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Dynamic Relationships between Foreign Direct Investment Inflows, Financial Development, Institutional Quality, and Economic Growth: Empirical Evidence from Burundi

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Abstract

This article analyses the dynamic interdependencies between foreign direct investment inflows, financial development, institutional quality, and economic growth in Burundi over the period 1972–2024. Drawing on the poverty vicious circle theory, new institutional economics, and the finance-growth literature, we estimate six structural VAR models with Granger causality tests, impulse response functions, and variance decompositions. Three robust results emerge. First, financial development does not stimulate economic growth according to the classical supply-side pattern of financial services. A one-standard-deviation shock to private-sector credit increases inflation by 2.5 to 2.9 percentage points over a two-year horizon across all specifications and ex-plains 14.5 percent of the variance in ten-year inflation, while reducing economic growth by 1.0 to 1.3 percen-tage points. Second, economic growth reduces inflation by about 2.8 percentage points over two years and accounts for 15.5 percent of its long-term variance, confirming a dominant agricultural supply effect rather than demand-pull inflation. But after the first two years, inflation continues its upward trend until it becomes stable. Third, institutional quality acts selectively: Granger tests show that only overall institutional quality and executive corruption cause financial development, while political corruption, the rule of law, and liberal democracy have no significant effect. Response functions indicate that an increase in executive corruption reduces financial depth by percentage points over two years, and variance decomposition attributes 8.7 percent of the variance in financial development to executive corruption alone, compared to less than 3 percent for the other institutional dimensions. Foreign direct investment remains causally inert in all models and never ex-plains more than 4 percent of the macroeconomic variance. The results highlight a specific Burundian chain: constraints on executive predation allow for modest financial deepening, which is primarily transmitted to prices rather than productive investment, while growth itself is determined by exogenous agricultural supply shocks. Breaking Nurkse's vicious cycle therefore requires targeted institutional reforms focused on the execu-tive rather than generic governance reforms.

1. Introduction

Classic theories of economic development, notably Ragnar Nurkse's 1950s theory of the vicious circle of po-verty, highlight how developing countries are trapped in a circle where low income leads to low savings and low investment, thereby perpetuating low productivity and chronic underdevelopment (Nurkse, 1958). In this framework, high quality of institutions, financial development and foreign direct investments (FDIs) are con-sidered as essential levers to break this circle by supplementing insufficient domestic savings, transferring advanced technologies and managerial skills, and generating knock-on effects on local productivity (Pineli et al., 2021). These theoretical contributions emphasize the need for domestic and foreign capital not only to stimulate economic growth but also to promote an improvement in human well-being, through an increase in employment opportunities and incomes (Aderemi et al., 2021).

Foreign direct investment (FDI) has been defined in various ways by international organizations and authors: the IMF and OECD describe it as an investment involving a lasting interest of a resident of one economy in a company of another economy, with a minimum threshold of 10% of voting rights to exert significant influence over management (Alfaro & Charlton, 2009), while typologies distinguish horizontal FDI (replication of acti-vities to access markets) from vertical FDI (fragmentation of the value chain to optimize costs) or by motives such as market search, resources, efficiency or strategic assets (Seiko, 2016; Nizigiyimana & Ünlü Ören, 2021; Alfaro & Charlton, 2009); a synthetic definition thus conceives of it as capital flows accompanied by manage-rial control, technology and reinvestment of profits, differentiated from portfolio investments by their direct and lasting nature.

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Institutional quality has been conceptualized by Douglass North as the "rules of the game" structuring human interactions–formal (law, constitutions) or informal (norms, customs)–is distinct from organizations (actors or "players") and includes political (inclusive, according to Acemoğlu et al., 2004) and economic dimensions, as measured by the Worldwide Governance Indicators (WGI) across six axes: Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption (Faúndez, 2016; Nissanke, 2015; Sabir et al., 2019). Ultimately, institutions are defined as the set of mechanisms that reduce uncertainty and transaction costs, thereby promoting inclusive economic activity. These institutions can also encompass the protection of civil and property rights, the extent of economic and political freedom, and the prevalence of corruption, whose impact is crucial for economic, property, and investment attractiveness (Bénassy-Quéré et al., 2005; Okara, 2021). Empirical evidence shows that the benefits of FDIs for development depend heavily on the host country's institutional quality, as theorized by Douglass North in the 1990s, who posited that institutions structure economic interactions by reducing transaction costs and uncertainty (North, 1990; Sabir et al., 2019). Weak institutions, characterized by corruption, political instability, and a weak rule of law, act as a brake on the attractiveness of FDI, thus creating a second vicious circle in which institutional weakness discourages foreign capital flows, which are crucial for development (Ali et al., 2010). Therefore, institutional quality is essential to transforming FDI into an effective catalyst for innovation and resource reallocation, preventing these investments from being confined to isolated enclaves without positive spillovers. This view is reinforced by contemporary analyses by Acemoğlu et al., which stipulate that only effective institutions allow FDI to propel economies toward high-level equilibria by fostering endogenous innovation and inclusive growth (Sabir et al., 2019). In countries with extractive institutions, FDI, conversely, risks exacerba-ting inequalities by primarily benefiting elites, highlighting the relational impact whereby better governance positively moderates the link between FDI and development.

As far as the financial development is concerned, it is understood as the capacity of the banking system and capital markets to channel savings toward productive investments, and as a key driver of growth by lowering transaction costs and optimizing resource allocation (Ratsimalahelo & Barry, 2010). Indeed, theoretical and empirical literature demonstrates that the development of financial institutions acts as a primary engine for capital accumulation and technological progress, far from being a mere passive consequence of economic expansion (Levine, 1997).This perspective is largely supported by the seminal work of King and Levine, who demonstrate that the financial development of capital markets stimulates economic growth by improving total factor productivity and capital efficiency (Mtiraoui, 2020). Meanwhile, other empirical research highlights that the role of financial institutions revolves around two main dynamics: supply-leading, where the supply of fi-nancial services precedes and stimulates economic development, and demand-following, which suggests that the expansion of real activity generates an increased need for financial intermediation (Pinshi & Kabeya, 2020; Deisting et al., 2012). This causal duality remains central to academic debates on sub-Saharan Africa, where empirical results, sometimes divergent, suggest that the relationship can be bidirectional depending on the maturity level of local banking infrastructures (Zhang & Zhou, 2021). Faced with this ambiguity, the literature emphasizes that the effectiveness of the financial system in promoting growth depends on its capacity to diver-sify risks and reduce information asymmetries (Séraphin & Carelle, 2025). Nevertheless, the reach of this financial lever is intrinsically linked to the strength of formal and informal institutions, which act as essential mediators to ensure the efficient distribution of capital towards the most productive uses (Meniago et al., 2025; Osei-Tutu, 2021). However, this relationship is not linear and appears to be subject to threshold effects, where excessive financialization could, beyond an optimal point, become counterproductive to national growth dy-namics (Megnigang, 2021).

In the specific case of Burundi, empirical results reveal a complex and often sluggish relationship, characte-rized by virtually no long-term elasticity of growth with respect to financial development, as well as a lack of significant adjustment of growth to short-term developments in the financial sector. Furthermore, analyses of the role of foreign direct investment indicate a lack of significant causality between FDI and economic growth, highlighting that current policies have not yet succeeded in attracting market-oriented investors (Ndoricimpa, 2014). In addition, another empirical study confirms that while financial development can theoretically en-hance the beneficial effects of FDI on economic well-being, this impact remains extremely weak in Burundi compared to other countries in the region (Acheampong, 2019). Finally, empirical research also highlights that the quality of institutions, while crucial in theory, struggles to serve as an effective lever in Burundi to trans-form capital accumulation, whether internal or external, into robust and sustainable growth dynamics (Irakoze & Yu, 2020).

In light of previous analyses, this article examines the dynamics relationships between foreign direct in-vestment inflows, financial development and economic growth, seeking to understand how financial innova-tion, coupled with strengthened institutional quality and greater attractiveness for productive FDI, could am-plify the multiplier effects of intermediation on the real economy and mitigate the observed structural rigidi-ties. This analysis justifies the need for a specific empirical investigation in Burundi to guide appropriate stra-tegies. In this context, the article aims to examine the impact of inward FDI, financial development and institu-tional quality on economic growth in Burundi during the period 1972-2024.

The remainder of this paper is organized as follows: the second part reviews the theoretical and empirical lite-rature and the construction of the research questions and hypotheses; the third part outlines the originality of this study; the fourth highlights the variables, the data, and the estimation methodology; the final part answers the research questions and validates the hypotheses; the sixth part discusses the results; the seventh part pre-sents the conclusion; and the final part provides the economic policy recommendations.

2 Literature Review and Construction of Hypotheses

2.1 Conceptual framework

Foreign direct investment (FDI) has been defined in various ways by international organizations and authors: the IMF and OECD describe it as an investment involving a lasting interest of a resident of one economy in a company of another economy, with a minimum threshold of 10% of voting rights to exert significant influence over management (Alfaro & Charlton, 2009), while typologies distinguish horizontal FDI (replication of acti-vities to access the host country's markets) from vertical FDI (fragmentation of the value chain to optimize costs) or by motives such as market search, resources, efficiency or strategic assets (Seiko, 2016; Nizigiyimana & Ünlü Ören, 2021; Alfaro & Charlton, 2009); a synthetic definition thus conceives of it as capital flows ac-companied by managerial control, technology and reinvestment of profits, differentiated from portfolio in-vestments by their direct and lasting nature.

The financial development is defined as the process by which financial institutions, markets, and instruments improve to facilitate the mobilization of savings, the management of risks, and the efficient allocation of re-sources toward productive investments (Moussa, 2016). This dynamic fosters economic growth by improving risk diversification, reducing information asymmetry, and optimizing financial intermediation (Jude, 2011). More specifically, financial development can be analyzed as a multidimensional concept encompassing not only increased market depth and improved operational efficiency of intermediaries, but also broader access to financial services and diversification of available instruments, thereby reducing transaction costs and informa-tion asymmetry (Eggoh, 2011; Verma, Dandgawhal, & Giri, 2023). Indeed, this improved efficiency of finan-cial intermediation stimulates economic growth by fostering increased capital accumulation and sustained growth in total factor productivity (Allegret & Azzabi, 2012; Bassirou & Ramde, 2019).

Institutional quality as far as it is concerned, has been conceptualized by Douglass North as the "rules of the game" structuring human interactions–formal (law, constitutions) or informal (norms, customs)–is distinct from organizations (actors or "players") and includes political (inclusive, according to Acemoğlu & Robinson, 2012) and economic dimensions, as measured by the Worldwide Governance Indicators (WGI) across six axes: Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption (Faúndez, 2016; Nissanke, 2015; Sabir et al., 2019). Ultimately, institutions are defined as the set of mechanisms that reduce uncertainty and transaction costs, thereby promoting inclusive economic activity. These institutions can also encompass the protection of civil and property rights, the extent of econo-mic and political freedom, and the prevalence of corruption, whose impact is crucial for economic, property, and investment attractiveness (Bénassy-Quéré et al., 2005; Okara, 2021).

The private property rights index, for example, assesses the protection of individual rights against expropria-tion and the effective enforcement of contracts, fundamental elements for a stable investment environment (Mijiyawa, 2010). Moreover, political stability and governmental effectiveness, measured by the absence of political violence and the quality of public services, are essential determinants of investor confidence and the predictability of the operating framework. Indeed, institutional quality encompasses a broad spectrum of fac-tors, including not only formal regulations and their effective implementation, but also social trust and admi-nistrative transparency, fundamental elements of reducing transaction costs and promoting sustainable deve-lopment (Sabir et al., 2019). Governance, for its part, falls within this institutional framework by defining the traditions and structures through which authority is exercised, encompassing the establishment, oversight, and replacement of governments, as well as their capacity to formulate and implement sound policies (Mitiraoui, 2017). Good governance thus presupposes a set of streamlined and robust institutions, focused on core state functions and the implementation of efficient public policies, and opposed to forms of corruption (Mitiraoui, 2020). The previous six global institutions'indicators developed by Kaufmann, Kraay, and Zoido-Lobaton (Kaufmann, Kraay, & Mastruzzi, 2010; Kaufmann, Kraay, & Zaido-Lobatón, 2002; Kaufmann, Kraay, & Zai-do-Lobatón, 1999) by determining the predictability and security of the business environment directly in-fluence the effectiveness of market mechanisms and, by extension, the attractiveness and impact of foreign direct investment (Bannour, 2013). Thus, robust governance, characterized by increased transparency and legal impartiality, is fundamental to maximizing the impact of FDI on economic development.

2.2 Empirical Literature Findings, Research Questions, and Hypotheses

This part of the analysis synthesizes empirical research studies'results on the relationships between FDI in-flows, financial system development, and economic growth, while highlighting the crucial role of institutional quality in transforming these resources into productivity gains (Hicham, 2025; Barry, 2012). Indeed, much of the literature suggests that financial development acts as an essential prerequisite for an economy to absorb the technological externalities generated by foreign investment (Alfaro et al., 2009; Islam et al., 2021). Further-more, the strength of state structures directly influences this synergy by securing property rights and ensuring contractual transparency—key factors for maximizing the efficiency of capital allocation (Hicham, 2025; Jude & Levieuge, 2015). To synthesize these complex dynamics within the empirical literature, Table 1 presents the main empirical researches that examine the relations between FDI inflows, financial development, institutional quality, and economic growth.

Table 1. Summary of results from selected empirical studies

Author(s) & year	Period of Study	Topic	Country/ Region	Method	Key Findings
1.	Relationship between Financial Development (FID), Institutional Quality (IQ), and Economic Growth (EG)				
Meniago et al., 2025	2003-2025	FID, IQ, and EG	CFA countries	FMOLS	- Positive and significant effect between FID and EG. - The impact of FID on EG depends on the IQ.
Chérif & Idrissa, 2019	1980-2015	FID, IQ, and EG	20 sub-Saharan African countries.	FMOLS, DOLS, and VECM	-Positive impact of IQ on FID. -In countries with improved institutions and more advanced financial systems, financial development drives economic growth. Conversely, in countries with stronger institutions and less-structured financial systems, economic growth drives financial development.
Appiah et al., 2020	1996-2017	FID, IQ, and EG	15 ECOWAS emerging economies	Two-step SGMM	-FID has a positive but non-significant impact on EG. -Corruption control and regulatory indicators have opposing effects on EG, with corruption control reducing EG and regulatory quality increasing EG.
Mbulawa & Chingoiro, 2024	1975-2020	FID, IQ, and EG	13 low-income and 18 middle-income sub-Saharan African countries	ARDL	-Short-run as well as long-run causality relationship running from FID and I to EG. -IQ enhances EG in both groups of countries. -The direction of causality is similar in both groups of countries, but the impact of IQ is different within the two groups of countries.
2.	Relationship between Foreign Direct Investment (FDI), Economic Growth (EG), and Institutional Quality (IQ)				
Nguegang et al., 2019	1996-2016	FDI, IQ, and EG	41 sub-Saharan African countries	GMM system analysis	-The IQ plays a catalytic role, with specific thresholds, in the effect of FDI on growth. -The IQ shows a more ambiguous effect of the degree of anti-corruption efforts and political stability. -Differentiated effects in certain regional economic communities of sub-Saharan Africa.
Gosh & Saha, 2025	1996-2020	FDI, IQ, and EG	135 developing countries	GMM system analysis	-Positive and significant effect of FDI on EG. -The IQ enhances the impact of FDI on EG.

Hayat, 2019	1996-2015	FDI, IQ, and EG	104 countries	GMM	- Both FDI inflows and IQ cause stronger EG.
3.	Relationship between FDI and Economic Growth (EG)				
Rahman, 2015	1999-2013	FDI and EG	Bangladesh	Multiple Regression Analysis	-Negative correlation between FDI and EG.
Uzun, 2026	1980-2020	FDI and EG	Turkey	Todaro-Yamamoto causality	-Significant unidirectional causality running from FDI to EG.
Almalik et al., 2024	2001-2022	FDI and EG	19 countries from the G20	Johansen's Cointegration, VECM, and Granger Causality test	-FDI has a positive and statistically significant effect on EG.
Mthimkhulu et al., 2025	1994-2023	FDI, Political Stability, and EG	South Africa	ARDL Analysis	-Stable political Contexts promote positive effects of FDI. -The interplay between FDI and political stability exerts a negative effect on EG.
4.	Relationship between institional quality(IQ) and Economic Growth(EG)				
Afonso et al., 2021	1995-2021	IQ and EG	36 OECD countries	2SLS	-Positive impact of IQ on EG.
Liko, 2024	2000-2022	IQ and EG	8 Balkan countries	-Pedroni cointegration technique -FMOLS -DOLS	-Positive and significant relationship between IQ and EG.
Akwe et al., 2025	1986-2023	IQ, EG, and other variables	Nigeria	Johansen Cointegration and OLS	IQ has a positive and statistically significant impact on EG.
5.	Relationship between institutional quality(IQ) and FDI				
Sabir et al., 2019	1996-2016	IQ and FDI	low-, lower-middle-, upper-middle-, and high-income countries	GMM system analysis	-Positive and significant impact of IQ on FDI
Adegboye et al., 2020	2000-2018	IQ and FDI	30 sub-Saharan African countries	Panel regression analysis	-Positive impact of IQ on inward FDI
Ramde (2023)	2000-2020	IQ and FDI	WAEMU region	Fixed-effects model estimation	-Institutional quality indicators were not significant for FDI
Chen & Jiang, 2023	2005-2020	IQ and FDI	42 G20 countries	GMM	-Positive association between IQ and FDI.
6.	Relationship between Financial Development (FD) and Economic Growth (EG)				
Deisting et al., 2012	1975-2010	FID and EG	Morocco	VAR	- Positive effect of FID on EG
Megnigang, 2021	2004-2015	FID and EG	40 sub-Saharan African countries	GMM	-Positive but nonlinear relationship between FID and EG - Excessive FID can hinder EG. - FID is a necessary but not sufficient condition for EG.
Masila et al., 2025	2002-2021	FID and EG	45 sub-Saharan African countries	Spewise regression on panel data	-FID has a significant but mixed effect on EG.
Pinshi & Kabeya, 2021	2004-2019	FID and EG	DRC	Granger Causality	-Unidirectional relationship ranging from EG to FID.
Saanyane & Khalid, 2022	1980-2019	FID and EG	40 African countries	Fixed effect model analysis and Hsiao test	-FID, as measured by bank credit to GDP and the ratio of the money supply as defined by M3 to GDP, does not improve the EG.
7.	Relationship between institutional qualty(IQ) and financial development(FD)				
Libinski & Burnquist, 2024	2000-2021	IQ and FID	131 developed and developing countries	GMM system analysis	- Positive impact of IQ on FID - Concrete and well-defined institutions are important for FID
Meniago et al., 2025	2003-2025	FID, IQ, and EG	CFA countries	FMOLS	- Positive and significant effect between FID and EG. - The impact of FID on EG depends on the IQ.
Mohammed et al., 2024	2004-2020	Financial Inclusion (FI), IQ, and EG	20 sub-Saharan African Countries	GMM system analysis	-FI has a positive impact on EG. -IQ has varied effects on EG.

8.	Relationship between foreign direct investment (FDI) and financial development(FID)				
Abor et al., 2024	2004-2017	FID, IQ, and Financial Inclusion-FI	90 countries	Panel regression analysis	-FDI improves FI. -Higher FID and IQ improve FI. -FID and IQ can serve as channels moderating variables through which FDI affects FI.
Majeed et al., 2021	1990-2017	FDI, FID, and other variables	102 Belt and Road Initiative countries on four continents: Asia, Europe, Africa, and Latin America	FGLS and other techniques	- FDI increased FiD in Asia, Europe, and Latin America but decreased FID in Africa. -Inflation has a negative influence on FiD in all countries. -There is a two-way causality among FDI and FID in Asia and Europe. -There is a unidirectional relationship between FDI and FiD in Latin America. - Low- and midlle-income countries attract more FDI than high-income countries due to high factor costs.
Shahbaz et al., 2020	1965-2017	FID, FDI, EG, and other variables	France	Bootstrapping ARDL cointegration	-FID declines FDI.

Source: Authors'compilation from empirical literature review.

The empirical analysis' findings summarized in Table 1 reveal complex interdependencies among foreign direct investment and economic growth, with institutional quality and financial development often serving as a key catalyst for optimizing these flows. While studies generally suggest that robust institutions enhance the efficiency of foreign capital and facilitate access to financial services, empirical findings remain hetero-geneous, highlighting that actual benefits are highly dependent on the national regulatory framework.

Briefly, the empirical literature highlights that the development of the local financial system is a crucial prere-quisite for capturing and leveraging the technological benefits of foreign direct investment (Abor et al., 2024). Some research demonstrates that FDI can act as a driver of financial sector modernization by stimulating com-petitiveness and technological innovation within local markets (Majeed et al, 2021; Shahbaz et al., 2020). However, effective mediation requires that financial development reach minimum thresholds to ensure that capital inflows are not hindered by inadequate banking or stock market infrastructure (Bouzayani & Abida, 2025). In this regard, robust institutions become essential to moderate this relationship, ensuring that financial integration is not limited to mere credit expansion but promotes the optimal allocation of FDI resources to productive sectors (Islam et al., 2020).

Therefore, this study aims to examine whether, in the specific context of Burundi, these institutional structures are able to overcome structural barriers to transform capital inflows into inclusive economic growth. It aims to empirically analyze the dynamic relationships between FDI, financial development, institutional quality, and economic growth in Burundi. It answers the following research questions and hypotheses :

Question 1: What is the nature of the dynamic relationship between financial development, economic growth, and inflation in Burundi?

Question 2: To what extent is the quality of institutions, and particularly executive corruption, linked to finan-cial development in Burundi?

Question 3: What is the empirical link between economic growth, inflation and foreign direct investment inflows in Burundi?

Hypothesis 1: Financial development, economic growth and inflation exhibit significant dynamic interdepen-dencies in Burundi.

Hypothesis 2: Institutional quality, and in particular corruption of the executive, is a significant determinant of financial development in Burundi.

Hypothesis 3: Economic growth, inflation and foreign direct investment inflows maintain significant dynamic relationships in Burundi.

3 Originality of the Study

To the best of our knowledge, research that simultaneously examines the effects of FDI and financial develop-ment on economic growth while considering the role of institutional quality is scarce in Burundi. Therefore, this study is innovative in that it proposes an empirical reexamination of the role of institutional quality in the relationship between FDI, financial development, and economic growth in Burundi.

4 Variables, Data, and Methodology

4.1 Variables and data

To test the hypotheses and answer the underlying research questions defined above, this study chooses econo-mic growth (annual %) as an endogenous variable while it uses foreign direct investment: FDI (net inflows as a % of GDP), financial development: FID (measured by domestic credit to the private sector as a % of GDP), inflation : INFL(consumer prices, annual %), the overall institutional quality variable: INST (measured as the mean of four indicators including Political Corruption: PC, Executive Corruption: EXECORR, Rule of Law: RULE, and Democratic Liberty/freedom: LIBDEM, as independent variables. Data on economic growth, foreign direct investment, financial development, and inflation are drawn from the World Bank's World Deve-lopment Indicators database. However, data were missing for a few years. To fill in the gaps, we used the Mul-tiple Imputation by Chained Equations (MICE) method as it presents some advantages (Azur et al., 2011; Royston & White, 2011). The data on the indicators of institutional quality were taken from the Varieties of Democracy (V-Dem) of Global Standards Local Knowledge Database (v-dem.net). All these indicators have values between 0 and 1, and their meanings are as follows :

- EXECORR means executive corruption and shows how routinely do members of executive, or their agents grant favors in exchange for bribes, kickbacks, or other material inducements, and how often do they steal, embezzle, or misappropriate public funds or other state resources for personal or family use. Lower scores indicate a better situation (less corrupt) and higher scores indicate worse situation (more corrupt).

- LIBDEM means liberal democracy and shows how is important the individual and minority rights are protected against tyranny of the state and the tyranny of the majority. It is achieved by constitutional-ly protected civil liberties, strong rule of law, an independent judiciary, and effective checks and ba-lances that, together, limit exercise of executive power. It measures the level of liberal democracy. It takes a value of 0 for lower level to 1 for higher level of liberal democracy.
- PC means political corruption and runs from less corrupted to more corrupted situation. The corrup-tion index includes measures of six distinct types of corruption that cover both different areas and le-vels of the polity realm, distinguishing between executive, legislative and judicial corruption. It takes a value of 0 for lower level to 1 for higher level of liberal democracy.
- RULE means rule of law and shows the extent to which laws are transparent, independent, predicted, impartiated, and equal enforced, and the extent to which actions of government officials comply with the law. It takes a value of 0 for lower level to 1 for higher level of liberal regarding the enforcement of rule of law.

4.2 Model Specification and Estimation Methodology

Model specification

In this article, the model we use is the one specified by Meniago et al. (2025). It is an econometric model that relates the key variables of this research. Adapted to the context of our study, it takes the form:

$$\mathrm{GDPG_t} = \alpha_0 + \alpha_1 \mathrm{FDI_t} + \alpha_2 \mathrm{FID_t} + \alpha_3 \mathrm{INFL_t} + \alpha_4 \mathrm{INST_t} + \varepsilon_t \tag{1}$$

Where:

$\mathrm{GDPG_t}$ = Growth of Gross Domestic Product (it stands for economic growth) over year t;

$\mathrm{FDI_t}$ =Foreign Direct Investment Inflows over year t;

$\mathrm{FID_t}$ = Financial Development over year t;

$\mathrm{INST_t}$= Institutional Quality over year t;

$\mathrm{PC_t}$= Political Corruption over year t;

$\mathrm{EXECORR_t}$ = Executive Corruption over year t;

$\mathrm{RULE_t}$= Rule of Law over year t;

$\mathrm{LIBDEM_t}$= Democratic Freedom over year t;

$\mathrm{INFL_t}$ = Inflation over year t;

ε_t = error term over year t; and

α_i= are coefficients of the model.

The indicators of institutional quality are not included simultaneously in the model. They are included gradually, one after the other, to analyze the individual effect of each institutional variant. Thus, in the following section, we proceed by studying stationarity to determine the order of integration of the series. To do this, we use two commonly used tests: the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The results of these tests are given in Tables 1 and 2 below.

Table 2. Results of the ADF Unit Root Test

Model					ADF-Statistics					
At level										
Variables		**DGPG**	**FDI**	**FID**	**INFL**	**INST**	**PC**	**EXECORR**	**RULE**	**LIBDEM**
With Constant	t-Statistic	-6.0708***	-5.0817***	-0.5517	-5.3349***	-1.2353	-0.5556	-0.744241	-0.3229	-1.3561
	Prob.	0.0000	0.0001	0.8719	0.0000	0.6522	0.8712	0.8261	0.9140	0.5965
	Significant	Yes	Yes	No	Yes	No	No	No	No	No
With Constant & Trend	t-Statistic	-5.9987***	-5.6573***	-2.8526	-5.2836***	-1.9371	-2.0691	-2.4818	-2.4360	-1.3047
	Prob.	0.0000	0.0001	0.1862	0.0004	0.6207	0.5503	0.3355	0.3576	0.8758
	Significant	Yes	Yes	No	Yes	No	No	No	No	No
Without Constant &Trend	t-Statistic	-2.61**	-4.1780***	1.2729	-1.0196	0.4191	0.7089	0.3155	-0.9132	-0.5042
	Prob.	0.0100	0.0001	0.9467	0.2729	0.8003	0.8653	0.7731	0.3161	0.4931
	Significant	Yes	Yes	No	No	No	No	No	No	No
At first difference										
With Constant	t-Statistic	-12.7342***	-8.4791***	-5.9825***	-8.7320***	-5.1918***	-5.9582***	-0.2616***	-5.8043***	-5.5785***
	Prob.	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000
	Significant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
With Constant & Trend	t-Statistic	-12.5823***	-8.3887***	-6.0103***	-8.6741***	-5.1571***	-0.9266***	-5.2097***	-5.8866***	-5.7041***
	Prob.	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0005	0.0001	0.0001
	Significant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Without Constant &Trend	t-Statistic	-12.8692***	-8.56087***	-5.8239***	-8.8136***	-5.1735***	-5.9204***	-5.2527***	-5.7897***	-5.6354***
	Prob.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note (*): ***, ** and * denote significant at 1%; 5% and 10% levels, respectively. No: Not stationary; Yes : Stationary.

*Mackinon (1996) one sided P-Value.

Source: Authors'computation using Eviews 12.

Table 3. Results of the Phillips-Perron Unit Root Test

Model					**Phillips-Perron Statistics**					
At level										
Variables		DGPG	FDI	FID	INFL	INST	PC	EXCORR	RULE	LIBDEM
With Constant	t-Statistic	-6.1314***.	-5.1130***	-0.2454	-5.3349***	-1.0180	-0.6534	-0.7442	-0.4414	-1.6781
	Prob.	0.0000	0.0001	0.9255	0.0000	0.7403	0.8491	0.8261	0.8938	0.4362
	Significant	Yes	Yes	No	Yes	No	No	No	No	No
With Constant & Trend	t-Statistic	-6.0634***	-5.5338***	-2.2706	-5.3141***	-1.4241	-2.1867	-2.0263	-2.4661	-1.5257
	Prob.	0.0000	0.0002	0.4418	0.0003	0.8421	0.4867	0.5734	0.3430	0.8079
	Significant	Yes	Yes	No	Yes	No	No	No	No	No
Without Constant &Trend	t-Statistic	-4.7220***	-4.1765***	1.1152	-2.4715**	0.6658	0.6065	0.3155	-0.9063	-0.6055
	Prob.	0.0000	0.0001	0.9294	0.0144	0.8567	0.8443	0.7731	0.3190	0.4503
	Significant	Yes	Yes	No	Yes	No	No	No	No	No
At first difference										
With Constant	t-Statistic	-29.0857***	-28.2331***	-5.9605***	-19.7559***	-5.1122***	-5.9641***	-5.1279***	-5.8106***	-5.5924***
	Prob.	0.0000	0.0001	0.0000	0.0001	0.0001	0.0000	0.0001	0.0000	0.0000
	Significant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
With Constant & Trend	t-Statistic	-30.0287***	-28.5896***	-5.9299***	-20.0141***	-5.0668***	-5.9327***	-5.0722***	-5.8930***	-5.6990***
	Prob.	0.0000	0.0000	0.0000	0.0001	0.0007	0.0000	0.0007	0.0001	0.0001
	Significant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Without Constant &Trend	t-Statistic	-29.4893***	-27.8333***	-5.8174***	-19.9267***	-5.0998***	-5.9262***	-5.1310***	-5.7897***	-5.6487***
	Prob.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	Significant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note (*): ***, ** and * denote significant at 1%; 5% and 10% levels, respectively. No: Not stationary ; Yes : Stationary.

Source: Authors'computation using Eviews 12.

Analysis of the ADF and Phillips-Perron unit root tests reveals heterogeneity in the order of integration of the variables studied. According to the ADF and Phillips-Perron tests, the GDPG, FDI, and INFL series are stationary at the I(0) level, as the statistics are significant at the 1% level in all three specifications: with constant, with constant and trend, and without constant or trend. The two tests converge: ADF gives a t-statistic value of - 6.07 for GDPG, a t-statistic value of - 5.08 for FDI, a t-statistic value of -5.33 for INFL; and PP gives a t-statistic value of - 6.13 for GDPG, a t-statistic value of - 5.11 for FDI, a t-statistic value of -5.33 for INFL, all with p-values = 0.000. In contrast, FID, INST, PC, EXCORR, RULE, and LIBDEM are non-stationary at the level. At level, their p-values > 0.10: t-statistic value of -0.55 for FID, t-statistic value of -1.23 for INST, etc. They all become stationary after the first difference, with very high absolute t-statistics: ΔFID has a t-statistic value of -12.73, for ΔINST t-statistic value = -5.19, and all their p-values = 0.000. They are therefore I(1) integrated series. Since we have a mixture of I(0) and I(1) series, and the dependent variable GDPG is I(0), and no I(2) variable, the appropriate method is supposed to be the ARDL bounds testing of Pesaran et al. (2001). The ARDL bounds besting approach is robust to the I(0)/I(1) mix and allows us to test for cointegration and then estimate a long-term relationship via an error correction model (ECM) if cointegration exists. Henceforward, the objective is to verify whether there is a long-term equilibrium relationship between these variables. The results of the Bounds cointegration test are given in Table 4 below:

Table 4. Results of Bounds test cointegration on foreign direct investment, financial development, institutional quality, and economic growth relationships: without interactions

Specification	**Model 1 : without "INST"**	**Model2: with "INST"**	**Model3: with "PC"**	**Model4: with "EXCORR"**	**Model5: with "RULE"**	**Model6: with "LIBDEM"**
1. Details of the ARDL model						
Explanatory variables.	FDI, FID, INFL	FDI, FID, INFL, INST	FDI, FID, INFL, PC	FDI, FID, INFL, EXECORR	FDI, FID, INFL, RULE	FDI, FID, INFL, LIBDEM
Selected lags	ARDL (2, 0, 0, 2)	ARDL (4, 3, 4, 2, 3)	ARDL (2, 0, 0, 2, 0)	ARDL (4, 2, 2, 2, 3)	ARDL (4, 0, 0, 2, 1)	ARDL (2, 0, 0, 2, 1)
Selection criteria	AIC	AIC	AIC	AIC	AIC	
2. Bounds Test						
F-statistic calculated	2.583	2.926	2.250	2.508	1.215	2.433
Bounds (5%)	I(0) I(1)	I(0) I(1)	I(0) I(1)	I(0) I(1)	I(0) I(1)	I(0) I(1)
Asymptotic critical values.	2.79 3.67	2.82 3.87	2.82 3.87	2.85 3.90	2.85 3.90	2.82 3.87
Conclusion	No cointegration	Indifference zone	No cointegration	No cointegration	No cointegration	No cointegration
3. Consequences						
Long-term relationship	Invalid	Invalid	Invalid	Invalid	Invalid	Invalid
Error Correction Model (ECM)	Non applicable	Not applicable	Non applicable	Non applicable	Non applicable	Non applicable
Coefficient ECT (-1)	-	-	-	-	-	-
Analysis retained	Short term only	Short term only	Short term only	Short term only	Short term only	Short term only

Source: Authors'computation using Eviews 12.

The ADF and PP tests indicated that GDPG, FDI, and INFL are stationary at level and are I(0), while FID, INST, PC, EXECORR, RULE, and LIBDEM have a unit root and are I(1). Furthermore, the bounds test applied to the ARDL models does not reject the null hypothesis of no cointegration among the variables. Thus, there is an absence of long-term relationships among the variables.

Estimation methodology

Estimating short-run ARDL models would constrain various possible dynamic relationships among variables to a few. Similarly, estimating level VAR models would lead to invalid inferences due to the non-stationarity at level of FID and institutional quality variables. Therefore, in accordance with the literature, we specify first-differenced VAR models ensuring the stationarity of the system and the validity of the impulse response functions. The choice of differenced standard VAR models rather than short–run ARDL models is also justified by the multivariate nature of the systems. ARDL assumes a cointegrating relationship or, failing that, weak exogeneity of the regressors to estimate a single conditional equation; however, the Bounds cointegration test concludes that a long-term equilibrium does not exist, and reciprocal endogeneity between economic growth, foreign direct investment, financial development, and institutional quality variables is theoretically plausible. VAR treats all variables as endogenous, guarantees the stationarity of the system by introducing the I(1) variables in first differences, and allows for the analysis of short-term dynamic interactions through impulse response functions and variance decomposition. Thus, when the objective is to study the transmission of shocks within the system rather than to estimate a unidirectional structural relationship, the differenced VAR standard framework is the appropriate specification.

VAR estimate results

As the data are annual, the optimal number of lags chosen for all models is one (1). Thus, for all VAR systems defined according to whether or not the different institutional variants are considered, we estimate a first-order VAR on the following vector:

$$Y_t = [FDI_t, FID_t, INFL_t, \Delta INST_t]' \quad (2)$$

In this form, the INST variable stands for all variants of institutional quality. It can be one of these institutional indicators, depending on the case. However, it should also be noted that no indicator of institutional quality is included in the basic model. The chosen VAR specification is written as follows:

$$Y_t = C + A_1 Y_{t-1} + \varepsilon_t \quad (3)$$

Where C is a vector of constants, $A_1$is a 4×4 matrix for the basic model and a 5×5 matrix of coefficients for the models including institutional variants, and ε_t is the vector of innovations.

A. Granger causality analysis

Table 5. Granger Causality Tests Results

	Dependent Variable in Regression				
	Model 1 : VAR (GDPG, FDI, ΔFID, INFL)				
Regressor	GDPG	FDI	ΔFID	INFL	
GDPG	-	0.94	0.89	0.02**	
FDI	0.83	-	0.69	0.20	
ΔFID	0.07*	0.74	-	0.00***	
INFL	0.70	0.83	0.23	-	
	Model 2 : VAR (GDPG, FDI, ΔFID, INFL, ΔINST)				
Regressor	GDPG	FDI	ΔFID	INFL	ΔINST
GDPG	-	0.89	0.92	0.01**	0.59
FDI	0.78	-	0.54	0.17	0.34
ΔFID	0.05*	0.64	-	0.02**	0.88
INFL	0.70	0.83	0.22	-	0.86
ΔINST	0.50	0.63	0.04**	0.28	-
	Model 3 : VAR (GDPG, FDI, ΔFID, INFL, ΔPC)				
Regressor	GDPG	FDI	ΔFID	INFL	ΔPC
GDPG	-	0.93	0.93	0.01**	0.43
FDI	0.83	-	0.68	0.19	0.59
ΔFID	0.08*	0.73	-	0.02**	0.68
INFL	0.70	0.83	0.24	-	0.81
ΔPC	0.87	0.91	0.44	0.25	-
	Model 4 : VAR (GDPG, FDI, ΔFID, INFL, ΔEXECORR)				
Regressor	GDPG	FDI	ΔFID	INFL	ΔEXECORR
GDPG	-	0.91	0.82	0.01**	0.68
FDI	0.84	-	0.69	0.21	0.54
ΔFID	0.05*	0.70	-	0.02**	0.72
INFL	0.68	0.83	0.25	-	0.82
ΔEXECORR	0.46	0.81	0.03**	0.34	-
	Model 5 : VAR (GDPG, FDI, ΔFID, INFL, ΔRULE)				
Regressor	GDPG	FDI	ΔFID	INFL	ΔRULE
GDPG	-	0.95	0.98	0.01**	0.65
FDI	0.86	-	0.73	0.23	0.78
DFID	0.06*	0.76	-	0.02**	0.87
INFL	0.70	0.83	0.24	-	0.87
ΔRULE	0.59	0.97	0.43	0.26	-
	Model 6 : VAR (GDPG, FDI, ΔFID, INFL, ΔLIBDEM)				
Regressor	GDPG	FDI	ΔFID	INFL	ΔLIBDEM
GDPG	-	0.85	0.89	0.01**	0.73
FDI	0.68	-	0.70	0.18	0.27
ΔFID	0.09*	0.82	-	0.00***	0.56
INFL	0.81	0.91	0.25	-	0.60
ΔLIBDEM	0.31	0.48	0.98	0.62	-

-Note (*): ***, ** and * denote significant at 1%; 5% and 10% levels, respectively.

Source: Authors'computation using Eviews 12.

From Table 5, the Granger causality tests reveal a hierarchical structure where institutions and finance interact selectively before influencing the real economy: only overall institutional quality (Model 2) and executive corruption (Model 4) Granger–cause financial development at the 5% threshold, while political corruption (Model 3), the rule of law (Model 5), and liberal democracy (Model 6) have no significant causal effect on finance. Once activated, financial development Granger–causes economic growth in five out of six models (Model 2, Model 3, Model 4, Model 5, Model 6), at the 10% threshold, and even at 5% in the model including democratic freedom (Model 6). However, this finance–growth channel immediately leads to inflationary pressures, since growth and financial development systematically cause inflation at the 5% threshold across all specifications (Model 1 to

Model 6), with the attached test confirming that the variable block explains inflation at the 1% threshold (Model 1 to Model 6). The system thus outlines a chain where targeted institutions promote finance, which then supports growth, before growth fuels inflation, revealing that executive governance conditions financial deepening, but that every real or financial gain comes at a price.

In Burundi, this causal chain takes on particular significance given the structural characteristics of the economy. The primacy of executive governance in activating finance, highlighted by North (1990) and Acemoğlu et al.(2004), resonates with an economy dominated by a public and semi-public banking sector where credit granting remains heavily influenced by the administration: the historical weakness of contract enforcement, political interference in credit allocation, and widespread executive corruption have long maintained prohibitive transaction costs, explaining why only progress in curbing executive predation is currently allowing for a timid deepening of financial resources. Once this obstacle is removed, the finance–growth channel described by Levine encounters the Burundian productive structure, characterized by 90% subsistence farming, an embryonic industrial base, and massive informality. Bank credit is therefore struggling to finance high–productivity projects, and, as Patrick (1966) points out, the supply–leading effect remains fragile as long as legal guarantees and the land registry remain inadequate, resulting in growth driven more by consumption than by investment.

This weakly transformative growth immediately runs up against structural supply rigidities—erratic agricultural yields, landlocked status, and dependence on imports of petroleum and food products—which validates the logic of demand–pull inflation and the Phillips curve: any increase in aggregate demand translates into higher prices rather than higher quantities, a mechanism exacerbated by the Thirlwall balance of payments constraint (Thirlwall, 1979), as Burundi imports three times more than it exports.

Finally, the direct finance-inflation link described by Friedman (1968) and McKinnon (1973)–Shaw (1973) is amplified by financial repression and partial dollarization: in a shallow and underbanked banking system, credit expansion, often directed towards import trade and urban household consumption, increases the money supply without a productive counterpart, while weak intermediation prevents the sterilization of shocks, making financial overheating systematic.

B. Impulse response functions results analysis

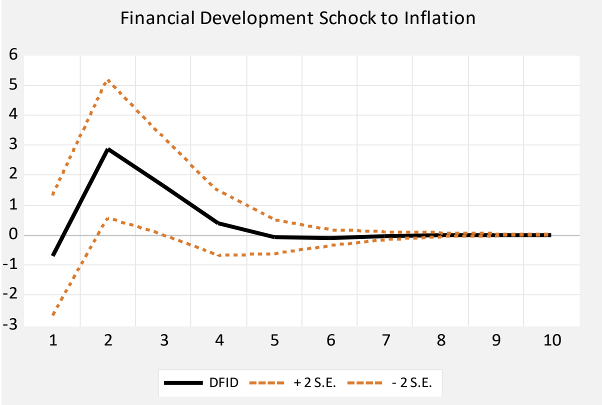
Having established the existence of Granger causal relationships between economic growth, foreign direct investment, financial development, inflation, and institutional quality, it is necessary to examine their short-term dynamics. The Granger test indicates whether one variable statistically precedes another, but it provides no information about the sign, magnitude, or persistence of the transmission. This is the purpose of the impulse response functions (IRFs) derived from the estimated VAR model. Within the framework of the Cholesky decomposition, with the structural order GDPG → FDI → ΔFID → INFL→ (ΔINST)—an order justified by the assumption of decreasing exogeneity from the real to the monetary sphere—the IRFs allow us to simulate the effect of an exogenous shock of one standard deviation on each variable and to observe the response trajectory of the other variables over a ten-period horizon.

This analysis is particularly relevant to the Burundian economy, characterized by shallow financial depth, a high dependence on agricultural supply shocks, and largely imported inflation. It aims to answer three central questions: (1) Does financial development stimulate growth, or does it initially generate inflationary pressures, as predicted by the McKinnon–Shaw financial repression theory? (2) Does FDI have a significant multiplier effect on economic activity? (3) Is growth inflationary or disinflationary in the short term?

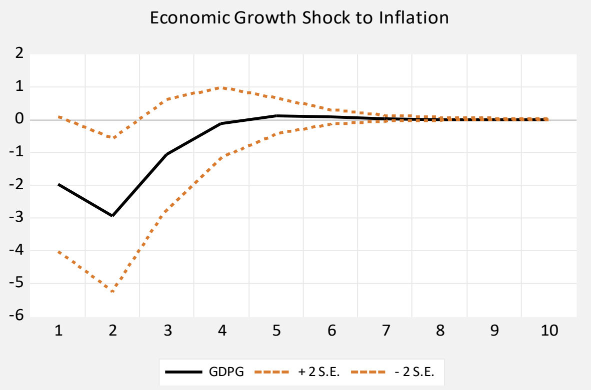
A four- or five-variable VAR mechanically generates a large number of response functions (16 for the basic model, 25 for models augmented with institutional indicators). However, presenting all these trajectories exhaustively would unnecessarily complicate the reading without providing any analytical insight, as the majority of responses are statistically non-significant. In accordance with econometric practice, and in order to focus the interpretation on economically relevant mechanisms, only response functions whose 95% confidence interval (±2 analytical standard deviations) consistently excludes the value zero over at least two consecutive time horizons are retained and discussed. This significance criterion allows us to distinguish the true transmission channels from sampling fluctuations and to connect the results with the theoretical predictions of New Institutional Economics, endogenous growth, and monetarist theory. The significant trajectories thus identified are presented in Figure 1 below, along with their economic interpretation.

Figure 1. Impulse Response Functions

(a) In all models

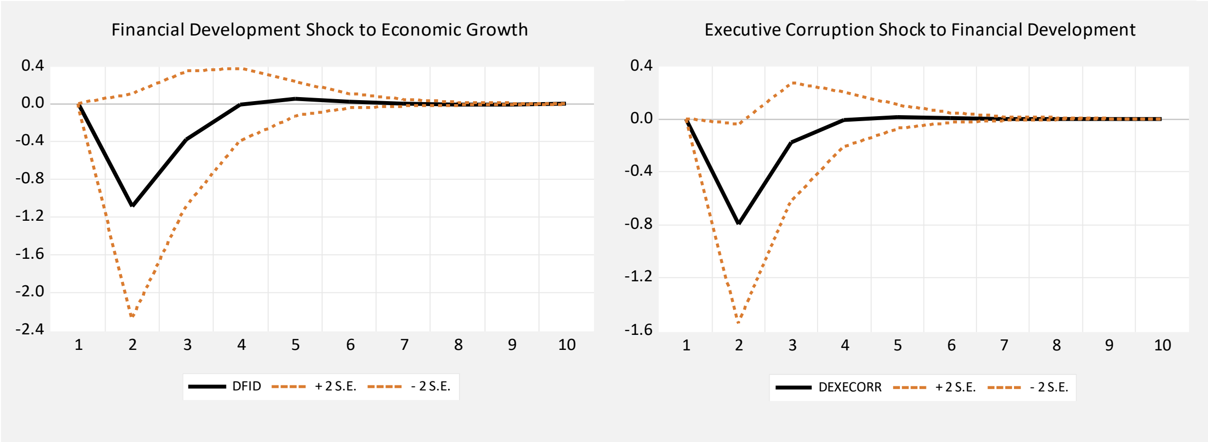


(b) In all models



(c) In models 1 and 2

(d) In model 4 only



Source: Authors'computation using Eviews 12.

According to the results of the impulse response function analysis (Figure 1, panel (a)), an unexpected shock — an increase of one standard deviation in financial development (credit to the private sector)—causes an increase in inflation of 2.5 to 2.9 points in the second year depending on the model. On the figure the orange band is entirely above 0 in the second and third years in all six models. This means that the response of FID to the shock of inflation is significant at 5% level in the second year for all models. This corroborates Friedman's monetary theory (1968) according to which all credit expansion is first monetary (it increases inflation) and McKinnon-Shaw's financial development theory (1973) which stipulates that in a system of financial repression, additional credit does not finance investment but consumption and imports, which immediately fuels inflation.

From Figure 1 panel (b), an unexpected shock of one standard deviation in economic growth lowers inflation until the second year and causes it to rise again from that second year onward. The band is entirely below 0 the second year in all six models. And it remains significant at 5% level. This result shows that inflation is not driven by demand, but rather by the supply-side effect described by North (1990). In Burundi, GDP is primarily agricultural, and agriculture is subsistence-based, rainfed, and non-irrigated. A "GDP increase" almost never stems from a factory operating at higher capacity, but rather from a good rainy season that boosts the harvest of staple foods such as beans, cassava, maize, and so on. Food represents more than 70% of the food basket used in the National Food Price Index (INFL). That said, during a good harvest season, the food supply increases sharply, which lowers food prices in the market and reduces inflation. However, during the dry season or periods of poor harvests, the food supply decreases, prices soar, and inflation rises. Therefore, it is supply-side inflation, not demand-pull inflation. The causality is reversed: it is not economic growth that creates demand and therefore inflation, but rather the agricultural supply shock that simultaneously creates growth and disinflation.North calls this a "low-absorbing institutional environment": because there is no storage, no agro-industrial processing, and no futures market, the agricultural surplus does not translate into sustainable income; it is directly transformed into lower prices. Contrary to the positive relationship postulated by the Phillips curve, the response of inflation to a growth shock is negative and significant of around -2.8 points at second year. This result invalidates the hypothesis of demand-driven inflation and corroborates North's (1990) institutional analysis: in an economy where growth depends heavily on subsistence agriculture, a positive GDP shock reflects an expansion of food supply which mechanically depresses prices, the main component of the consumer price index.

According to Figure 1 panel (c), a financial shock causes a drop in economic growth ranging from -1.0 to -1.3 percentage points in the second year. The shock is significant at the 5% level in models 3 to 6. This is the short-term cost of premature supply-leading as described by Patrick (1966). As long as institutions do not channel credit toward the productive sector, finance creates inflation (previous IRF) that crowds out real growth. The increasing significance when controlling for institutions confirms that the channel is institutional.

Figure 1 panel (d) shows the response of financial development to an executive corruption shock in model 4. An increase in executive corruption causes a 0.8 point decrease in financial development in the second year. The orange band is below 0 (i.e., a negative response of financial development). This is also why the other institutional indicators are insignificant in the other impulse response functions. This shows that it is not "good governance" in general that matters, but specifically the constraint on the executive. Therefore, unlike aggregate measures, only executive corruption has a significant effect on financial development: a shock of one standard deviation of ΔEXECORR reduces financial development by 0.8 points over horizon 2 (95% CI excluding zero). This result supports North's (1990) thesis that executive predation, and not the overall level of democracy, constitutes the institutional bottleneck in financially shallow economies like Burundi.

C. Variance decomposition

The basic VAR (GDPG, FDI, ΔFID, INFL) serves as a reference before the introduction of institutional variables. The variance decomposition is presented only for the two variables of interest in the study—inflation (INFL) and growth (GDPG) —because FDI proved insignificant in the impulse response functions and never explains more than 2% of the variance. The 1-, 2-, 5-, and 10-year time horizons are chosen to capture three distinct economic timescales: the very short term (contemporary shock), the monetary transmission horizon in Burundi (2 years, identified in the impulsive response functions), and the medium to long term (5–10 years), where structural effects stabilize. Presenting all 10 horizons would make the text cumbersome without adding value.

Table 6. Inflation variance decomposition (INFL) : Model 1

Period	INFL	ΔFID	GDPG	FDI
1	91.1	0.8	6.0	2.0
2	69.8	11.6	15.2	3.4
5	65.9	14.5	15.5	4.1
10	65.9	14.5	15.5	4.1

Source: Authors'computation using Eviews 12.

For inflation (Table 6), the dynamics are clear: at horizon 1, 91.1% of its variance is explained by its own shocks, reflecting inertia and the strong imported component of prices. By horizon 2, the share of financial development (ΔFID) jumps to 11.6% and reaches 14.5% at 10 years. This is the quantitative translation of the significant impulse response function "a shock to ΔFID causes an increase in INFL": credit is not neutral; it is inflationary. Meanwhile, economic growth explains 6.0% at 1 year, 15.2% at 2 years and then 15.5% at 10 years, with a negative sign in the impulse response functions: this is the agricultural supply effect described by North (1990) —a good harvest increases GDP and simultaneously lowers food prices.

Tableau 7. Decomposition of the variance of economic growth (GDPG) : Model 1

Period	GDPG	ΔFID	INFL	FDI
1	100.0	0.0	0.0	0.0
2	93.2	6.5	0.2	0.0
5	92.1	7.2	0.6	0.0
10	92.1	7.2	0.6	0.0

Source: Authors'computation using Eviews 12.

For economic growth (Table 7), the variance remains dominated by its own shocks (100%) in the first year, confirming the largely exogenous (climatic) nature of Burundi's GDP. However, in the second year ΔFID explains 6.5% and 7.2% of it in the long term, thus quantifying the short-term recessionary effect highlighted in the impulsive response function: "a GDPG shock causes ΔFID." FDI remains residual (0%), consistent with its lack of significance in Granger tests and impulsive response functions.

D. Marginal contribution of institutions

The five augmented models (in Table 8) each add a single institutional variable in first difference (ΔINST, ΔPC, ΔEXECORR, ΔRULE, ΔLIBDEM). Presenting five complete variance decompositions would be redundant because institutional contributions are small and stable after horizon 5. The choice of horizon 10 allows us to measure the maximum cumulative effect, and the choice to report only the proportion of variance in financial development and inflation explained by the institution directly answers the theoretical question: do institutions act directly on inflation, or indirectly via finance?

Table 8. Comparative synthesis of the variance decomposition of inflation and financial development in the five institutional VARs (10-year horizon).

Model	Instittution added	% variance of INFL explained by:		% variance of DFID explained by :
		ΔFID	GDPG	Institution
Model 1 : VAR (GDPG, FDI, ΔFID, INFL)	-	14.5%	15.5%	-
Model 2 : VAR (GDPG, FDI, ΔFID, INFL, ΔINST)	ΔOVERALL INST	14.2%	16.6%	2.8%
Model 3 : VAR (GDPG, FDI, ΔFID, INFL, ΔCORR)	ΔCORR	15.08%	15.48%	2.36%
Model 4 : VAR (GDPG, FDI, ΔFID, INFL, Δ**EXE**CORR)	ΔEXECORR	13.5%	16.9%	8.63%
Model 5 : VAR (GDPG, FDI, ΔFID, INFL, ΔRULE)	ΔRULE	14.6%	16.2%	2.2%
Model 6 : VAR (GDPG, FDI, ΔFID, INFL, ΔLIBDEM)	ΔLIBDEM	14.7%	15.6%	0.6%

Source: Authors'computation using Eviews 12.

Table 8 shows that the variance decomposition confirms the robustness of the channels identified by the impulse response functions. Over a ten-year horizon, financial development consistently explains 14–15% of the variance in inflation, while growth explains 15–17%, simultaneously validating the McKinnon-Shaw inflationary hypothesis and the agricultural supply effect highlighted by North (1990). Among institutional variables, only executive corruption has significant explanatory power over finance itself (8.7% of its variance), compared to less than 3% for the rule of law or liberal democracy, corroborating the central role of executive constraint in economies with shallow financial depth.

4.3 Answers to research questions and validation of hypotheses

The answer to the first question is as follows: the interaction is significant but reversed compared to the classi-cal model. Granger causality shows that financial development causes inflation at the 5% level in all six mo-dels and causes economic growth at the 10% level in five of the six models. Economic growth also causes inflation at the 5% level in all specifications. The response functions also show that a shock of one standard deviation to private credit increases inflation by 2.5 to 2.9 percentage points over a two-year horizon, with a fully positive and significant confidence band. The same financial shock reduces growth by 1.0 to 1.3 percen-tage points over two years, significant in models three through six. Conversely, a growth shock reduces infla-tion by approximately 2.8 percentage points over two years, significant in all six models. Furthermore, the variance decomposition shows that over ten years, financial development explains 14.5% of the variance in inflation, compared to 0% for impact, while growth explains 15.5%. For growth itself, financial development explains 7.2% in the long-term, confirming its short-term recessionary role.

Hence, the first hypothesis is validated. The three Granger causalities are significant, the three response func-tions are significant at two years, and the variance shares at ten years are substantial for all three pairs.

For the second research question, the link is strong but highly selective. The Granger causality results show that only overall institutional quality and executive corruption cause financial development at the 5% signifi-cance level. Political corruption, the rule of law, and liberal democracy do not exhibit significant causality. Response functions show that a shock to executive corruption reduces financial development by 0.8 percentage points over a two-year horizon, with a zero-exclusion confidence interval. No other institutional variable pro-duces a significant response. Variance decomposition shows that over ten years, executive corruption explains 8.7% of the variance in financial development, compared to 7.4% for overall institutional quality, 1.2% for the rule of law, 0.02% for liberal democracy, and less than 3% for political corruption. For inflation, the share explained by institutions remains below 2.8%, confirming an indirect effect via finance.

Hence, the second hypothesis is validated, but only partially. Only executive corruption and, to a lesser extent, the overall institutional index, are significant determinants. The other institutional dimensions tested are not, which clarifies the initial hypothesis.

For the third research question, the link between growth and inflation is strong and negative, while the link with FDI is nonexistent. This is because the Granger causality indicates that growth causes inflation in all models, whereas FDI does not cause growth, inflation, or financial development in any specification. The res-ponse function shows that the inflation response to a growth shock is negative and significant over two years in all six models, reflecting an agricultural supply effect. The responses of all variables to an FDI shock are flat and not significant. Furthermore, the variance decomposition shows that FDI explains less than 0.1% of the variance in growth and less than 4.1% of the variance in inflation over ten years, compared to 15.5% for growth itself in explaining inflation.

Then, the third hypothesis is validated for the growth-inflation relationship, but rejected for FDI. The growth-inflation relationship is significant, negative, and robust, while FDI shows no significant dynamic relationship with the other two variables.

4.4 Results discussion

The VAR results challenge three canonical assumptions and validate a fourth mechanism, mediated by institu-tions and specific to Burundi. First, the finance–inflation link contradicts Levine's view on the driving role of financial supply. In all six models, financial development Granger causes inflation at the 5% threshold, and the response function is positive, significant, and persistent. The variance decomposition quantifies this transmis-sion: private credit explains nothing of the impact on inflation, but 11.6% at two years and 14.5% at ten years. This aligns with Friedman and McKinnon–Shaw in the context of financial repression: in a shallow banking system where credit is short-term and geared towards import trade and urban consumption, the creation of liquidity has no productive counterpart. The simultaneous negative response of finance to growth, significant in models 3 through 6, confirms Patrick's hypothesis regarding the premature nature of the supply of financial services—credit deepens without institutions capable of allocating it efficiently. Secondly, the growth–inflation relationship inverts the theoretical Phillips curve. Granger causality runs from growth to inflation in each specification, but the response function is negative and significant at two years. The decom-position shows that growth explains 15.2% of inflation at two years and 15.5% at ten years. This is not de-mand-side disinflation but rather the supply effect described by North. Burundi's growth is primarily due to a good rainy season, which increases the supply of certain food products such as beans, cassava, maize, etc., representing a significant portion of the price index basket. In the absence of storage, transformation, and fu-tures markets, the surplus immediately translates into lower prices, validating North's low-absorbing institu-tional environment. Third, institutions matter, but only narrowly. Granger's hierarchy is clear: only the aggre-gate index and executive corruption cause financial development. The response function for executive corrup-tion is the only institutional shock whose confidence band excludes zero, reducing financial depth by 0.8 points. In the decomposition, executive corruption explains 8.7% of the variance in ten-year financial deve-lopment, compared to 1.2% for the rule of law, 0.02% for liberal democracy, and less than 3% for political corruption. This confirms new institutional theory: it is not aggregate governance but the specific constraint on executive discretion that reduces transaction costs in credit markets. The Burundian banking sector, historical-ly under state influence, makes credit allocation particularly susceptible to executive predation. Fourth, FDI is structurally disconnected. Despite theoretical expectations of technology transfer, FDI does not cause growth or finance in the Granger sense, and its response functions are flat. The decomposition confirms its irrelevance, with contributions of less than 0.1% to growth and 4.1 % to inflation. This reflects an enclave pattern: FDI is concentrated in extractive industries and telecommunications with limited local linkages, and weak contract enforcement prevents spillover effects.

The whole result describes a closed loop: modest improvements in executive constraints allow for limited financial deepening; this deepening fuels prices rather than output due to structural supply rigidities and im-port dependence; growth itself is exogenous and deflationary. Thirlwall's balance-of-payments constraint am-plifies this mechanism, with any increase in demand resulting in imports.

5 Conclusion and Recommendations

5.1 Conclusion

This study provides the first systematic VAR evidence for Burundi, showing that the vicious cycle of poverty is perpetuated not by a lack of finance per se, but by the institutional misallocation of finance. Using six speci-fications from 1972 to 2024, we demonstrate that financial development and economic growth are significant determinants of inflation, that growth is supply-driven and deflationary, and that only executive corruption, not overall democratic quality, shapes financial deepening. FDI plays no measurable macroeconomic role. The contribution is threefold. Theoretically, we reconcile McKinnon–Shaw with North by showing that financial repression becomes inflationary precisely where executive institutions fail to secure property rights. Empiri-cally, we quantify Burundian transmission horizons and variance shares, establishing a two-year monetary transmission lag. Methodologically, we show that disaggregated institutional measures outperform composite indices in the value-for-income ratios (VARs) of low-income countries.

The limitation lies in the aggregated nature of national accounts in a largely informal economy, which may underestimate actual financial intermediation. Future research should utilize sectoral credit data and threshold VARs to test for nonlinearities in the finance–inflation relationship.

5.2 Economic policy recommendations

The VAR results indicate that any strategy to break the vicious cycle in Burundi must begin with effective executive control over the financial sphere, as this is the only institutional dimension whose causal effect on financial depth is both significant and quantitatively substantial. In a banking system historically dominated by the state, where credit allocation remains susceptible to administrative interference, strengthening the inde-pendence of the supervisory authority and the anti-corruption jurisdiction, coupled with a requirement for transparency regarding loans to politically exposed persons, constitutes the highest-yield institutional lever. Without this prior securing of property rights and contracts, financial deepening risks reproducing the pattern highlighted by the response functions, namely, credit expansion that fuels inflation rather than productive investment.

This institutional control must be accompanied by an explicit realignment of financial policy instruments to-ward agricultural supply. Given that Burundi's growth is largely driven by rainfall shocks and that inflation reacts negatively to these supply shocks, credit expansion should be conditioned on its productive orientation. This implies adjusting reserve requirements to favor financing food value chains, generalizing warehouse re-ceipt financing, and supporting small-scale irrigation, so that credit is no longer primarily directed toward import trade and urban consumption. Such a reorientation would transform the currently inflationary channel of financial development, which accounts for 14.5% of the ten-year inflation variance, into a supply-side chan-nel.

This supply-side transformation also requires the establishment of absorption institutions, which have been lacking until now. The deflationary effect of growth, which explains 15.5% of the price variance, reflects the system's inability to store and smooth agricultural surpluses. Public investment in storage capacity, cold chains, and a commodities exchange with guarantee mechanisms is therefore essential to convert good harvests into stable incomes rather than price collapses, and to break the dependence of price dynamics on weather events.

Regarding foreign direct investment, its causal inertia, as demonstrated by all the specifications, suggests abandoning a volume-focused policy in favor of one centered on productive linkages. In an environment where FDI does not explain growth and where weak contract execution prevents spillover effects, tax incentives should be contingent on verifiable requirements for local sourcing, skills transfer, and integration into domes-tic value chains, once prior institutional guarantees have been strengthened.

Finally, the central bank must incorporate into its macroprudential framework the two-year transmission lag observed between credit and prices. In a partially dollarized and shallow system, where shock sterilization is limited, close monitoring of private credit growth and coordination with fiscal policy are necessary to prevent even well-directed financial deepening from leading to deficit monetization and imported inflation, amplified by the country's structural external constraints.

Without this sequence—executive constraints, productive reorientation of credit, supply-absorbing institutions, FDI conditionality, and macroprudential vigilance—capital accumulation, whether domestic or foreign, risks perpetuating the current Burundian configuration: more liquidity, higher prices, and unchanged productive capacity.

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Ethical considerations

The article followed all ethical standards appropriate for this kind of research.

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