

Article

Do Institutions Matter for Turning Savings into Investment? Evidence from African Economies

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Abstract

This study examines the relationship between domestic savings and fixed capital formation in African economies, focusing on the moderating role of institutional quality. Using panel data for 45 African countries over the period 1996–2024, we estimate a fixed-effects model with Driscoll–Kraay standard errors to account for cross-sectional dependence and heteroskedasticity. The findings confirm a positive and significant relationship between domestic savings and investment, consistent with traditional growth theory. More importantly, the results reveal that institutional quality significantly enhances the effectiveness of savings in promoting fixed capital formation, with stronger governance frameworks improving the allocation of resources and limiting diversion into unproductive uses. Disaggregated results further show that the moderating effect varies across institutional dimensions and is more pronounced in middle-income countries, while remaining weak or insignificant in low-income economies. These findings highlight the conditional nature of the savings–investment nexus and underscore the importance of institutional development in translating domestic resources into productive investment in Africa.

Keywords: savings; institutional quality; investment; Africa

JEL Classification: E02; E21; E22; L78; O55

1. Introduction

The relationship between saving and investment has long been central to macroeconomics, particularly within theories of capital formation and long-run growth. In Solow's (1956) neoclassical growth model, the saving rate is a key determinant of the steady-state level of capital per worker and, consequently, of output and income. This perspective has its roots in the earlier Harrod–Domar model (Harrod, 1939; Domar, 1946), which similarly identified savings as a necessary condition for investment and economic growth. Thus, the savings–investment relationship became a key element for understanding how capital formation takes place and different growth rates arise.

However, despite this strong theoretical foundation, gross fixed capital formation as a share of GDP has remained persistently low and volatile in many African countries (Warnholz, 2008; Collier & Pattillo, 2000). In several cases, investment levels fall short of what is required to sustain growth, and are further constrained by external shocks in addition to domestic structural weaknesses. On the other hand, domestic savings are generally low and inadequate to support investment, leading to dependency on external financing (Warnholz, 2008; Collier & Pattillo, 2000; Anyanwu, 2006).



Academic Editor: Robert Czudaj

Received: 13 April 2026

Revised: 29 May 2026

Accepted: 2 June 2026

Published: 5 July 2026

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Empirically, the savings–investment link has been extensively studied in various clusters of nations. The pioneering study by [Feldstein and Horioka \(1980\)](#) showed a high degree of association between domestic saving and investment, leading to the formation of the Feldstein-Horioka puzzle that implied low international mobility of capital. It spurred considerable discussion and empirical scrutiny. In particular, [Obstfeld \(1986\)](#) and [Rogoff \(1996\)](#) re-examined the puzzle in the face of growing financial openness, and [Razin \(1994\)](#) analyzed its effects on open-economy macroeconomics.

Subsequent research focused on developing countries where domestic savings were considered likely to be a more important determinant of investment as a result of poor financial infrastructure. In this regard, [Schmidt-Hebbel et al. \(1996\)](#) gave some empirical results that indicated that savings are highly significant determinants of investments, especially in developing countries. Also, [Hermes and Lensink \(2000\)](#) concluded that domestic savings are an important determinant of investments in developing economies. Contributions from [Rajan and Zingales \(1998\)](#) and [Prasad et al. \(2007\)](#) have highlighted the role of financial development and foreign capital in shaping the savings–investment relationship, while more recent work by [Pal \(2024\)](#), [Salakpi et al. \(2024\)](#) and [Zieseimer \(2026\)](#) has extended this debate to capital mobility and external capital flows across heterogeneous developing regions.

A parallel strand of research emphasises the role of institutions in shaping macroeconomic outcomes. In his seminal study of institutions, [North \(1990\)](#) described institutions as “the rules of the game” that govern economic activities and emphasized their importance in bringing down uncertainty and making transactions easier. Following this, [Acemoglu et al. \(2001\)](#) used statistical data to show the significance of institutions in the economic growth process. Likewise, [Rodrik et al. \(2004\)](#) argued that institutions play a decisive role in explaining income differentials among countries relative to other determinants like geography and trade.

Within the investment literature, institutional quality is increasingly recognised as a critical determinant of both the level and efficiency of capital formation. Strong institutions—characterised by good governance, the rule of law, sound regulation, and low corruption—facilitate investment by securing property rights and ensuring contract enforcement. As found by empirical research conducted by [Alfaro et al. \(2008\)](#), institutions increase the efficiency of financial flows, specifically foreign direct investments. Additionally, [Wei \(2000\)](#) finds that corruption decreases the efficiency of investments as it serves as an additional tax imposed upon them. Finally, [La Porta et al. \(1998\)](#) show the significance of legal institutions for finance and [Beck and Demirgüç-Kunt \(2006\)](#) stress the importance of institutions for financial intermediation and capital formation.

In the context of African economies where problems related to institutions, such as poor governance, inadequate regulations, and a lack of financial development, still exist, there might be significant constraints on the efficiency of converting savings into investments. Poor institutions will contribute to capital flight, inefficient resource allocation, and weak financial intermediation, thus reducing the ability of savings to be converted into investments. In this regard, sound institutions would help develop a better capacity to convert savings into investments.

However, most of the current literature considers savings and institutions as two independent factors influencing investment decisions. Theoretically, the capacity of savings to stimulate investment is likely conditioned by the quality of the institutional environment in which they accumulate. The savings–investment link therefore depends on institutional quality, yet empirical evidence on this conditional relationship remains scarce, particularly regarding how individual dimensions of institutional quality shape the translation of savings into investment.

This paper seeks to fill these gaps by conducting an empirical examination of the conditional savings–investment relationship via the moderating effect of institutional quality, using a cross-country panel dataset. Specifically, this paper aims to: (i) test whether institutional quality moderates the savings–investment relationship; (ii) examine the heterogeneous effects of individual institutional dimensions on this relationship; and (iii) compare cross-country variations at different levels of economic development.

The remainder of the paper is organised as follows. Section 2 reviews the relevant literature, Section 3 describes the data and empirical methodology, Section 4 presents and discusses the results, and the final section concludes.

2. Literature Review

2.1. Overview

The relationship between domestic savings and investment, particularly fixed capital formation, has long occupied a central position in development economics. Traditional growth theories, including the Harrod–Domar model (Harrod, 1939; Domar, 1946) and the neoclassical growth framework (Solow, 1956), emphasise savings as a fundamental driver of capital accumulation and long-run economic performance. Within these frameworks, higher savings rates increase the pool of funds available for investment, thereby enabling economies to expand their productive capacity and sustain growth over time. While the Harrod–Domar model highlights the role of savings in determining growth through the capital–output ratio, the Solow model introduces diminishing returns to capital and demonstrates how savings influence the steady-state level of income rather than long-run growth itself.

Beyond these theoretical foundations, a substantial body of empirical literature has examined the savings–investment nexus, generally finding a positive relationship between domestic savings and investment (Feldstein & Horioka, 1980). This relationship is particularly relevant in developing economies, where limited access to international capital markets and underdeveloped financial systems constrain external financing options, thereby increasing reliance on domestic savings to fund investment (Ndikumana, 2000). In such contexts, domestic savings play a crucial role in financing infrastructure development, industrial expansion, and other forms of fixed capital formation. However, the strength and efficiency of this relationship vary considerably across countries, suggesting that structural and institutional factors may influence how effectively savings are translated into productive investment.

Empirically, the savings–investment nexus has been widely studied, with mixed but generally supportive evidence of a positive relationship (Feldstein & Horioka, 1980; De Vita & Abbott, 2002; Ndikumana, 2000; David et al., 2020; Murthy & Ketenci, 2021; Horioka, 2024; Yersh, 2025; Ziesemer, 2026). For African samples, the results support the savings–investment relationship. For example, research on 16 SSA countries (1981–2011) explicitly models domestic savings and domestic investment jointly (alongside FDI and growth), documenting meaningful interrelationships between domestic savings and investment dynamics (Abu & Karim, 2016). Complementary work emphasises that financial development facilitates the channelling of resources from savers to investors in SSA, implying that the availability of savings alone is insufficient—the transmission mechanism matters (Ndikumana, 2000). More recent contributions have re-examined this relationship using updated panel techniques and African samples. Murthy and Ketenci (2021) re-test the Feldstein–Horioka hypothesis for African countries using panel error-correction modelling and find evidence of moderate capital mobility, while Horioka (2024) reframes the long-standing puzzle as a fallacy of composition. Pal (2024) and Yersh (2025) further highlight that capital flows and current account dynamics meaningfully shape the

savings–investment correlation across developing regions, reinforcing the view that domestic and external financial channels jointly determine investment outcomes.

Institutional economics emphasises that investment outcomes depend not only on the availability of financial resources but also on the “rules of the game,” including the institutional environment within which economic activity takes place (Abdulai et al., 2024). In Sub-Saharan Africa, a growing body of empirical evidence highlights the critical role of institutional quality in shaping investment dynamics (Iheonu, 2019; Bakari & Benzid, 2021; Asongu et al., 2021; Abdulai et al., 2024). Collectively, these studies underscore the importance of institutional factors in influencing investment outcomes across the region. For instance, Asongu et al. (2021) analyse the interaction between financial development, institutional frameworks, and private investment in Africa. Their findings indicate that institutional quality, especially aspects related to property rights protection and governance structures, plays a more significant role in driving private investment than the expansion of financial intermediaries alone.

Similarly, Iheonu (2019) shows that most governance indicators have a statistically significant and positive influence on domestic investment across African countries. Notably, dimensions such as voice and accountability, along with the control of corruption, exhibit particularly strong effects. However, government effectiveness appears to be an exception, as it does not significantly contribute to investment outcomes in this context.

Focusing on specific governance dimensions, Bakari and Benzid (2021) find that corruption undermines domestic investment, while greater levels of democracy and investment freedom enhance it. This underscores the importance of both political and economic governance in fostering an environment conducive to capital formation.

Beyond traditional investment channels, recent evidence also suggests that institutional quality shapes financial market responses during periods of crisis. For example, Almustafa (2022) demonstrates that the relationship between the COVID-19 pandemic and stock market performance is conditioned by the strength of national governance systems. Countries with higher-quality governance frameworks tend to exhibit more resilient financial market behaviour during such shocks.

2.2. Institutional Quality and the Savings–Investment Relationship

In environments characterised by poor institutional quality, domestic savings are less likely to be transformed into productive investment and are often diverted towards unproductive uses such as capital flight, rent-seeking activities, or short-term consumption (Acemoglu et al., 2005). This is particularly evident in developing economies, where governance failures, weak property rights, and corruption reduce investor confidence and limit the efficient allocation of financial resources. Empirical evidence from Africa suggests that capital flight has been a persistent challenge, with substantial domestic resources leaving the continent instead of financing domestic investment (Ndikumana & Boyce, 2011). Similarly, weak institutional frameworks have been associated with higher levels of corruption and rent-seeking, which further distort investment decisions and reduce capital formation (Mauro, 1995). These dynamics imply that the presence of savings alone is insufficient to drive investment; rather, the institutional environment plays a critical role in determining whether savings are channelled into productive capital accumulation. Consequently, institutional quality can be viewed as a key moderating factor in the savings–investment relationship, reinforcing the hypothesis that stronger institutions enhance the effectiveness of savings in promoting fixed capital formation.

Empirical evidence supports the moderating role of institutions in the savings–investment relationship. Studies have shown that institutional quality enhances investment efficiency and strengthens the link between financial development and economic growth

(Alfaro et al., 2008; Levine, 2005). In the African context, poor governance, political instability, and weak regulatory frameworks, including episodes of armed conflict and civil war that have historically disrupted investment in countries such as Sudan, the Democratic Republic of the Congo, Somalia, and parts of the Sahel, have often been cited as barriers to effective capital formation, even in the presence of available savings (Fosu, 2013; Collier & Hoeffler, 2004). These dimensions of political risk are captured in our empirical analysis through the Political Stability and Absence of Violence indicator within the Worldwide Governance Indicators composite. This suggests that the impact of savings on fixed capital formation is conditional on the quality of institutions, supporting the hypothesis that institutional quality moderates this relationship.

2.3. Income Levels and Conditional Effects

The relationship between savings, institutional quality, and fixed capital formation may also depend on a country's level of economic development. Development theory suggests that low-income countries face structural constraints that limit both savings mobilisation and investment efficiency (Banerjee & Duflo, 2005). High levels of poverty, limited financial inclusion, and weak institutional capacity reduce the ability of these economies to convert savings into productive capital formation. In such contexts, savings are often used primarily for consumption smoothing rather than investment due to liquidity constraints and income volatility (Deaton, 1991). Moreover, even when savings are available, weak institutions and underdeveloped financial systems may prevent their efficient allocation (Acemoglu et al., 2005; Levine, 2005). As a result, the moderating role of institutional quality may be less pronounced in low-income countries, where both savings and institutional frameworks remain insufficiently developed to generate strong interaction effects.

In contrast, middle-income countries typically exhibit higher savings rates, more developed financial systems, and relatively stronger institutional frameworks. In these contexts, improvements in institutional quality can significantly enhance the efficiency of investment and strengthen the savings–investment link. Empirical studies support this view, showing that the impact of institutions on economic outcomes becomes more pronounced as countries reach higher levels of development (Rodrik et al., 2004; Aghion et al., 2005).

Building on this perspective, this study contributes to and differs from the existing literature in three connected ways. Conceptually, while earlier work on Africa (e.g., Ndikumana, 2000; Abu & Karim, 2016; Murthy & Ketenci, 2021) typically treats the savings–investment link as an unconditional macroeconomic relationship, or, in the institutional literature, examines institutions as a direct determinant of growth or investment (Acemoglu et al., 2005; Fosu, 2013), this paper treats institutional quality as a moderator of the savings–investment relationship itself, rather than as a parallel determinant. Empirically, instead of relying on a single composite governance index or a single institutional pillar, the analysis disaggregates institutional quality across the Worldwide Governance Indicators and tests for heterogeneous moderating effects across income groups within Africa, providing finer-grained evidence than aggregate-index studies (e.g., Ekeocha et al., 2023). In terms of policy implications, the results move the debate beyond the general call to “raise savings” or “improve institutions” by identifying which institutional dimensions and which country groups generate the largest payoff in turning savings into productive capital formation, which is directly relevant for sequencing reform priorities in African economies.

Table 1 below synthesises the main strands of the literature reviewed above, organising studies by their thematic focus, regional coverage, methodological approach, and key findings.

Table 1. Synthesis of the literature reviewed.

Study	Focus	Region/Sample	Method	Key Finding
Feldstein and Horioka (1980)	Savings–investment correlation; capital mobility	16 OECD countries	Cross-section OLS	High S–I correlation; capital less mobile than expected
Ndikumana (2000)	Determinants of domestic investment	Sub-Saharan Africa panel	Fixed-effects panel	Domestic savings significantly drive investment in SSA
Hermes and Lensink (2000)	Financial development and capital flight	Developing countries incl. Africa	Panel regression	Weak financial systems impede mobilisation of savings
Rajan and Zingales (1998)	Financial dependence and growth	Cross-country industry panel	Difference-in-differences	Financial development matters more for finance-dependent sectors
Acemoglu et al. (2005)	Institutions and long-run growth	Cross-country historical	IV/cross-section	Institutions are a fundamental cause of growth
Fosu (2013)	Growth, governance, and inequality in Africa	SSA panel	Panel econometrics	Institutional quality conditions growth payoffs
Prasad et al. (2007)	Foreign capital and growth	Developing countries	Cross-country panel	Reliance on foreign savings not associated with faster growth
Abu and Karim (2016)	Savings–investment nexus	Sub-Saharan Africa	Panel cointegration	Long-run S–I relationship exists in SSA
Murthy and Ketenci (2021)	Feldstein–Horioka in Africa	27 African countries, 1965–2015	Panel error-correction	Capital mobility evidence with cross-country heterogeneity
Ekeocha et al. (2023)	Institutional quality and sectoral outcomes	42 SSA countries, 2010–2018	System GMM	Institutional effects on sectoral performance are muted
Salakpi et al. (2024)	Financial development and domestic investment	45 African economies, 1986–2020	Pooled Mean Group	Financial development supports investment in long run
Horioka (2024)	Feldstein–Horioka after 44 years	Global review	Theoretical/survey	Re-frames puzzle as fallacy of composition

3. Methodology

To empirically examine the effect of domestic savings on investment in Africa, this study utilizes an augmented investment function framework. Traditional growth theories, including the Harrod–Domar model and the neoclassical framework (Solow, 1956), emphasize savings as the fundamental driver of capital accumulation and productive capacity. While human capital and technological progress are also recognised as important drivers of investment, this study focuses specifically on how governance structures—the “rules of the game”—regulate the efficiency with which financial resources are transformed into physical capital.

3.1. Model Specification

Following the panel specifications used by Abu and Karim (2016) for Sub-Saharan Africa, the baseline empirical model captures both the direct effect of savings and its conditional effect mediated by institutional quality. This specification draws on the logic of Feldstein and Horioka (1980), which relates domestic savings to domestic investment,

while augmenting it with institutional variables as proposed by North (1990) to account for the rules that structure economic interaction. The general specification is as follows:

$$GFI_{i,t} = \beta_0 + \beta_1 Savings_{i,t} + \beta_2 INST_{i,t} + \beta_3 (Savings \times INST)_{i,t} + \sum_{K=1}^4 \varnothing_k X_{i,t} + \mu_i + \tau_t + \varepsilon_{i,t} \quad (1)$$

In this equation, β_0 represents the intercept, while the dependent variable, $GFI_{i,t}$, is measured by Fixed Capital Formation as a percentage of GDP for country i at time t . The primary explanatory variable of interest, $Savings_{i,t}$, represents Gross Savings as a percentage of GDP. To capture the quality of the governance environment, $INST_{i,t}$ is used as a composite institutional indicator calculated from the average of six worldwide governance indicators, such as Rule of Law, Regulatory Quality, Control of Corruption, Political Stability, Voice and Accountability, and Government Effectiveness, using Principal Component Analysis (PCA). The dataset consists of annual observations for each indicator to ensure consistency across the panel, with descriptive ranges detailed in Appendix A. The interaction term $(Savings \times INST)_{i,t}$ is utilized to test the moderating role of institutions in strengthening the translation of domestic resources into fixed capital. The vector of control variables, $X_{i,t}$, includes the first difference in the natural logarithm of real GDP per capita ($D.lnGDP$), Foreign Direct Investment (FDI), government spending ($Spending$), and population growth (POP) to account for broader macroeconomic conditions. To address concerns regarding non-stationarity, particularly for $lnGDP$, we use the first difference in the variable ($D.lnGDP$) in our estimations, ensuring that the model does not combine I(0) and I(1) processes. Finally, μ_i and τ_t represent country-specific and time-specific effects, respectively, while $\varepsilon_{i,t}$ is the error term.

To determine if an improvement in institutional quality can enhance the impact of savings on investment, Equation (2) is differentiated with respect to savings:

$$\frac{\partial GFI_{i,t}}{\partial Savings_{i,t}} = \beta_1 + \beta_3 INST_{i,t} \quad (2)$$

A positive β_3 indicates complementarity, signifying that stronger institutions enhance the effectiveness of savings in promoting fixed capital formation by ensuring resources are not diverted to unproductive uses such as capital flight or rent-seeking. Following development theory (Banerjee & Duflo, 2005), the study further tests if this mediation shifts as nations develop by disaggregating the sample into low-income and middle-income groups. The classification follows the World Bank's income criteria (see Appendix F for the full list), grouping countries by shared structural economic characteristics and developmental constraints. This accounts for the hypothesis that in low-income countries, structural constraints and weak institutional capacity often result in savings being utilized for consumption smoothing (Deaton, 1991) rather than capital formation. Conversely, in middle-income contexts, the impact of institutional quality on economic outcomes becomes more pronounced, as stronger frameworks significantly enhance investment efficiency (Rodrik et al., 2004; Aghion et al., 2005).

3.2. Estimation Technique: Fixed-Effects with Driscoll–Kraay Standard Errors

The choice of a Fixed-Effects (FE) model is driven by its ability to handle unobserved heterogeneity, such as time-invariant geographic factors or initial levels of technology (Plümer & Troeger, 2007; Clark & Linzer, 2015; Bell & Jones, 2015). This approach ensures that the parameters are identified through within-country variation over time, reducing the risk of bias from omitted variables that are constant within each nation.

To ensure the reliability of the inferential results, the main estimation is conducted using Driscoll–Kraay standard errors, a technique chosen for its robustness to common

diagnostic issues in panel data. This estimator accounts for serial correlation by addressing temporal dependence within the error terms of individual countries over time. Furthermore, it remains valid in the presence of heteroskedasticity, where the variance of the error terms is not constant. Most importantly, it addresses cross-sectional dependence (CSD)—contemporaneous correlation across countries—which is frequent in African regional data owing to shared economic shocks. By employing this robust covariance matrix estimator, the study ensures that the significance of the institutional mediation effect is accurately identified.

Nevertheless, to address potential endogeneity and reverse causality—since savings, investment, and institutional quality may be jointly determined—we supplement the fixed-effects analysis with an Instrumental Variable (IV-2SLS) estimation as a robustness check (see Appendix C.2). The Durbin-Wu-Hausman test for endogeneity yielded a p -value of 0.2229 ($\text{Prob} > \chi^2$), indicating that the null hypothesis of exogeneity cannot be rejected at standard significance levels. This suggests that the baseline fixed-effects results are not significantly biased by endogeneity, further validating the reliability of our findings.

3.3. Data Sources and Variable Definitions

The study utilizes panel data for 45 African countries (see Appendix F for the list of countries) spanning from 1996 to 2024. Data for capital formation and savings are sourced from the World Development Indicators (WDI), while institutional and macroeconomic control variables are sourced from The Global Economy.

The descriptive statistics in Table 2 reveal a sizeable gap between average gross savings (19.43% of GDP) and fixed capital formation (21.99% of GDP) across the continent. This discrepancy points to a systemic challenge in capital accumulation and is consistent with a continued reliance on external financing to meet investment needs. The substantial variability in the composite institutional index (standard deviation = 2.21) further reflects a diverse governance landscape, in which structural bottlenecks such as weak property rights and corruption likely constrain the effectiveness of domestic resource mobilisation. Taken together, these statistics suggest that the translation of available resources into fixed capital is strongly conditioned by country-specific developmental and institutional contexts.

Table 2. Descriptive statistics of variables used in the empirical model.

Variable	Obs	Mean	Std. Dev.	Min	Max
GFI	1301	21.99334	9.836436	−15.68	76.78
Savings	1032	19.43343	12.08303	−19.9	67.9
INS	1375	1.26×10^{-10}	2.214847	−5.76219	5.75139
LGDP	1507	7.207194	0.977491	5.36994	9.877229
POP	1536	2.364824	1.125139	−2.63	16.75
Spending	1266	15.40797	7.506587	2.05	62.13
FDI	1465	4.141584	9.128259	−82.89	161.82

The correlation matrix in Table 3 reveals a positive relationship between fixed capital formation (GFI) and domestic savings (0.5152), supporting the foundational theory that higher savings rates increase the pool of funds available for investment. The association with institutional quality is positive (0.1673), supporting the premise that governance serves as a channel for converting resources into outcomes. Additionally, the correlation between GFI and Foreign Direct Investment (0.406) underscores the complementary role of external financing in capital accumulation across the continent. Positive correlations for spending (0.1696) and GDP per capita (0.0955) highlight broader macroeconomic drivers of investment, while all coefficients remain well below 0.8, confirming the absence of multicollinearity.

Table 3. Correlation matrix of model variables.

Variable	GFI	Savings	Savings $\times$ INS	INS	LGDP	POP	Spending	FDI
GFI	1							
Savings	0.5152	1						
Savings $\times$ INS	0.1519	0.0468	1					
INS	0.1673	0.0844	0.8649	1				
LGDP	0.1215	0.3642	0.3719	0.5162	1			
POP	0.0675	−0.0486	−0.4335	−0.494	−0.6015	1		
Spending	0.1376	0.0504	0.3585	0.3493	0.3224	−0.3576	1	
FDI	0.406	0.0007	0.0669	0.1111	0.0334	0.0048	0.1176	1

To further ensure the econometric integrity of the model, Table 4 presents the Variance Inflation Factor (VIF) analysis to test for multicollinearity. The results show a mean VIF of 2.39, with all individual variable VIFs, including the institutional index (4.91) and the interaction term (4.25), remaining well below the standard threshold of 10. This confirms that multicollinearity does not pose a threat to the reliability of our coefficient estimates, ensuring that the individual effects of savings and institutions can be clearly identified.

Table 4. Variance Inflation Factor (VIF) test for multicollinearity.

Variable	VIF	1/VIF
INS	4.91	0.203473
Savings $\times$ INS	4.25	0.23518
LGDP	2.23	0.448792
POP	1.83	0.545745
Spending	1.25	0.80019
Savings	1.23	0.815906
FDI	1.03	0.967174
Mean VIF	2.39	

4. Results

4.1. Baseline Results

The baseline results in Table 5 demonstrate that domestic savings have a positive and statistically significant association with investment across all specifications. This finding supports traditional growth models, such as the Harrod–Domar model and the neoclassical framework (Solow, 1956), which identify savings as a fundamental driver of capital accumulation. It further confirms the Feldstein and Horioka (1980) hypothesis regarding the savings–investment nexus and aligns with empirical evidence from Abu and Karim (2016), who documented a robust relationship between domestic savings and investment in Sub-Saharan Africa. Meaningfully, this relationship suggests that higher domestic savings are linked to a larger pool of resources required for expanding productive capacity and sustaining fixed capital formation in the region. Among the control variables, population growth (POP) consistently exhibits a positive and highly significant association with investment across all models (Table 5), likely reflecting increased demand for infrastructure. In contrast, the relationship with economic growth (D.LGDP) is statistically insignificant in this panel, suggesting that capital accumulation in these economies may not be primarily driven by short-term income fluctuations. Foreign direct investment plays a complementary role by augmenting domestic resources and supporting capital accumulation, while government expenditure is positively correlated with investment. Overall, the results in Table 5 indicate that both domestic savings and broader macroeconomic conditions are important determinants of investment. All estimations account for time-specific effects, which are statistically

significant ($p < 0.001$), indicating that temporal trends significantly influence investment dynamics across the continent.

Table 5. The role of institutions in moderating the effect of savings on fixed investment.

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Savings</i>	0.303 *** (0.0465)	0.366 *** (0.0515)	0.401 *** (0.0559)	0.355 *** (0.0535)	0.390 *** (0.0583)	0.320 *** (0.0558)	0.370 *** (0.0610)
<i>Savings</i> × <i>INS</i>	0.0337 ** (0.0132)						
<i>INS</i>	0.483 (0.412)						
<i>D.LGDP</i>	−0.204 (4.144)	0.486 (4.166)	−0.563 (4.058)	−0.231 (4.256)	−1.002 (4.155)	0.816 (4.017)	0.429 (3.951)
<i>POP</i>	1.773 *** (0.545)	1.877 *** (0.556)	1.742 *** (0.513)	1.762 *** (0.551)	1.836 *** (0.547)	1.645 *** (0.533)	1.803 *** (0.531)
<i>Spending</i>	0.217 ** (0.0887)	0.204 ** (0.0809)	0.197 ** (0.0872)	0.241 ** (0.0903)	0.173 * (0.0880)	0.230 ** (0.0886)	0.212 ** (0.0875)
<i>FDI</i>	0.628 *** (0.101)	0.622 *** (0.0995)	0.624 *** (0.0991)	0.626 *** (0.104)	0.626 *** (0.0999)	0.628 *** (0.0992)	0.624 *** (0.0991)
<i>GEF</i>		1.380 (1.274)					
<i>Savings</i> × <i>GEF</i>		0.0939 ** (0.0434)					
<i>Savings</i> × <i>RL</i>			0.127 *** (0.0432)				
<i>RL</i>			−1.330 (1.487)				
<i>Savings</i> × <i>CC</i>				0.0796 * (0.0404)			
<i>CC</i>				1.599 (1.133)			
<i>Savings</i> × <i>VA</i>					0.104 ** (0.0426)		
<i>VA</i>					−0.228 (0.960)		
<i>PL</i>						−0.0675 (0.766)	
<i>Savings</i> × <i>PL</i>						0.0314 (0.0230)	
<i>REQ</i>							−0.389 (1.023)
<i>Savings</i> × <i>REQ</i>							0.0865 ** (0.0417)
<i>Constant</i>	6.298 *** (1.611)	7.259 *** (1.956)	5.968 *** (1.878)	7.005 *** (1.765)	6.662 *** (1.727)	6.767 *** (1.720)	6.182 *** (1.900)
<i>Observations</i>	893	893	893	893	893	893	893
<i>Number of groups</i>	45	45	45	45	45	45	45
<i>Time effect (p-Value)</i>	0.00						

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.2. The Moderating Role of Institutions

To provide a more granular understanding of how specific governance frameworks influence the savings–investment link, Models 2 through 7 in Table 5 examine individual institutional dimensions. The results reported in Table 5 reveal that institutional quality significantly moderates the relationship between savings and fixed investment. Both the composite institutional index (INS) and individual governance indicators—government effectiveness (GEF), rule of law (RL), control of corruption (CC), voice and accountability (VA), and regulatory quality (REQ)—produce positive and statistically significant interaction terms with savings. These findings support North's (1990) argument that the “rules of the game” shape economic outcomes, and align with literature indicating that stronger institutions reduce the diversion of domestic resources toward unproductive uses such as capital flight or rent-seeking (Acemoglu et al., 2005; Ndikumana & Boyce, 2011; Mauro, 1995). The strong interaction effects found for governance dimensions such as VA and CC mirror those reported by Iheonu (2019) and Bakari and Benzid (2021).

4.3. Marginal Effects Analysis

The marginal effects, illustrated in Figures 1–7 and detailed in Appendix E, provide deeper insight into how the relationship between savings and investment is conditioned by institutional quality. The results consistently show that at low levels of institutional development, the effect of savings on investment is negligible or even negative, suggesting that the mere availability of savings is insufficient without an effective transmission mechanism (Ndikumana, 2000). As institutional quality improves, the marginal effect becomes positive and increases steadily, reflecting a threshold effect where a minimum level of governance is required for savings to contribute meaningfully to capital formation. In Figures 2–7, the institutional indicators are plotted over the range of values observed in the sampled African economies, ensuring that the visualisations reflect the empirical distribution of the data rather than theoretical extremes.

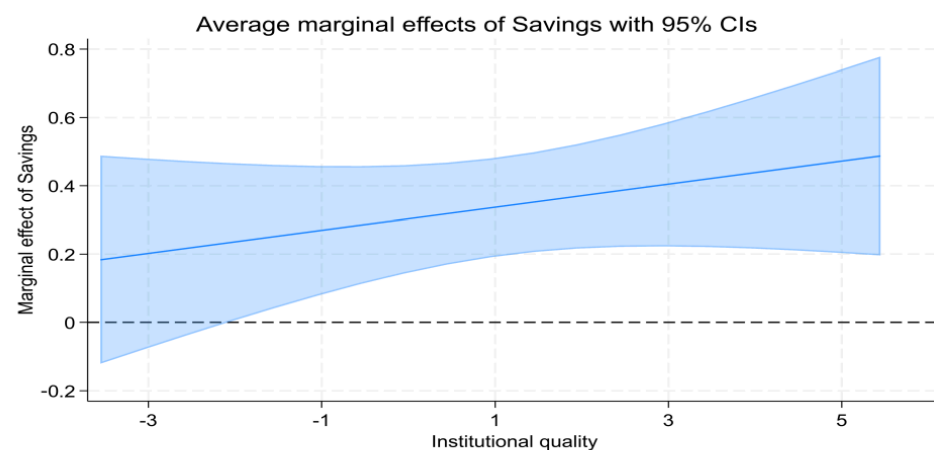


Figure 1. Marginal effects of savings on fixed investment across the composite institutional quality index (INS).

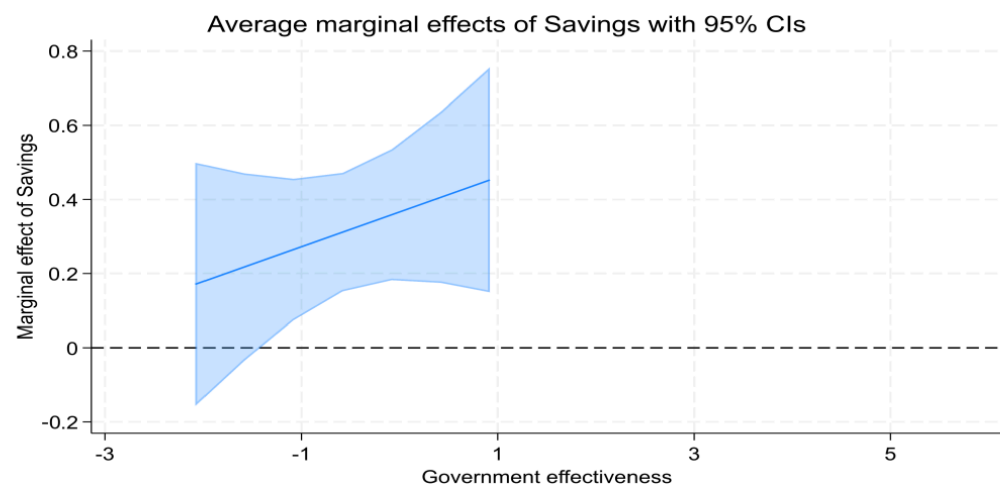


Figure 2. Marginal effects of savings on fixed investment at different levels of government effectiveness.

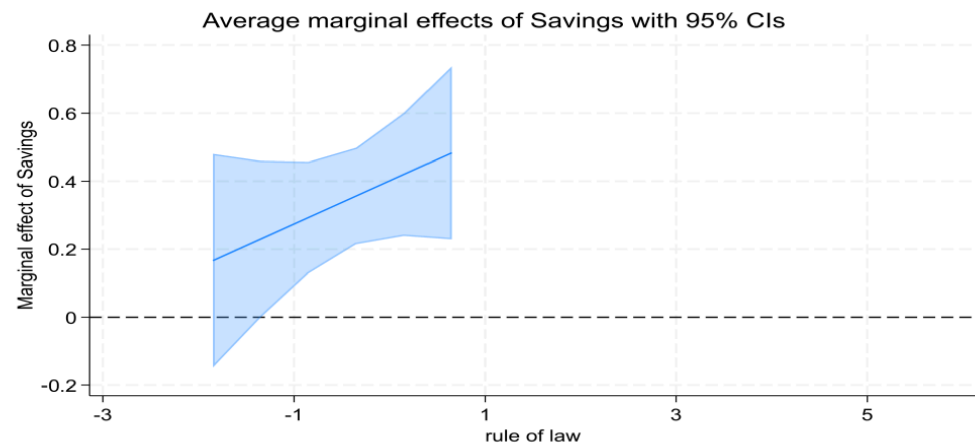


Figure 3. Marginal effects of savings on fixed investment at different levels of rule of law.

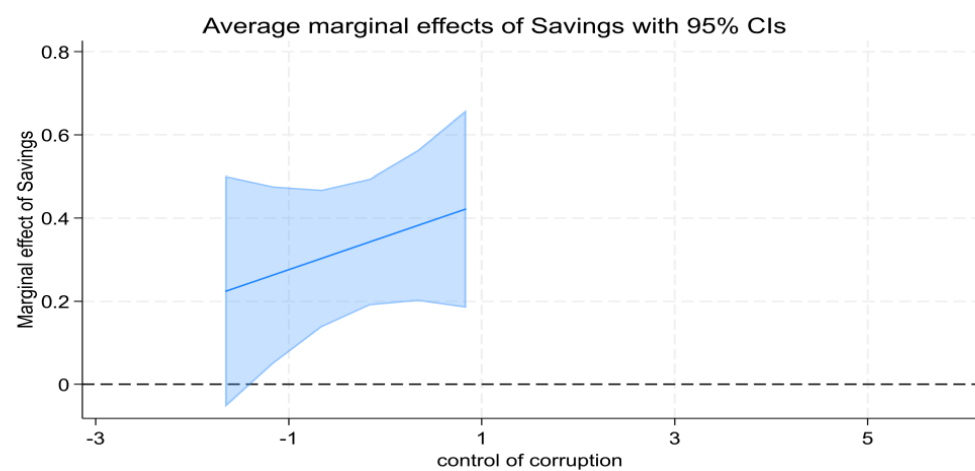


Figure 4. Marginal effects of savings on fixed investment at different levels of control of corruption.

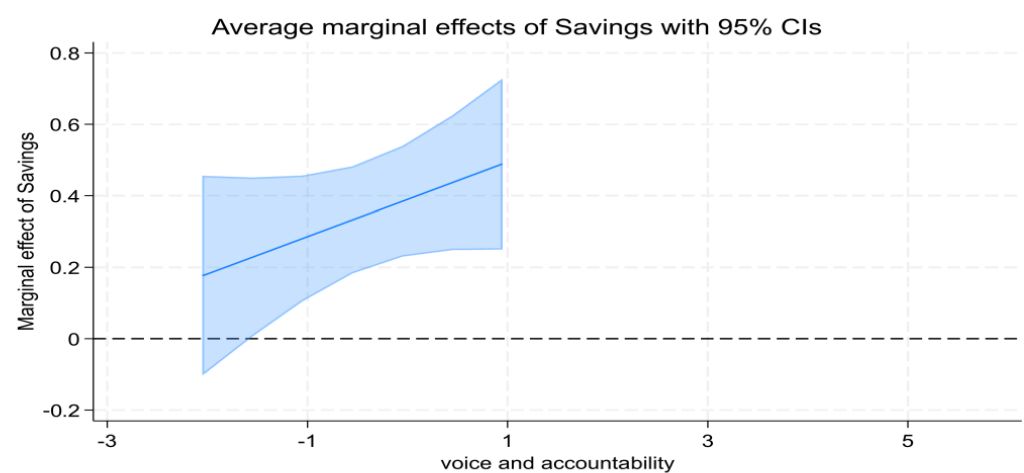


Figure 5. Marginal effects of savings on fixed investment at different levels of voice and accountability.

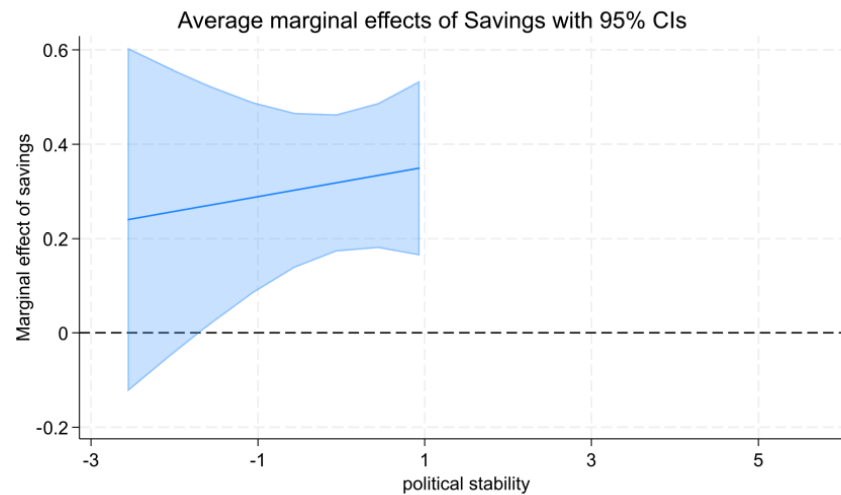


Figure 6. Marginal effects of savings on fixed investment at different levels of political stability.

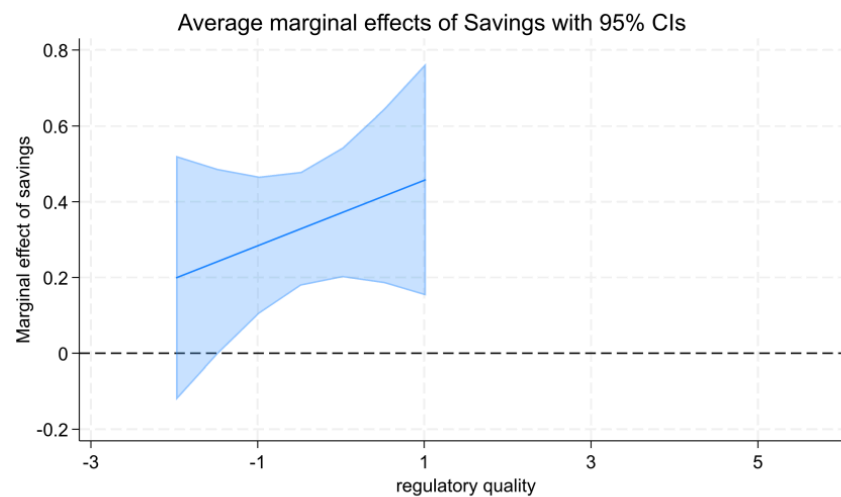


Figure 7. Marginal effects of savings on fixed investment at different levels of regulatory quality.

4.4. Heterogeneity by Income Groups

The disaggregated results in Appendices D.1 and D.2 reveal significant differences based on economic development. In middle-income countries (Appendix D.1), institutional quality reinforces the savings–investment link, which is consistent with evidence that institutional impacts become more pronounced at higher development stages (Rodrik et al., 2004; Aghion et al., 2005). These results suggest that relatively more developed institutional frameworks in these nations support efficient resource allocation, allowing savings to effectively drive capital formation. Conversely, in low-income countries (Appendix D.2), the interaction term between savings and institutional indicators are generally weak or insignificant. While this insignificance could partially reflect lower statistical power due to the smaller sample size in this sub-group (14 countries and 291 observations, compared to 31 countries and 602 observations in the middle-income group), the findings are robustly supported by development theory. This outcome aligns with the premise that in low-income contexts, structural constraints and poverty often cause savings to be used for consumption smoothing rather than productive investment (Deaton, 1991; Banerjee & Duflo, 2005). In these environments, investment is more closely associated with external financing sources, such as Foreign Direct Investment (FDI), as domestic savings and institutional frameworks remain insufficiently developed to generate strong interaction effects.

4.5. Robustness Checks

Robustness results in Appendices B, C.1 and C.2 confirm the stability of the main findings. To ensure the results are not driven by specific variable definitions, alternative proxies were employed, most notably in Appendix B, which utilizes gross capital investment as a percent of GDP as an alternative measure for investment instead of the primary gross fixed capital formation indicator. Additionally, alternative estimation techniques, including Random-Effects (Appendix C.1) and Instrumental Variable (IV-2SLS) estimation (Appendix C.2), were utilized to account for unobserved heterogeneity and potential model specification issues. Across all these variations, the positive relationship between savings and investment, as well as the significant moderating role of institutions, remains consistent. This ensures that the conclusions are robust to alternative measurements and estimation approaches, reinforcing the theoretical premise that institutional quality acts as the vital “rules of the game” (North, 1990) necessary for effective capital accumulation.

5. Conclusions

This study examined the relationship between domestic savings and fixed capital formation in African economies, with a focus on the moderating role of institutional quality. Using panel data for 45 countries over the period 1996–2024, the results confirm a positive relationship between savings and investment, consistent with growth theory. Importantly, the findings show that institutional quality significantly enhances the effectiveness of savings in promoting capital formation, with stronger governance frameworks improving resource allocation and reducing diversion into unproductive uses. The analysis further reveals heterogeneity across institutional dimensions and development levels, with the moderating effect being more pronounced in middle-income countries and largely insignificant in low-income contexts. These results highlight the conditional nature of the savings–investment nexus and suggest that strengthening institutional quality, alongside addressing structural constraints in lower-income economies, is essential for translating domestic savings into productive investment in Africa.

These findings broadly confirm the positive savings–investment relationship documented in earlier studies on Africa (Ndikumana, 2000; Abu & Karim, 2016; Murthy & Ketenci, 2021), while extending that literature by showing that the strength of the relationship is conditional on institutional quality and income level rather than being uniform across the continent. The result that the moderating role of institutions is more pronounced in middle-income than in low-income African countries is consistent with evidence that the marginal effect of governance reforms on investment outcomes depends on a minimum threshold of institutional capacity (Fosu, 2013; Ekeocha et al., 2023). Many African governments have made explicit efforts to raise institutional quality—through anti-corruption agencies, public-financial-management reforms, and African Union governance frameworks such as the African Peer Review Mechanism—and our findings suggest these efforts are a necessary complement to, rather than a substitute for, policies that mobilise domestic savings.

Author Contributions: Conceptualization, C.A.; Methodology, C.A. and D.M.; Software, C.A.; Formal analysis, C.A.; Data curation, C.A.; Writing—original draft, C.A.; Writing—review & editing, D.M. and F.K.; Supervision, D.M. and F.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data used in this study are derived from publicly available international databases and are available from the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A. Variable Description and Sources, 1996–2024

Variables Names	Variable Description	Source
Dependent variables		
<i>GFIC</i>	Capital investment (% of GDP)	WDI, 1996–2024
Explanatory variables		
<i>Savings</i>	Gross domestic savings (% of GDP)	WDI, 1996–2024
Measurement of institutions		
<i>INS</i>	Composite institutional indicator, measured by the average of the six worldwide governance indicators , using principal component analysis (PCA) (−2.5 weak; 2.5 strong)	
<i>RL</i>	Rule of law index (−2.5 weak; 2.5 strong)	The Global Economy, 1996–2024
<i>REQ</i>	Regulatory quality index (−2.5 weak; 2.5 strong)	The Global Economy, 1996–2024
<i>CC</i>	Control of corruption (−2.5 weak; 2.5 strong)	The Global Economy, 1996–2024
<i>PL</i>	Political stability index (−2.5 weak; 2.5 strong)	The Global Economy, 1996–2024
<i>VA</i>	Voice and accountability index (−2.5 weak; 2.5 strong)	The Global Economy, 1996–2024
<i>GEF</i>	Government effectiveness index (−2.5 weak; 2.5 strong)	The Global Economy, 1996–2024
Control variables		
<i>lnGDP</i>	Natural logarithm of real GDP per capita at constant national prices (in constant 2015 US\$)	The Global Economy, 1996–2024
<i>FDI</i>	Foreign Direct Investment, percent of GDP	The Global Economy, 1996–2024
<i>Spending</i>	Government spending as percent of GDP	The Global Economy, 1996–2024
<i>POP</i>	Population growth, percent	The Global Economy, 1996–2024

Appendix B. Gross Capital Investment as Percent of GDP

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Savings</i>	0.196 *** (0.0442)	0.197 *** (0.0390)	0.247 *** (0.0498)	0.186 *** (0.0509)	0.241 *** (0.0534)	0.211 *** (0.0482)	0.203 *** (0.0567)
<i>Savings</i> × <i>INS</i>	0.0125 (0.00914)						
<i>INS</i>	1.162 ** (0.519)						
<i>D.LGDP</i>	0.279 (5.231)	2.941 (5.256)	−0.145 (5.381)	0.558 (5.349)	−0.377 (5.258)	0.599 (5.277)	0.609 (5.200)
<i>POP</i>	0.869 (0.534)	1.367 ** (0.598)	0.814 (0.515)	0.867 (0.521)	0.894 (0.532)	0.711 (0.521)	0.919 * (0.526)
<i>Spending</i>	0.332 *** (0.0938)	0.352 *** (0.0896)	0.301 *** (0.0923)	0.330 *** (0.0936)	0.287 *** (0.0982)	0.330 *** (0.0939)	0.332 *** (0.0958)
<i>FDI</i>	0.590 *** (0.103)	0.570 *** (0.0978)	0.595 *** (0.106)	0.597 *** (0.103)	0.590 *** (0.103)	0.596 *** (0.105)	0.589 *** (0.102)
<i>GEF</i>		7.877 *** (1.216)					

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Savings</i> × <i>GEF</i>		0.0207 (0.0346)					
<i>Savings</i> × <i>RL</i>			0.0560 * (0.0314)				
<i>RL</i>			−1.323 ** (0.584)				
<i>Savings</i> × <i>CC</i>				−0.0225 (0.0265)			
<i>CC</i>				1.524 * (0.790)			
<i>Savings</i> × <i>VA</i>					0.0463 (0.0357)		
<i>VA</i>					0.350 (1.040)		
<i>PL</i>						0.362 (0.843)	
<i>Savings</i> × <i>PL</i>						0.0212 (0.0154)	
<i>REQ</i>							2.504 ** (1.037)
<i>Savings</i> × <i>REQ</i>							0.00747 (0.0380)
<i>Constant</i>	8.926 *** (1.749)	12.94 *** (1.987)	9.105 *** (1.756)	10.44 *** (1.703)	10.16 *** (1.913)	10.12 *** (1.847)	10.83 *** (1.818)
<i>Observations</i>	834	834	834	834	834	834	834
<i>Number of groups</i>	42	42	42	42	42	42	42

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix C

Appendix C.1. Random Effect

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Savings</i>	0.290 *** (0.0610)	0.328 *** (0.0794)	0.364 *** (0.0696)	0.324 *** (0.0710)	0.383 *** (0.0682)	0.302 *** (0.0705)	0.319 *** (0.0783)
<i>Savings</i> × <i>INS</i>	0.0224 ** (0.00987)						
<i>INS</i>	0.535 * (0.297)						
<i>D.LGDP</i>	−3.304 (4.631)	−1.796 (5.031)	−3.801 (4.266)	−3.093 (4.482)	−4.767 (4.202)	−2.739 (4.146)	−2.901 (4.270)
<i>POP</i>	1.928 *** (0.500)	2.273 *** (0.567)	1.763 *** (0.482)	1.938 *** (0.502)	1.860 *** (0.454)	1.727 *** (0.495)	1.869 *** (0.491)
<i>Spending</i>	0.218 ** (0.0791)	0.215 *** (0.0754)	0.212 ** (0.0802)	0.220 *** (0.0775)	0.189 ** (0.0819)	0.230 *** (0.0806)	0.228 ** (0.0820)
<i>FDI</i>	0.672 *** (0.102)	0.657 *** (0.0998)	0.675 *** (0.100)	0.675 *** (0.105)	0.669 *** (0.100)	0.676 *** (0.0990)	0.672 *** (0.0991)
<i>GEF</i>		3.788 *** (1.174)					

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Savings</i> × <i>GEF</i>		0.0603 (0.0463)					
<i>Savings</i> × <i>RL</i>			0.0923 *** (0.0306)				
<i>RL</i>			−1.061 (0.941)				
<i>Savings</i> × <i>CC</i>				0.0482 (0.0324)			
<i>CC</i>				1.483 (0.917)			
<i>Savings</i> × <i>VA</i>					0.105 *** (0.0328)		
<i>VA</i>					0.115 (0.877)		
<i>PL</i>						−0.0133 (0.634)	
<i>Savings</i> × <i>PL</i>						0.0166 (0.0265)	
<i>REQ</i>							1.045 (0.902)
<i>Savings</i> × <i>REQ</i>							0.0360 (0.0351)
<i>Constant</i>	6.990 *** (1.782)	8.934 *** (2.006)	6.838 *** (1.972)	7.943 *** (1.752)	7.618 *** (1.943)	7.581 *** (1.737)	7.838 *** (1.950)
<i>Observations</i>	893	893	893	893	893	893	893
<i>Number of groups</i>	45	45	45	45	45	45	45

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix C.2. IV (2SLS) Estimation

Variables	Model 1
<i>Savings</i>	0.449 *** (0.0976)
<i>INS</i>	0.532 (0.638)
<i>Savings</i> × <i>INS</i>	0.0379 * (0.0227)
<i>D.LGDP</i>	−26.23 (39.03)
<i>FDI</i>	1.625 *** (0.404)
<i>Spending</i>	0.142 (0.120)
<i>POP</i>	1.784 * (0.936)
<i>Constant</i>	14.94 ** (6.218)
<i>Observations</i>	769
<i>R-squared</i>	0.607
<i>Durbin–Wu–Hausman Test for Endogeneity:</i>	6.969
<i>Prob > chi2</i>	0.2229

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix D

Appendix D.1. Middle-Income Group

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Savings</i>	0.153 ** (0.0552)	0.292 *** (0.0620)	0.292 *** (0.0702)	0.239 *** (0.0731)	0.289 *** (0.0682)	0.223 *** (0.0691)	0.273 *** (0.0775)
<i>Savings</i> × <i>INS</i>	0.0567 *** (0.0136)						
<i>INS</i>	0.376 (0.692)						
<i>D.LGDP</i>	−3.592 (6.257)	−1.621 (6.580)	−4.425 (6.284)	−3.177 (6.134)	−4.974 (5.613)	−1.968 (6.185)	−2.913 (6.149)
<i>POP</i>	1.887 ** (0.776)	2.234 ** (0.804)	1.770 ** (0.749)	1.829 ** (0.764)	1.997 ** (0.742)	1.492 * (0.755)	1.933 ** (0.780)
<i>Spending</i>	0.316 *** (0.102)	0.279 *** (0.0989)	0.285 ** (0.103)	0.332 *** (0.102)	0.255 ** (0.105)	0.365 *** (0.104)	0.327 *** (0.106)
<i>FDI</i>	0.633 *** (0.113)	0.624 *** (0.113)	0.627 *** (0.114)	0.633 *** (0.114)	0.630 *** (0.111)	0.627 *** (0.108)	0.627 *** (0.110)
<i>GEF</i>		1.936 (1.995)					
<i>Savings</i> × <i>GEF</i>		0.199 *** (0.0478)					
<i>Savings</i> × <i>RL</i>			0.166 *** (0.0419)				
<i>RL</i>			−4.335 ** (1.793)				
<i>Savings</i>				0.110 ** (0.0503)			
<i>CC</i>				−0.477 (1.788)			
<i>Savings</i> × <i>VA</i>					0.154 *** (0.0329)		
<i>VA</i>					−1.727 (1.613)		
<i>PL</i>						−1.735 (1.086)	
<i>Savings</i> × <i>PL</i>						0.123 *** (0.0249)	
<i>REQ</i>							−1.128 (1.044)
<i>Savings</i> × <i>REQ</i>							0.141 *** (0.0461)
<i>Constant</i>	8.242 *** (1.757)	9.355 *** (1.805)	7.373 *** (1.542)	8.627 *** (1.540)	8.675 *** (1.506)	8.491 *** (1.537)	7.880 *** (1.592)
<i>Observations</i>	602	602	602	602	602	602	602
<i>Number of groups</i>	31	31	31	31	31	31	31

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix D.2. Low-Income Group

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Savings</i>	0.567 *** (0.0622)	0.479 *** (0.0925)	0.670 *** (0.0971)	0.722 *** (0.129)	0.587 *** (0.0851)	0.568 *** (0.0687)	0.539 *** (0.115)
<i>Savings</i> × <i>INS</i>	0.00932 (0.0203)						
<i>INS</i>	0.732 (0.544)						
<i>D.LGDP</i>	5.531 (6.932)	8.396 (6.930)	5.745 (6.999)	5.981 (7.197)	6.666 (6.588)	6.340 (6.876)	6.840 (7.265)
<i>POP</i>	2.278 *** (0.482)	2.575 *** (0.492)	2.364 *** (0.476)	2.370 *** (0.501)	2.334 *** (0.545)	2.259 *** (0.532)	2.317 *** (0.475)
<i>Spending</i>	−0.325 *** (0.0757)	−0.317 *** (0.0843)	−0.327 *** (0.0753)	−0.303 *** (0.0805)	−0.334 *** (0.0801)	−0.336 *** (0.0752)	−0.353 *** (0.0834)
<i>FDI</i>	0.776 *** (0.0827)	0.758 *** (0.0781)	0.763 *** (0.0868)	0.710 *** (0.0973)	0.785 *** (0.0810)	0.799 *** (0.0812)	0.789 *** (0.0810)
<i>GEF</i>		4.776 *** (1.333)					
<i>Savings</i> × <i>GEF</i>		−0.0534 (0.0668)					
<i>Savings</i> × <i>RL</i>			0.0981 (0.0751)				
<i>RL</i>			0.377 (1.971)				
<i>Savings</i> × <i>CC</i>				0.163 (0.110)			
<i>CC</i>				0.356 (2.520)			
<i>Savings</i> × <i>VA</i>					0.0259 (0.0487)		
<i>VA</i>					0.0122 (1.455)		
<i>PL</i>						0.411 (0.607)	
<i>Savings</i> × <i>PL</i>						0.00452 (0.0293)	
<i>REQ</i>							2.464 (1.750)
<i>Savings</i> × <i>REQ</i>							−0.0127 (0.0969)
<i>Constant</i>	7.771 ** (2.874)	11.44 *** (3.159)	7.092 * (3.485)	6.786 * (3.653)	7.216 ** (3.477)	7.830 ** (2.998)	9.730 *** (3.418)
<i>Observations</i>	291	291	291	291	291	291	291
<i>Number of groups</i>	14	14	14	14	14	14	14

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Appendix E. Marginal Effects of Savings on Investment at Different Levels of Institutional Quality

Institutional Level	INS	GEF	RL	CC	VA	PL	REQ
Low	0.183	0.171	0.166	0.223	0.176	0.24	0.199
Medium	0.335	0.359	0.357	0.343	0.333	0.302	0.372
High	0.487	0.453	0.484	0.422	0.489	0.35	0.459

Appendix F. The Aggregated and Disaggregated Sample of African Countries Use in This Article

Full Sample (45)		High Income (2)	Middle Income (29)	Low Income (14)
		(Middle Income (31))		
Algeria	Namibia	Mauritius	Algeria	Burkina Faso
Angola	Niger	Seychelles	Angola	Burundi
Benin	Republic of the Congo		Benin	Democratic Republic of the Congo
Botswana	Rwanda		Botswana	Ethiopia
Burkina Faso	Senegal		Cameroon	Gambia
Burundi	Seychelles		Cape Verde	Guinea-Bissau
Cameroon	Sierra Leone		Comoros	Madagascar
Cape Verde	South Africa		Djibouti	Mali
Comoros	Sudan		Egypt	Niger
Democratic Republic of the Congo	Swaziland		Eritrea	Rwanda
Djibouti	Tanzania		Gabon	Sierra Leone
Egypt	Togo		Ghana	Sudan
Eritrea	Tunisia		Guinea	Togo
Ethiopia	Uganda		Ivory Coast	Uganda
Gabon	Zambia		Kenya	
Gambia	Zimbabwe		Lesotho	
Ghana			Libya	
Guinea			Mauritania	
Guinea-Bissau			Morocco	
Ivory Coast			Mozambique	
Kenya			Namibia	
Lesotho			Republic of the Congo	
Libya			Senegal	
Madagascar			South Africa	
Mali			Swaziland	
Mauritania			Tanzania	
Mauritius			Tunisia	
Morocco			Zambia	
Mozambique			Zimbabwe	

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