty encompasses a wide range of factors, including inadequate food and housing consumption, poor health and trouble getting health care, failure to be incorporated into the Labor market, and political impotence (Shahbaz et al., 2010). Economic development and poverty reduction are intimately linked, and both are means of enhancing living conditions, although development does not always result in poverty elimination. Many factors play a role in this, including unequal development, which has resulted in inequality of opinion, which can sometimes be seen as a result of development (Nielsen, 1994). In the neoclassical perspective, inequality is not considered a problem because it cannot be avoided. In the



end, modernization, industrialization, and development are believed to be able to reduce inequality itself.

It is widely assumed that financial development will directly or/and indirectly aid in the eradication of poverty in emerging countries. Market failure is a major source of poverty because financial market inefficiencies frequently hinder the disadvantaged from borrowing against future earnings in order to invest. It is possible to enhance the poor's access to formal finance by tackling the reasons for financial market failure, including asymmetric information and high, fixed costs of small-scale lending (Stiglitz, 1998). Improving poor people's access to financial services, notably credit and risk insurance, strengthens their productive assets, boosts their productivity, and raises their chances of establishing sustainable lives (World Bank, 2001).

Greenwood and Jovanovic (1990) developed a model where financial intermediaries analyse imperfect information and channel funds from savers to borrowers. Their strategy includes a participation cost, which is a one-time fee paid by agents to participate in the financial sector. This fee effectively prevents the poor from benefiting from financial possibilities. Not only would the poor be disadvantaged, but the income gap between low and high earners would possibly expand. Stiglitz (1993), who believes that financial market failure is the primary source of poverty in emerging nations, agrees with this conclusion. Applying this approach to our situation, the participation cost for microfinance institutions (MFIs) would most likely be cheaper, allowing them to acquire loans, invest, and overcome poverty more easily. Of course, whether it is low enough to aid the poor is a different matter.

Such considerations have not been investigated at the macroeconomic level, where, as previously indicated, economy-wide financial development strategies are applied. For example, Jalilian and Kirkpatrick (2002), Beck et al. (2008), and Jeanneney and Kpodar (2011) investigated financial development and poverty reduction in developing countries using the trickle-down approach (an indirect effect of financial development on poverty



reduction through economic growth) and found that financial development reinforces growth, which then reduces poverty. For example, Jalilian and Kirkpatrick (2002) suggest that increasing poor people's access to financial services will increase their income, hence reducing poverty. For example, providing poor people with insurance can help them better protect themselves from income shocks. Other studies have looked into the link between financial development and poverty reduction or income distribution. Using an auto-regressive distributed lag (ARDL) model, Keho (2017) estimates the relationship between financial advancements, economic growth, and poverty alleviation in nine African nations. In eight countries, the results show evidence of a long-run relationship between the variables, with GDP and financial deepening having a positive effect on poverty reduction in five (Benin, Cameroon, Cote d'Ivoire, Gabon, and South Africa), and poverty reduction having a positive effect on economic growth in three (Benin, Cameroon, Cote d'Ivoire, Gabon, and South Africa) (Ghana, Nigeria, and Senegal). Azran et al. (2012) investigated the influence of financial development on poverty reduction in Pakistan using the auto-regressive distributed lag model (ARDL) with an error correction method. According to the findings, financial deepening (credit to the private sector and broad money supply) had an effect on consumption per capita, which was employed as a proxy for poverty, according to the findings. Domestic bank assets, on the other hand, were not proven to have a long-term impact on poverty. Benjamin (2012) employed the 2SLS in a related study to look into the impact of financial development on poverty reduction in emerging countries. According to the study, boosting the availability of money and deposit opportunities rather than loans has helped emerging countries reduce poverty.

Between 1975 and 2011, Uddin (2013) explores the relationship between financial development, economic growth, and poverty reduction in Bangladesh. In Bangladesh, the Augmented Dickey-Fuller (ADF) and Zivot-Andrew structural break tests are used to determine the order of co-integration of all variables. The findings revealed that in Bangladesh, there is a long-term



association between financial development, economic growth, and poverty alleviation. Adam (2012) assesses the influence of financial openness-induced growth in Ghana on poverty alleviation. The findings point to a beneficial link between financial liberalization and growth. The findings imply a positive association between financial liberalism and the poor, but only in a disproportionate way. As a result of the findings, they concluded that credit channels are a more effective way of reducing poverty when accompanied by effective policy interventions. On the other hand, Kaidi and Mensi (2018) use a variety of estimating methodologies to look at the impact of financial development on poverty reduction in middle-income countries. The findings suggest that the development of the financial sector does not always help the poor's situation. The stock market, on the other hand, does. Dandume (2014) aims to investigate the causal relationship between Nigerian banking sector expansion, economic growth, and poverty alleviation. The Autoregressive Distributed Lag model is used in this investigation (ARDL). The study's empirical findings demonstrate that financial sector development does not lead to poverty reduction. This means that increasing the quantity of loanable funds as a result of financial sector expansion is insufficient to alleviate poverty.

Therefore, from the literature, it can be seen that studies that relate poverty reduction to the interaction between financial development and institutional quality in Sub-Saharan African countries are unavailable. This is the major gap the study seeks to cover.

2.3 Financial Development and the role of Institutional Quality

The financial sector plays a critical role in allocating finite economic resources, and the financial transactions that take place as part of this process help to boost economic growth (Graff 2003). According to Hartmann et al. (2007), financial innovation and institutional and organizational improvements in a financial system are used to minimize asymmetric information, strengthen market completeness, assist agents in financial



transactions via (explicit or implicit) contracts, lower transaction costs, and enhance competitiveness. As a result, FD encompasses advancements in banking products, institutions, and organizations, as well as non-banking financial structures and capital markets. Greenwood, Sanchez, and Wang (2007) argue that FD promotes investment efficiency and productivity by allowing credit allocation between enterprises. According to Ro, Kim, and Kim (2017), financial market efficiency and competitiveness are more significant than financial market size in encouraging economic growth. Han and Shen (2015) suggest that the rapid pace of FD leads to an increase in total factor productivity by addressing resource allocation imbalances. Yu, Li, and Huang (2017) point to two financial functions, namely financial access and financial efficiency, as important factors of FD that have a spillover effect through economic development. When liquid liabilities and loans to the private sector are used as measures, FD also serves as a poverty-reduction and economic booster (Rashid and Intartaglia, 2017). According to Anwar and Cooray (2012), improvements in political rights and civil liberties augment the benefits of FD in South Asia by positively influencing economic growth. Andrianova, Demetriades, and Xu (2011) emphasize the government's crucial role as a political institution that raises enormous trading monopolies, allowing the creation of global financial systems. Mardan (2017) looks at the barriers to external fundraising, such as tax restrictions and interest exemptions, that limit the optimal utilization of investment possibilities, resulting in FD; these rigid rules are more visible in less financially advanced economies than in financially developed ones. Singh and Delios (2017) emphasize the importance of governance structure in supporting board independence and launching new domestic and international ventures, the latter of which is dependent on-board firms' interconnection with other businesses' central networks. Bolgorian (2011) found that a high corruption index (low corruption) has a positive and significant impact on market capitalization and traded volume using panel data. According to Jain, Kuvvet, and Pagano (2017), bribery has a large and detrimental impact on a country's financial



sector, with highly transparent countries having lower transaction costs due to lower information asymmetry than corrupt countries.

Altunbaş and Thornton (2012), on the other hand, believe that corruption can be reduced by more efficiently allocating bank credits to the private sector. In a study of 469 firms listed on the Tehran Stock Exchange, Rostami, Rostami, and Kohansal (2016) discovered a significant and positive link between governance indicators and financial market returns; particularly, institutional ownership, ownership structure, and board independence positively drive stock returns, whilst the ownership concentration and board size have the opposite effect.

Remarkably, industrialized countries' institutional frameworks are very stable and do not alter frequently. However, due to the quick expansion of some rapidly growing countries, the institutions of Sub-Saharan African countries have evolved considerably in the short term. Emerging countries are in the midst of a delicate period of fast expansion, during which Institutional Quality plays a critical role in fostering profitable outcomes from a quickly expanding finance system. Law, Azman-Saini, and Ibrahim (2013) claim that countries with varying levels of institutional development have varying degrees of FD, which they relate to their Institutional Quality threshold levels.



3 Theories

3.1.1 Financial Development and Poverty Reduction Theory

Two schools of thought have evolved to explain the financial development and poverty reduction relationship. The first theoretical model is based on growth, whereas the second is based on the poor benefiting directly from financial services (Zhuang et al., 2009). Growth's impact on poverty reduction, according to the indirect approach, can occur through a variety of channels. To begin with, economic expansion has a tendency to create jobs for the unemployed. Second, faster growth may reduce wage disparities between skilled and unskilled Labor at a later stage of development, benefiting the poor (Galor & Tsiddon, 1996). Third, strong growth may result in increased tax revenues, allowing the government to spend more fiscal resources on social spending such as health, education, and social protection, benefiting the poor; and the poor may be able to invest more in human capital (Peroti, 1993). Fourth, as capital accumulation rises in tandem with rapid economic growth, more funds become accessible to the poor for investment (Aghion and Bolton, 1997), boosting their income.

In the earlier literature, however, there were differing viewpoints on the growth–poverty reduction link. According to the popular Kuznets inverted-U theory (Kuznets 1963), economic expansion may raise income disparity in the early stages of development but decrease it as industrialization progresses. The asset-rich classes, who can self-finance or have easy access to financing, would reap the early benefits of industrialization and therefore gain a larger portion of the economic pie, while the poor would be left behind. The "trickle down" (shared growth) hypothesis, on the other hand, proposed that economic progress would either trickle down to the poor through job creation and other economic possibilities, or establish the necessary conditions for the wider distribution of growth's economic and social advantages (Todaro, 1997). Contrarily, some economists believe that the rise of financial intermediaries will benefit the poor disproportionately. This is due to informational inequities that impose credit limits on the poor, who lack the resources to fund their own



initiatives and the collateral needed to obtain bank credit (Banerjee & Newman 1993; Galor and Zeira 1993; Aghion & Bolton 1997). Credit constraints prevent the poor from taking advantage of investment opportunities, limiting overall growth by preventing capital from flowing to its most valuable uses. A poorly functioning financial system will result in increasing income disparity by disproportionately preventing capital from flowing to "wealth-deficient" entrepreneurs. Given these divergent viewpoints, empirical research is required to evaluate whether or not financial system development is linked to poverty alleviation. This study is an attempt in that direction, with a focus on the quality of institutions in the sub-Saharan African region.

3.1.2 Financial Development and Institutional Quality Theories

Furthermore, various research (theoretical and empirical) has been conducted in the economic literature to indicate that there is a true relationship between the quality of institutions and financial progress. Three theories (the theory of law and finance, the theory of endowments, and the theory of pressure groups) provide contradictory explanations for the role of institutional quality in financial development.

3.1.3 Legal theory of finance

Financial markets, according to the Legal theory of finance (LTF), are legally constituted and situated in a hybrid location between market and state, private and public. At the same time, financial markets have specific characteristics that put them in direct conflict with legal or contractual duties. This is especially true during times of financial crisis, when strict adherence to legal commitments would result in the financial system's self-destruction. When the system's survival is in peril, this law-finance conundrum is frequently handled by suspending the strict application of the law. This happens at the very top of the financial structure (Pistor, 2013b).

The LTF is an inductive model. The LTF's four main arguments are that: 1) financial instruments are legally constituted; 2) law contributes to financial market instability; 3) there is a pecking order of payment modes, implying that



finance is inherently hierarchical; and 4) there is an inverse relationship between the obligatory nature of contractual and legal commitments on the one hand and the hierarchical nature of finance on the other, with law tending to be more elastic at the top (Pistor, 2013b).

3.1.4 Endowment Theory

Endowment theory is focused on the initial conditions and resources of colonized countries, as opposed to legal and financial theory, which focus on the identity and origins of colonizers to define the quality and effectiveness of a country's institutions. From this perspective, Acemoglu et al. (2001) argue that the colonists' settlement approach was a function of the colonized country's endowments, with substantial ramifications for institutions, particularly financial institutions. As a result, in an extractive economy, occupiers do not ensure the creation and growth of free and competitive financial markets because doing so would jeopardize their newly obtained position. In a settlement economy, on the other hand, residents attempt to establish institutions that preserve private property rights and thereby contribute to financial prosperity.

3.1.5 Pressure Group Theory

According to pressure group theory, the nonmonotonic evolution of financial development is explained by pressure groups opposing it because financial development causes competition. As a result, according to Rajan and Zingales (2003), the financial growth process is not always "win-win" and there is always a "win-lose" situation. The winners try to put off financial development as long as they can. They are resistant to change, and financial development will only be possible if their political influence is weakened.

In contrast to La Porta et al. (1998), Rajan and Zingales (2003) believe that political variables, rather than legal traditions, are more important in attaining financial development. According to this theory, when a group gains power, it



establishes policies and institutions that favour them (North, 1990). A powerful and centralized government is incompatible with a developed financial system in these circumstances, especially when there is an elite whose authority would be threatened by financial development. The reason for this assumption is that the effective operation of financial institutions necessitates less government discretion, which may be incompatible with the objectives and other designs of a powerful central government. A strong government cannot guarantee that it will keep its credit (repayment) promises, which could damage lending financial institutions or perhaps the financial system as a whole. Better institutions will regulate the financial system in ways that credit will be available for the poor.

3.2 Data And Empirical Strategy

Poverty is commonly characterized as a lack of resources or money, but in its most extreme form, it is defined as a lack of fundamental human requirements such as adequate food, clothing, housing, clean water, or health care. It can also refer to a lack of knowledge or opportunity, as well as uncertainty and anxieties about the future, as well as a lack of representation and independence. The headcount index, the poverty gap, the Gini coefficient, and the income of the poorest quintile are the four main indicators of poverty used in the literature, which has mostly concentrated on the economic element of poverty. The investigation focuses on the 46 Sub-Saharan African countries over the period 2000– 2019. The choice of the study period is informed by data availability. Data for the analyses will be sourced from the IMF's Financial Development Index Database, World Bank's World Development Indicators, and International Country Risk Guide. Specifically, the data/variables are discussed below.

Poverty headcount ratio at national poverty lines: The percentage of the population living below the national poverty line is known as the national poverty headcount ratio (s). National estimates are based on subgroup estimates from household surveys that have been population weighted.



National poverty lines serve as a guideline for determining poverty indicators that are appropriate for the country's economic and social conditions. To represent differences in the cost of living, or occasionally to reflect differences in diets and consumption baskets, a country may have a single national poverty line or separate poverty lines for rural and urban areas, or for different geographic locations. This is the most commonly used measure of poverty because, while arbitrary, it provides a quantitative metric of individuals living in conditions that a society deems intolerable at any given time. The average poverty rates in SSA, using headcount ratio at national poverty lines measure are given in Figure 3, with the highest average poverty rates recorded in 2002, 2006, 2011 and 2018. The least average poverty rate was recorded in 2016.

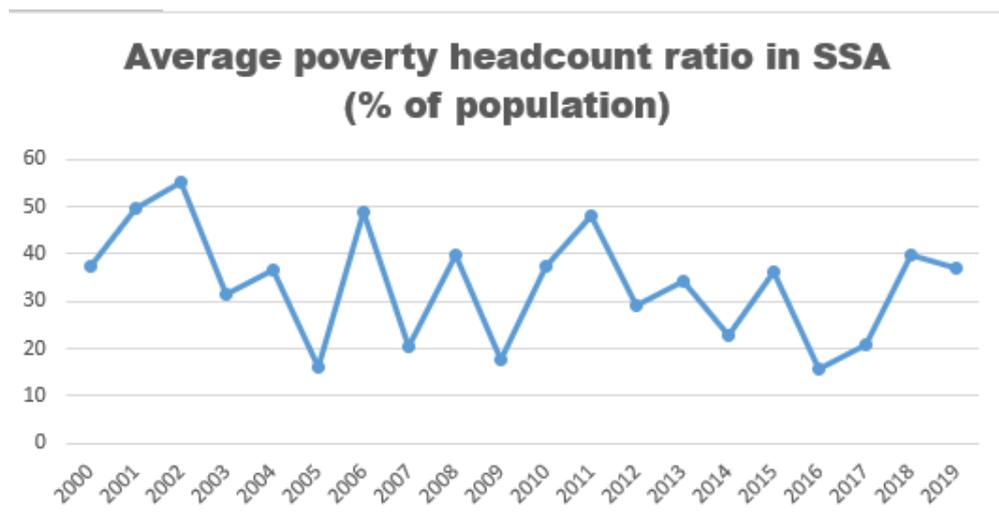


Figure 3

Source: Author's Construction with average in Dataset (Data from the IMF's database (2021)).

Institutional quality: The International Country Risk Guide provides the institutional variable. The use of an aggregate measure of institutions based on the rule of law, government corruption, and bureaucratic quality is used. Researchers such as Compton and Giedeman (2011) have utilized this variable to examine the function of institutions in the finance-growth nexus. The



variable is rescaled from 0 to 1, with higher values indicating more institutional quality and lower values indicating lower institutional quality.

Financial development index: In most empirical studies, financial development is proxied by one of two financial depth measures: the ratio of private credit to GDP or the ratio of stock market capitalization to GDP. These indicators, on the other hand, do not account for the multidimensional structure of financial progress. The IMF created the Financial Development Index to address this omission. It summarizes how developed financial institutions and financial markets are in terms of depth (size and liquidity), access (ability of individuals and businesses to obtain financial services), and efficiency (institution's ability to provide financial services at a low cost and with long-term revenues).

Finally, in accordance with Dollar and Kraay (2002), this study includes a set of control variables that are commonly used as factors determining poverty: overall income per capita, to capture the contribution of economic development (GDP per capita); consumer price index growth, to control for the macroeconomic environment (inflation); and the sum of exports and imports as a share of GDP, to capture the degree of international openness (trade openness).



Table 1: Variables Description

Variables	Indicators	Measurement	Source
<i>POV (poverty)</i>	Poverty headcount ratio at national poverty lines	Percentage	World Bank, Global Poverty Working Group (2021)
<i>FD (financial development)</i>	Financial Development Index	Index	IMF (2021)
<i>INST (institutional quality)</i>	Political Risk Index	Index	International Country Risk Guide (2020)
<i>GDPPC (economic development)</i>	GDP per capita growth (Annual)	Percentage	World Bank national accounts data (2021).
<i>INF (inflation)</i>	Inflation, consumer prices (annual)	Percentage	IMF's International Financial Statistics (2021).
<i>TOP (Trade openness)</i>	Trade (% of GDP)	Percentage	World Bank national accounts data (2021).

Source: Author's construction

The major goal of this research is to see if the quality of institutions has an impact on how financial progress affects poverty. As a result, the following model is specified.

when Eq. (1) is rewritten in a panel-econometric form, we get:

$$povred_{it} = a + \alpha_1 FD_{it} + \alpha_2 inst_{it} + \alpha_3 inst * FD_{it} + X_{it}\Gamma + a_i + \epsilon_{it} \dots \dots \dots (1)$$

Here:

a represents the constant term.

a_i is the individual heterogeneity.

ε_{it} is the error term.

povred_{it} is poverty reduction; **FD_{it}** is financial development; **inst_{it}** stands for institutional quality; **inst * FD_{it}** is the interaction between institutions and FD; and **X_{it}** is a vector of control variables (GDP per capita, inflation and trade openness).

The coefficients **a**, **α₁**, **α₂**, **α₃** and **Γ** denote the parameters to be estimated. A statistically significant negative sign for **α₁** indicates that financial development has a direct pro-poor impact. Similarly, a negative sign for **α₂** indicates that higher levels of institutional quality are associated with lower



poverty rates. A negative sign for α_3 indicates that the operation of a sound

Table 2: Sign and Meaning of the Coefficients Associated with the Main Variables

Sign	Meaning
$\alpha_1 < 0$	Financial development is pro-poor
$\alpha_2 < 0$	Institutional development is pro-poor
$\alpha_3 < 0$	Financial sector and institutions are complements
$\alpha_3 > 0$	Financial sector and institutions are substitutes
$\alpha_3 = 0$	Neither complements nor substitutes

institutional framework strengthens the pro-poor impact of financial development, implying that finance and institutions are complementary. A positive sign for α_3 implies that the pro-poor effect of financial development is smaller in countries with well-developed institutions than in countries with weak institutions, implying that finance and institutions are substitutes. However, the lack of statistical significance for α_3 implies that the impact of financial development on poverty is independent of institutional development. For illustration purposes, Table 1 shows the coefficients of the main variables of interest along with their signs and meanings. It is important to note that if the interaction between financial development and institutions is statistically significant, any poverty model that excludes the interaction may be mis specified and suffer from omitted variable bias.



3.2.1 Method of Estimation and Model justification

Fixed Effect and Random Effect Models

The panel data approach was used as the empirical method for estimate. Panel data approaches are increasingly commonly employed to estimate dynamic econometric models in order to capture dynamic effects, which is the primary advantage of panel data over cross-sectional data (Bond, 2002). Its advantage over aggregate time series data is the likelihood that aggregate base may mask underlying microeconomic processes. Panel data, in particular, allows researchers to investigate heterogeneity impacts emerging from the sample's cross-sectional components as well as the adjustment dynamic resulting from the time series component. The panel data dynamics is presented both in fixed and random effects, with the latter relying heavily on the error term assumption.

Pooled OLS model does not take into account the time-series in which data are ordinated and cannot examine more than one observation per country. In addition to this, it does not control for omitted variables. The fixed effect model allows for heterogeneity among subjects by allowing each entity to have its own intercept value (Gujarati and Porter, 2008). Although the intercept may differ across subjects, each entity's intercept is time invariant while the random effect model assumes that the intercept is a random variable with a mean value. For the random effect model, individual differences in the intercept value for each cross-sectional observations are reflected in the error term. The fixed and random effect model permits us to account for heterogeneity of the Sub-Saharan African countries. In order to check the suitability of the models to the data, the Hausman test will be performed. The Hausman test is given by the following formula under the null hypothesis that the random effects model is valid.:



$$H = [\widehat{b}_{FE} - \widehat{\beta}_{RE}] \Psi^{-1} [\widehat{b}_{FE} - \widehat{\beta}_{RE}] \xrightarrow{Asym.} X^2 (k - 1) \dots \dots \dots (2)$$

From equation 4, $[\widehat{b}_{FE} - \widehat{\beta}_{RE}]$ represents the vector of the difference in slope coefficients between the fixed effects estimator \widehat{b}_{FE} and the random effects estimator $\widehat{\beta}_{RE}$, Ψ represent the difference in the variance matrix of slope coefficients between the fixed and random effects (i.e., $\Psi = \text{Var}[\widehat{b}_{FE} - \widehat{\beta}_{RE}]$).

The Econometric form of the model:

- **Fixed Effect:**

$$Y_{it} = \alpha_0 + \beta_1 X_{it} + \varepsilon_{it} \dots \dots \dots (3)$$

$$povred_{it} = \beta_0 + \alpha_1 FD_{it} + \alpha_2 inst_{it} + \alpha_3 inst * FD_{it} + X_{it} \Gamma + \varepsilon_{it} \dots \dots \dots (4)$$

- **Random Effect:**

$$Y_{it} = \alpha_0 + \beta_1 X_{it} + \mu_i + \varepsilon_{it} \dots \dots \dots (5)$$

$$povred_{it} = \beta_0 + \alpha_1 FD_{it} + \alpha_2 inst_{it} + \alpha_3 inst * FD_{it} + X_{it} \Gamma + \alpha_i + \varepsilon_{it} \dots \dots \dots (6)$$



4 Preliminary Results

Table 3 gives descriptive measurements of the variables. The poverty headcount ratio has a mean estimate of 33.48 and min and max of 1.82 and 32.26 respectively.

Table 3: Summary Statistics for the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>POV</i>	790	33.478	47.405	1.825	32.261
<i>FD</i>	800	0.143	0.114	0.029	0.646
<i>INST</i>	799	0.517	0.183	0	0.869
<i>GDPPC</i>	799	1.973	5.148	-36.557	56.789
<i>INF</i>	757	8.411	28.520	-9.616	513.907
<i>TOP</i>	757	72.446	34.955	20.722	225.023

Financial development index has a sample of 800, however; it has a standard deviation of 0.11. The range of financial development ranges from 0.03 to 0.65. Institution has a variability of 0.18 as demonstrated by estimation of standard deviation. Its range lies somewhere in the range of 0 and 0.87. A comparable translation holds for all different variables.



Table 4: Correlation Matrix						
	POV	FD	INST	GDPPC	INF	TOP
<i>POV</i>	1.00					
<i>FD</i>	0.3501	1.00				
<i>INST</i>	0.1335	0.4289	1.00			
<i>GDPPC</i>	-0.0894	0.0330	0.1462	1.00		
<i>INF</i>	-0.0628	-0.0410	-0.1090	-0.1070	1.00	
<i>TOP</i>	0.4405	0.2980	0.0286	0.0299	0.0076	1.00

Source: Author's computation using STATA 15

The correlation matrix is presented in Table 4. The results display both the correlation coefficients and the probability. While some variables exhibit positive and significant correlation, others exhibit negative and significant correlation. Focusing specifically on *POV* (first row), it can be seen that economic growth per capita, and inflation have negative correlation with poverty.



5 Main Results

Based on the outcome of the Hausman test, all the analyses and interpretation pertaining to model seven [7] are inferred from the fixed effects result.

The fixed effects result, as presented in Table 5, suggests that notwithstanding its significance, the increase in the level of financial development had no reducing effect on the poverty level in SSA within the period of study. This finding highlights the fact that, despite increased financial sector development, the poor segment of the SSA population still lacks financial resources. It implies that financial progress alone, without equitable income distribution and effective governance, may not be adequate to combat poverty. The result is consistent with Dandume's (2014). The implication is that before financial sector expansion can pool mobilized resources into productive investment and equally channel economic progress to the poor, it requires a backup of supporting policies of resource distribution and effective governance.



Table 5 Fixed-effects (within) regression						
pov	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
FD	2.634	0.780	3.38	0.001	1.103	4.166
INST	0.461	0.149	3.08	0.002	0.168	0.755
GDPPC	0	0.003	-0.38	0.701	-.0061	0.004
INF	0.001	0.001	0.31	0.759	-.0006	0.001
TOP	-.0008	0.001	-1.07	0.286	-.0024	0.001
FD_INST	-1.942	0.862	-2.25	0.025	-3.634	-.2494
year						
2001	.0368	0.069	0.53	0.594	-0.099	0.172
2002	0.079	0.069	1.14	0.256	-0.057	0.214
2003	0.251	0.069	3.63	0.000	0.115	0.387
2004	0.390	0.070	5.59	0.000	0.253	0.527
2005	0.471	0.068	6.90	0.000	0.337	0.605
2006	0.516	0.069	7.49	0.000	0.380	0.651
2007	0.611	0.068	8.94	0.000	0.477	0.745
2008	0.686	0.072	9.54	0.000	0.544	0.826
2009	0.657	0.068	9.66	0.000	0.523	0.790
2010	0.666	0.068	9.75	0.000	0.532	0.799
2011	0.727	0.068	10.72	0.000	0.594	0.861
2012	0.709	0.068	10.38	0.000	0.574	0.842
2013	0.764	0.068	11.19	0.000	0.630	0.898
2014	0.779	0.069	11.32	0.000	0.644	0.914
2015	0.651	0.069	9.43	0.000	0.516	0.786
2016	0.615	0.070	8.80	0.000	0.478	0.752
2017	0.651	0.070	9.28	0.000	0.514	0.789
2018	0.687	0.071	9.70	0.000	0.548	0.826
2019	0.660	0.071	9.33	0.000	0.521	0.799
sigma_u	0.88					
sigma_e	0.26					
rho	0.92 (fraction of variance due to u_i)					
Turning point	FD	FD_INST			INST	
	2.63	+ (-1.94)	*		0.46	= 1.74

Furthermore, institutional quality is found to be a significant determinant of poverty reduction in SSA. This means that the quality of institutions in SSA countries has a significant effect on poverty reduction but didn't actually reduce poverty in the SSA region. This result corroborates that of Aracil et al.



(2022), who opined that the institutional decay in developing countries has not been able to stimulate economic performance and, in turn, poverty alleviation.

However, it is also found that the pro-poor impact of financial development is stronger where institutions work well and weaker when institutions work less well. These findings provide evidence in favor of a complementary effect between finance and institutions. One possible reason behind such an effect is that some of the limitations associated with a weak institutional framework might be alleviated by the working of the banking system, and vice versa.

Although the effect of GDPPPC is not significant, it is negatively signed, signifying a pro-poor effect on poverty. The positive change in economic growth is conducive to poverty reduction. This is in line with the findings of Ijaiya et al. (2011). Inflation and Trade openness are also not significant. The negative value of trade openness suggests that it reduced poverty level in SSA, that is, it is a pro-poor factor. This was not totally unexpected as trade openness tends to reduce poverty in countries where financial sectors are deep, education levels high and institutions strong.

6 Summary and Concluding remarks

The impact of financial development and institutional frameworks on poverty has received a lot of attention in the economic literature on poverty. These earlier empirical investigations have typically shown that financial development and institutions have a pro-poor impact. Despite these findings, the interaction effect of finance and institutions has been overlooked. As a result, the goal of this study is to re-evaluate the relationship between financial development and poverty for a sample of SSA countries while taking into account an interaction effect between the financial sector and the institutional framework, which is thought to be causing some omitted variable bias. These relationships were investigated using fixed effects and random effects models. The following is a summary of the main findings of this empirical study: To begin with, it was discovered that financial development had a statistically significant and positive impact on poverty reduction. Second, the estimates



reveal that institutional quality has an insignificant but positive impact on poverty reduction. However, it was discovered that where institutions perform better, the pro-poor impact of financial development is also better. These findings support the theory that finance, and institutions have a complementary effect. One possible explanation for this effect is that the functioning of the institutional framework may reduce some of the limitations associated with a weak financial system. Furthermore, the statistical significance of the complementing impact suggests that earlier models of poverty that fail to account for a relationship between financial growth and institutions may be essentially erroneous or mis-specified. In terms of policy implications, these findings show that directing resources to institution-building and the financial sector yields the largest benefits in terms of poverty reduction. This is especially important in nations where economic resources and finances are limited and funds are committed to meeting the population's basic necessities. A judicious allocation of these funds between financial development and strengthening the quality of institutions is then critical to reducing poverty and boosting economic growth. Of course, allocating funds to both sectors is dependent on the present levels of financial development and institutional quality, a position that is substantiated by other authors who consider threshold effects.



6.1 Policy Implication

In terms of policy implications, the findings show that investing resources in institution-building or the banking sector yields the largest returns in terms of poverty reduction. This is especially important in nations where economic resources and budgets are limited and funds are committed to meeting the population's basic necessities. Aiding poverty reduction and promoting economic growth requires a careful distribution of these resources between financial development and strengthening the quality of institutions. Of course, whether funds should be allocated to one or the other is dependent on present levels of financial development and the quality of the institutions, as other scholars have found.

6.2 Recommendation

As a result of the findings, policies to support financial development are necessary. These policies would promote institution quality, the ability to adapt and gain new skills, and economic openness. These policies would thus allow resources to be shifted from less productive to more promising activities. As a result, financial development should not be seen in isolation, and other policies will be required to boost its influence on poverty reduction efforts. Countries in Sub-Saharan Africa should continue to pursue policies that promote trade openness, effective governance, and the accumulation of human capital. Overall, the outcome provides strong messages to regional governments and administrations about the necessity of strengthening financial development and institutional quality in the economy. As a result, Sub-Saharan African countries should do everything necessary to improve the quality of their institutional frameworks and structures, because effective institutions diminish political unrest, which is a major determinant of growth and investment.



6.3 The study's limitation

The study is hampered by various limiting circumstances. This study only looked at countries in Sub-Saharan Africa; therefore, it doesn't represent the entire African continent. There was also an issue with data availability for some of the countries. The choices of variables differed from those of other research papers, and it became a constraint because there was no data for such variables as the democratization index.

6.4 Future Studies

This research provides some fascinating insights into financial development, institutional framework, and poverty, all of which can be improved. Given the importance of the informal financial sector in Sub-Saharan African countries, future research should focus on developing a financial development index that includes both the informal and formal financial sectors. Given the multi-dimensional nature of poverty, additional empirical studies using multi-dimensional poverty indicators might be conducted to produce more meaningful results.



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Appendix 1

Data Visualization

Yearly panel plots of the main variables are shown in Figures 4, 5 and 6.

Figure 4.

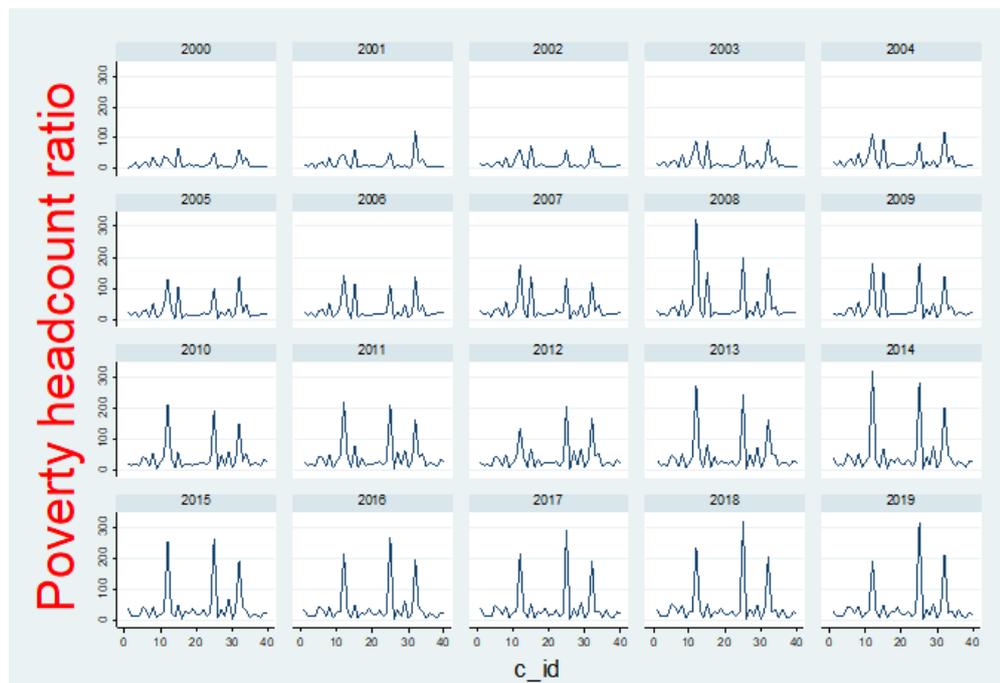


Figure 5

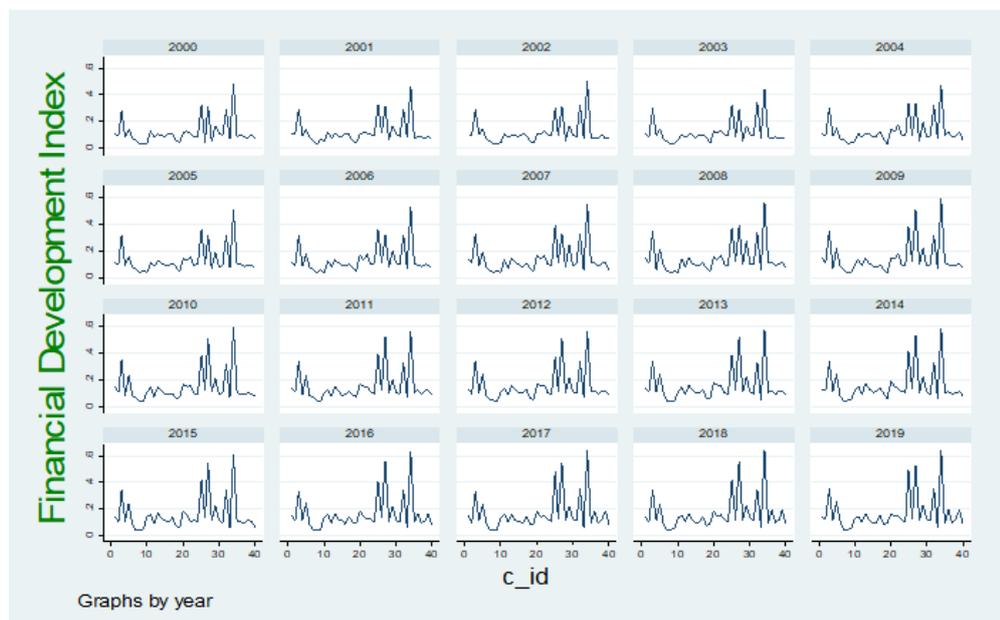
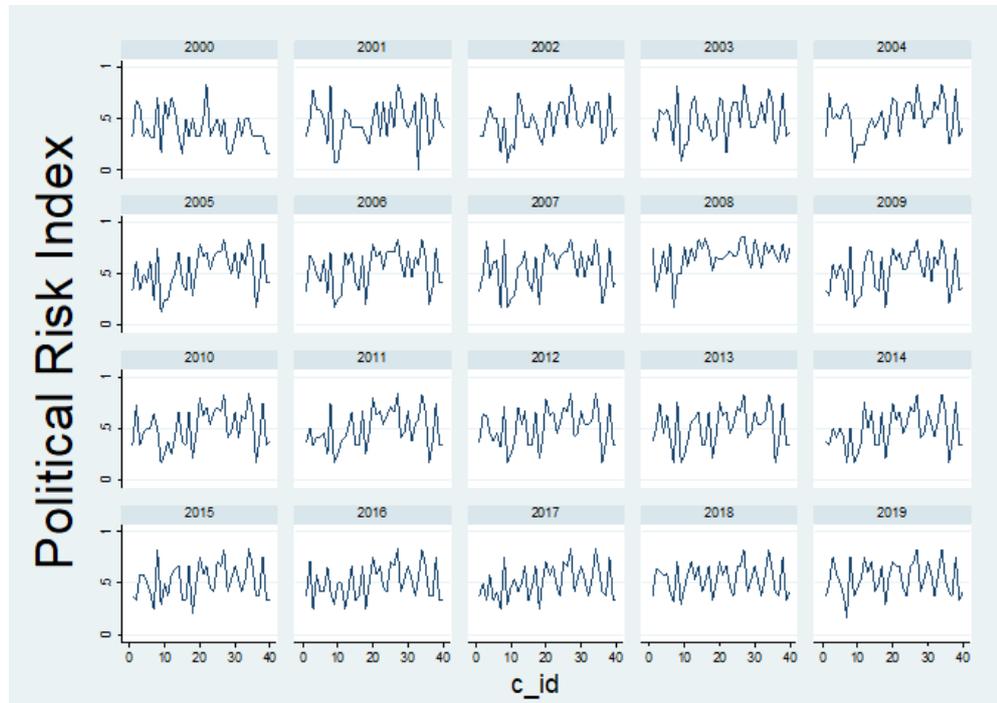




Figure 6





```
r Sunday May 22 09:39:54 2022 Page 2
      2018 | .6866584 .0707844 9.70 0.000 .5476654 .8256513
      2019 | .6597485 .0706799 9.33 0.000 .5209607 .7985363
-----+-----
      _cons | 2.076056 .1317723 15.75 0.000 1.817307 2.334805
-----+-----
      sigma_u | .87609515
      sigma_e | .26242015
      rho     | .91766648 (fraction of variance due to u_i)
-----+-----
F test that all u_i=0: F(38, 652) = 142.65 Prob > F = 0.0000
4 .
```



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