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"Accounting Utilisation Efficiency of the Rwanda Green Fund and Economic Performance in Rwanda (2015–2024)"

Accounting Utilisation Efficiency of the Rwanda Green Fund and Economic Performance in Rwanda (2015–2024)

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Abstract

In an era of rising climate finance, impact depends not only on the volume of funds mobilized but on how transparently they are managed and efficiently utilized to drive economic growth. This study examines the effect of accounting transparency and utilisation efficiency on macroeconomic performance in Rwanda, focusing on the Rwanda Green Fund (FONERWA) over the period 2015-2024. A quantitative time-series approach was adopted using audited financial data and national macroeconomic statistics. Descriptive statistics and regression analysis were employed to analyze the data. The study is based on ten annual observations covering accounting, fiscal, and macroeconomic indicators related to utilisation efficiency and economic performance. A census approach was used to include all available data for the period. Findings show that the execution rate improved over time but fluctuated due to implementation challenges. A positive relationship exists between execution rate and real GDP growth. However, regression results indicate that execution rate has a positive but statistically insignificant effect on GDP growth ($\beta = 0.693$, $p = 0.132$). Inflation ($\beta = -0.191$, $p = 0.573$) and government expenditure ($\beta = -1.045$, $p = 0.233$) show negative and insignificant effects, reflecting broader macroeconomic complexities. The study concludes that while accounting-based utilisation efficiency contributes to economic performance, its impact remains weak and influenced by structural and institutional factors. It recommends strengthening financial management systems, improving project implementation, and enhancing disbursement efficiency to maximize the economic benefits of climate finance in Rwanda.

Keywords: Accounting Transparency, Execution Rate, GDP Growth, Green fund, Rwanda.

1.1 Background of the Study

Globally, the rapid expansion of climate finance has elevated concerns regarding the transparency, accountability, and effectiveness of public resource management. Climate-related financial flows have increased substantially over the past decade as governments respond to environmental vulnerability and sustainability commitments. However, international experience demonstrates that the developmental impact of such financing depends not merely on the volume of funds mobilized, but on the quality of financial reporting, execution efficiency, and institutional accountability

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mechanisms governing their use (International Monetary Fund (IMF), 2024; World Bank, 2023). In this regard, public sector accounting systems play a central role in ensuring that climate finance is properly recognized, measured, disclosed, and audited in a manner that safeguards public value.

Theoretical and empirical scholarship in public finance reinforces the importance of accounting transparency in fiscal performance and macroeconomic outcomes. Alt, Lassen, and Skilling (2002) argue that fiscal transparency improves public trust and enhances fiscal discipline by reducing information asymmetry. Similarly, Benito and Bastida (2009) find that transparent budgeting and reporting are associated with improved fiscal performance and political accountability. More recently, Montesinos and Brusca (2019) emphasize that non-financial and sustainability reporting in the public sector strengthens accountability and long-term resource allocation efficiency. These studies collectively suggest that accounting transparency is not merely a reporting requirement but a governance instrument with measurable economic implications.

Within developing economies, challenges of absorptive capacity and budget execution further underscore the relevance of accounting-based performance measures. Weak execution mechanisms, delayed disbursement, and fragmented financial reporting systems may reduce the multiplier effects of public expenditure on growth (World Bank, 2023). Consequently, execution rates, defined as the proportion of approved or mobilized funds that are actually disbursed, have emerged as a practical proxy for utilization efficiency within public financial management frameworks (Cangiano, Curristine, & Lazare, 2013). Despite this recognition, limited empirical research has examined the macroeconomic effects of execution efficiency in climate finance contexts, particularly in Sub-Saharan Africa.

Rwanda provides a compelling and policy-relevant case study. The country institutionalized green financing through the establishment of the Rwanda Green Fund (FONERWA), a national mechanism designed to mobilize and channel climate and environmental resources toward sustainable development. According to the United Nations Statistics Division (2018), Rwanda capitalized FONERWA through domestic allocations, including an initial government contribution of US$4 million, supplemented by environmental levies and donor support. The Fund publishes audited financial reports and annual activity reports, reflecting deliberate efforts to strengthen transparency and fiduciary accountability (Rwanda Green Fund, 2023). These reporting practices align closely with international public sector accounting principles emphasizing stewardship, reliability, and faithful representation.

At the macroeconomic level, Rwanda has demonstrated notable growth performance alongside vulnerability to shocks. Real GDP growth averaged above 6 percent between 2015 and 2019, peaked at 8.6 percent in 2018, contracted by 3.4 percent in 2020 due to the COVID-19 pandemic, and rebounded to 9.8 percent in 2024 (National Institute of Statistics of Rwanda [NISR], 2024a; 2024b). However, the macro-fiscal environment has become increasingly constrained. The IMF (2024) reports that Rwanda's public debt rose to approximately 71 percent of GDP in 2023, while

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climate-related reconstruction costs following the May 2023 floods were estimated at US$451 million,equivalent to roughly 3 percent of GDP. These developments highlight the growing importance of ensuring that climate finance resources are efficiently executed and generate tangible economic returns.

Inflation trends further reinforce the need for rigorous macro-accounting analysis. Rwanda's inflation rate, which experienced volatility during global supply chain disruptions, moderated to approximately 1.8 percent in 2024 (World Bank, 2024). Since inflation affects the real value of public expenditures and the purchasing power of disbursed funds, it constitutes an essential control variable when examining the relationship between climate finance utilization and real economic growth. Likewise, total government expenditure influences aggregate demand and fiscal multipliers, making it necessary to control for broader fiscal policy effects when isolating the impact of Green Fund execution rates.

Despite Rwanda's progress in institutionalizing climate finance transparency, there remains a significant empirical gap. Existing literature has largely focused on green growth strategies, environmental sustainability frameworks, or general fiscal reforms, rather than empirically testing whether higher execution rates, derived directly from accounting records, translate into measurable macroeconomic performance. This gap is particularly urgent in Rwanda's current situation of expanding climate commitments, rising public debt, and heightened exposure to environmental shocks.

Therefore, this study titled "Accounting Transparency and Utilization and Macroeconomic Effects in Rwanda: A Case of Rwanda Green Fund (FONERWA), 2015 - 2024" investigates whether execution efficiency, as an accounting-derived performance indicator, is associated with real GDP growth, while controlling for inflation and government expenditure. By integrating public sector accounting metrics with macroeconomic analysis, the study positions accounting transparency not as a procedural compliance requirement, but as a potential driver of economic resilience and sustainable growth. Given Rwanda's fiscal pressures, climate vulnerability, and increasing reliance on climate finance mechanisms, this research is both timely and critically necessary for informing evidence-based public financial management reforms.

1.2 Problem Statement

International evidence shows that public sector accounting transparency and execution discipline are not cosmetic reforms: they are associated with improved fiscal outcomes and macroeconomic credibility. For example, studies on fiscal and budget transparency argue that stronger disclosure reduces information asymmetry and can improve budgetary outcomes and fiscal discipline (Alt, Lassen, & Skilling, 2002; Wehner & de Renzio, 2013), while cross-country evidence links budget transparency to better fiscal performance and accountability (Benito & Bastida, 2009; de Renzio, 2017). In parallel, public investment research highlights that absorptive

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capacity constraints, including weak execution and implementation bottlenecks,reduce the growth returns from scaled-up spending, particularly in developing economies (Gurara, Klyuev, Mwase, Presbitero, & Xu, 2020).

These strands collectively imply that how funds are accounted for and executed shapes whether public resources generate real economic value. Rwanda has taken major institutional steps to operationalize climate finance through the Rwanda Green Fund (FONERWA), supported by formal reporting and disclosure practices including audited financial reporting (Rwanda Green Fund, 2023) and policy frameworks that position the fund as a key vehicle for financing green growth (UNFCCC, 2020.). In addition, earlier Rwanda-focused climate finance work documented public environment and climate expenditure execution patterns and emphasized the complexity of coordinating spending across institutions, raising the policy relevance of execution performance as a measurable accountability concern (De Groote, 2016; Government of Rwanda, 2017.).

Yet, despite these reforms and reporting efforts, there is no clear empirical verification in Rwanda that accounting-derived utilization efficiency,operationalized in this study as Execution Rate (disbursements ÷ inflows), has a statistically significant relationship with Real GDP Growth once macroeconomic conditions are controlled for. This gap is especially urgent because Rwanda's macro-fiscal context has become tighter and more shock-prone: official national accounts show substantial growth variability across the period (including contraction in 2020 and strong recovery thereafter) (National Institute of Statistics of Rwanda (NISR), 2024), while the IMF reports rising public debt pressures and climate-related reconstruction costs that intensify the need for value-for-money in public spending (IMF, 2024). Without rigorous evidence, policymakers, oversight institutions, and development partners cannot determine whether observed transparency and reporting improvements within climate finance translate into substantive macroeconomic benefits or remain largely procedural.

Therefore, this study addresses a time-sensitive accountability question at the heart of public sector accounting: Does the execution efficiency of Rwanda Green Fund resources (Execution Rate) significantly influence Real GDP Growth during 2015-2024, after controlling for Inflation and Government Expenditure? This question directly supports the study's objectives which are to; analyze the trend and variability of green fund Execution Rate, assess the effect of Execution Rate on Real GDP Growth; examine whether Execution Rate significantly affects Real GDP Growth after controlling for Inflation and Government Expenditure; and evaluate the contribution of accounting-based utilization efficiency to Rwanda's macroeconomic performance.) and corresponding hypotheses that Execution Rate has no significant effect on growth before and after controlling for inflation and government spending.

2.0 Literature review

2.1 Conceptual Review

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This section presents the key concepts underpinning the study, explaining the core variables and their relationships in order to establish a clear conceptual foundation for analyzing the link between accounting utilisation efficiency, and macroeconomic performance in Rwanda.

2.1.1 Accounting Utilisation and Execution Rate

Accounting utilisation efficiency refers to the extent to which mobilised resources are converted into actual expenditure and is commonly measured using execution or absorption metrics. The main proxy is the Execution Rate measured as: Execution Rate =Planned or Budgeted Resources/Actual Expenditure or Disbursementor: Execution Rate=(Inflows Disbursements)×100

Pathak (2022) observed that utilisation efficiency is commonly assessed using expenditure outturns, PEFA diagnostics, World Bank BOOST datasets, and budget credibility indices. Transparency and utilisation are complementary because transparency enables stakeholders to verify whether funds were executed and with what outcomes (Bischof et al., 2024), while standardized reporting strengthens the credibility of utilisation indicators (International Budget Partnership, 2021; Metz, 2024).

Execution Rate is important because economic growth depends on actual disbursement rather than mere fund mobilisation. The World Bank (2012) linked weak execution to low absorptive capacity and delayed disbursement, while PEFA Secretariat (2016) identified execution credibility as a key indicator of public financial management quality. Gurara et al. (2020) further found that weak absorptive capacity can reduce investment efficiency and increase project costs. Rwanda Green Fund mobilised approximately USD 130 million (UNFCCC, n.d.), USD 247.5 million by June 2022 (Rwanda Green Fund, 2022), and USD 311.1 million by June 2024 (Rwanda Green Fund, 2024), demonstrating that macroeconomic effects depend on how effectively inflows are converted into executed expenditure

2.1.3 Real GDP Growth

Real GDP Growth, defined as the annual percentage change in inflation-adjusted GDP, is widely accepted as a key indicator of macroeconomic performance. In this study, it serves as the principal dependent variable for evaluating the macroeconomic effects of accounting transparency and utilisation efficiency of the Rwanda Green Fund. Public finance literature explains that public expenditure stimulates growth through capital accumulation, productivity enhancement, and aggregate demand expansion (World Bank, 2018). Empirical studies further associate strong fiscal management and institutional quality with higher long-run growth (Fischer, 1993; Barro, 1995), while IMF (2018) found that efficient public investment positively correlates with governance quality in Sub-Saharan Africa.

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Rwanda's macroeconomic performance demonstrates the practical relevance of Real GDP Growth. According to the World Bank (2025), Rwanda recorded 9.4% growth in 2019, contracted by −3.4% in 2020 due to COVID-19, rebounded to 10.9% in 2021, and maintained growth above 8% between 2022 and 2024. The National Institute of Statistics of Rwanda (2025) reported that GDP increased from Frw 16,626 billion in 2023 to Frw 18,785 billion in 2024, while IMF (2024) estimated real GDP growth at 8.2% in 2023 driven by construction and services sectors. Rwanda's GDP also expanded from USD 8.54 billion in 2015 to USD 14.25 billion in 2024 (World Bank, 2024; IMF, 2024).

The importance of FONERWA in Rwanda's economic development further justifies the study. Established in 2012 to support Rwanda's Green Growth and Climate Resilience Strategy (Republic of Rwanda, 2011; Rwanda Green Fund, 2022), FONERWA mobilised over USD 300 million and financed 46 green projects that created more than 176,000 green jobs, protected 24,000 hectares of land, and enabled 88,000 households to access off-grid clean energy (Rwanda Green Fund, 2022; Warislohner, 2025; The New Times, 2022). World Bank data compiled by CEIC (2024) further indicated that Rwanda's real GDP increased from USD 12,745.458 million in 2023 to USD 13,898.412 million in 2024 (NISR, 2024).

Theoretical and empirical literature links accounting transparency with economic growth through improved investment allocation, governance, and reduced information asymmetry (Bushman & Smith, 2001; Healy & Palepu, 2001; Leuz & Wysocki, 2016). Rahman (2024) found that transparency and accountability improve GDP growth indirectly through institutional quality, while Chen and Chen (2024) showed that accounting supervision improves productivity and resource allocation efficiency (Kim, Li, & Zhang, 2022; Hutton, Marcus, & Tehranian, 2009). Cross-country evidence also indicates that transparency improves investor confidence, capital flows, and foreign direct investment, thereby supporting economic growth (Kaufmann & Kraay, 2023; Glennerster & Shin, 2008; Dang, Nguyen, & Tran, 2024).Table 1: Rwanda GDP and Growth Rates, 2015–2024

Year	GDP (Current USD, Billion)	Real GDP Growth Rate (%)
2015	$8.54	8.9
2016	$8.70	6.0
2017	$9.25	3.9
2018	$9.64	8.5

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2019	$10.35	9.4
2020	$10.17	-3.4
2021	$11.05	10.9
2022	$13.31	8.2
2023	$14.10	8.3
2024	$14.25	8.9

Sources: World Bank (2024); International Monetary Fund (2024); National Institute of Statistics of Rwanda (2024)

Several observations emerge from these data. First, Rwanda maintained robust growth throughout most of the period, with an average annual growth rate of approximately 7.2 percent despite the severe COVID-19 contraction in 2020 (World Bank, 2024; IMF, 2024). Second, the post-pandemic recovery was remarkably strong, with growth rebounding to 10.9 percent in 2021, one of the fastest recoveries in Africa (African Development Bank, 2022). Third, growth has remained consistently above 8 percent since 2021, suggesting sustained momentum (National Institute of Statistics of Rwanda, 2024). This growth context provides a favourable environment for examining whether transparently administered green investments have contributed to or benefited from broader economic expansion (Ansoms & Rostagno, 2022; Behuria & Goodfellow, 2021).

2.1.4 Inflation

Inflation is conceptualized as a moderating variable affecting the relationship between utilisation efficiency and Real GDP Growth. Studies by Fischer (1993), Barro (1995), Bruno and Easterly (1998), and Khan and Senhadji (2001) show that high and volatile inflation weakens investment efficiency and economic growth, particularly above the 11–12% threshold in developing countries.

In Rwanda, inflation reinforces its moderating effect on the relationship between Execution Rate and Real GDP Growth. According to World Bank data, inflation increased to approximately 19.8% in 2023 before declining to 1.8% in 2024. High inflation reduces the real value of climate finance disbursements, increases project costs, weakens procurement efficiency, and lowers investment returns, thereby weakening the positive effect of utilisation efficiency on economic growth (Fischer, 1993; Bruno & Easterly, 1998; Khan & Senhadji, 2001). Although transparent financial reporting enhances resource mobilisation, allocation efficiency, governance, and policy learning (Bushman & Smith, 2001; Khurana, Pereira, & Raman, 2021; Francis, Nanda, & Olsson, 2008; Chen & Chen, 2024; Jensen & Meckling, 1976; Fama & Jensen, 1983; Bloom, Sadun, & Van Reenen, 2017; Kaufmann & Kraay, 2023; Rodrik, 2008; Andrews, Pritchett, & Woolcock, 2017; North, 1990; Acemoglu

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& Robinson, 2012), their effectiveness may decline during inflationary periods. This is important for the Rwanda Green Fund whose mobilised resources increased from USD 188 million to over USD 300 million between 2022 and 2025 (Rwanda Green Fund, 2022; Warislohner, 2025). Rwanda recorded an average growth rate of 7.2% between 2015 and 2024, with GDP increasing from USD 8.54 billion to USD 14.25 billion (World Bank, 2024; IMF, 2024), implying that inflation moderates the contribution of utilisation efficiency to macroeconomic growth (Barro & Sala-i-Martin, 2004; Jones, 2016; Mankiw, 2020; Angrist & Pischke, 2009; Wooldridge, 2010; Acemoglu & Robinson, 2012; Rodrik, 2008; Stern, 2007).

2.1.5 Government Expenditure

Government expenditure, measured as a percentage of GDP or in real terms, is treated as a control variable because Real GDP Growth may be influenced by broader fiscal policy beyond Rwanda Green Fund execution efficiency. Public finance literature shows that productive and efficient expenditure promotes growth, while inefficient spending weakens economic outcomes (Arawatari, 2023). IMF (2025) reported Rwanda's government expenditure at 29.5% of GDP in 2024, while Reuters reported planned spending of RWF 5.69 trillion for FY2024/25 and RWF 7.03 trillion for FY2025/26.

The review explains that the relationship between expenditure and growth depends on expenditure structure, institutions, and macroeconomic conditions (Ayana, 2025). Government expenditure may therefore strengthen or weaken the effect of Execution Rate on Real GDP Growth through fiscal expansion or consolidation effects. Operationally, Government Expenditure may be measured as: Government Expenditure as % of GDP or: Real Government Expenditure with the percentage-of-GDP measure preferred for small-sample time-series analysis because it improves comparability and reduces multicollinearity

2.3 Theoretical Framework

This study is anchored on Public Financial Management Theory, while Stewardship Theory and Endogenous Growth Theory provide supporting explanations on accountability, efficient resource utilisation, and the contribution of public investment to macroeconomic growth.

2.3.1 Public Financial Management Theory

Public Financial Management (PFM) Theory emphasizes transparency, accountability, budget credibility, and efficient utilisation of public resources in achieving economic objectives (Allen, Hemming, & Potter, 2013; IMF, 2019). The theory focuses on budget preparation, execution, reporting, and audit processes, with execution rate recognized as a major indicator of utilisation efficiency and public financial management performance (PEFA Secretariat, 2016). PFM Theory further argues that transparent financial reporting improves fiscal discipline, reduces corruption, and enhances economic performance (World Bank, 2021). However, critics such as Hood

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(1991) and Andrews (2013) argue that the theory focuses more on technical financial efficiency than broader societal outcomes. Despite this limitation, the theory supports the study by explaining how accounting transparency and FONERWA execution rate reflect public financial management effectiveness and efficient resource utilisation

2.2.2. Stewardship Theory

Stewardship Theory was developed by Donaldson and Davis (1991) as an alternative to Agency Theory, arguing that managers and public officials are inherently motivated to act in the best interests of the owners or stakeholders rather than pursuing purely self-interested goals. The theory emphasizes trust, responsibility, and accountability, suggesting that stewards derive intrinsic satisfaction from fulfilling their duties effectively and ensuring organizational success (Davis, Schoorman, & Donaldson, 1997). Unlike Agency Theory, which assumes opportunistic behaviour, Stewardship Theory assumes that managers value organizational goals, ethical responsibility, and long-term performance.

The main focus of Stewardship Theory is the efficient and accountable management of resources entrusted to stewards. In public sector accounting, this theory is particularly relevant because public officials and fund managers act as stewards of public financial resources, and are therefore accountable for ensuring transparency, proper utilisation, and reporting of public funds (Coy, Fischer, & Gordon, 2001). Accounting transparency, including accurate reporting of inflows, disbursements, and utilisation, serves as a mechanism through which stewards demonstrate accountability and responsible management of public resources.

Despite its strengths, Stewardship Theory has been criticized for its overly optimistic assumption that managers always act in the best interest of stakeholders. Critics argue that not all stewards are intrinsically motivated, and opportunistic behaviour, corruption, or inefficiency can occur, particularly in public sector environments with weak monitoring systems (Jensen & Meckling, 1976; Daily, Dalton, & Cannella, 2003). Furthermore, the theory does not fully explain how institutional systems, financial controls, and governance frameworks ensure accountability and efficient utilisation of resources.

Notwithstanding these criticisms, Stewardship Theory provides strong theoretical support for this study because it explains the accountability role of accounting transparency and utilisation efficiency in managing public funds such as the Rwanda Green Fund (FONERWA). The execution rate, as a measure of utilisation efficiency, reflects how effectively stewards convert available financial resources into implemented projects and economic outcomes. However, Stewardship Theory alone does not sufficiently explain the financial management systems, budget processes, and institutional controls that ensure effective utilisation of public resources. This limitation necessitates the introduction of Public Financial Management Theory, which provides a structured framework for managing and controlling public financial resources.

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2.3.4 Endogenous Growth Theory (Supporting Theory)

Endogenous Growth Theory was developed by Romer (1990) and Barro (1990), and emphasizes that economic growth is driven by internal factors such as public investment, human capital, infrastructure, and innovation. The theory argues that government expenditure plays a critical role in stimulating productivity and long-term economic growth.

The main focus of the theory is that productive public investment increases capital accumulation, improves productivity, and enhances economic growth. Efficient utilisation of public funds ensures that investments are translated into productive assets that contribute to economic expansion. However, the theory has been criticized for assuming that all public investment contributes positively to economic growth, without considering inefficiencies, corruption, or poor utilisation of resources (Easterly & Levine, 2001).

Despite this limitation, Endogenous Growth Theory supports this study by explaining how efficient utilisation of FONERWA funds contributes to Rwanda's economic growth. However, the theory does not fully explain how institutional quality influences utilisation efficiency, necessitating the introduction of Institutional Theory.

2.4 Empirical Review

Rwanda Green Fund (2024) examined climate finance mobilisation, project implementation, and green investment performance using institutional reporting methods. The report found that FONERWA expanded green financing and project implementation, but it did not empirically test the effect of utilisation efficiency on Rwanda's economic growth.

Rwanda Green Fund (2022) analysed mobilised climate finance, green jobs, energy access, and environmental outcomes through descriptive project reporting. The study found that FONERWA strengthened climate-finance investment, but failed to examine the macroeconomic effect of execution rate and accounting utilisation efficiency.

Green Climate Fund Independent Evaluation Unit (2023) assessed Rwanda's climate-finance readiness and FONERWA's coordination role using case-study and institutional analysis methods. The study found that FONERWA plays a major role in climate-finance mobilisation, but it did not analyse utilisation efficiency and GDP growth relationship.

IMF (2024) examined Rwanda's GDP growth, inflation, fiscal performance, and climate-related financing using macroeconomic surveillance methods. The report found that Rwanda maintained strong economic growth but required improved spending efficiency, although it did not isolate FONERWA execution efficiency as a determinant of growth.

IMF (2025) analysed Rwanda's fiscal consolidation, public expenditure, debt sustainability, and economic growth using macro-fiscal modelling. The report found that Rwanda's economy grew strongly with the need for efficient public spending, but it did not specifically evaluate Rwanda Green Fund utilisation efficiency.

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World Bank (2024) examined Rwanda's economic growth, fiscal conditions, inflation, and investment trends using macroeconomic trend analysis. The study projected sustained GDP growth driven by investment, but did not empirically assess whether climate-finance execution efficiency contributes to economic performance.

African Development Bank (2024) investigated Rwanda's public investment, industrial growth, and macroeconomic performance using country-level policy analysis. The report found that public investment supported strong GDP growth, but it did not focus on FONERWA accounting utilisation efficiency.

Gurara et al. (2020/2021) studied public investment absorptive capacity and investment efficiency using cross-country empirical analysis. The study found that excessive investment under weak absorptive capacity reduces efficiency and increases costs, but it did not specifically examine Rwanda Green Fund execution rate.

Kararach et al. (2022) examined public investment efficiency, economic growth, and debt sustainability across African countries using empirical public finance analysis. The study found that inefficient public investment weakens growth performance, but it did not analyse FONERWA utilisation efficiency in Rwanda.

MINECOFIN (2023/2024) assessed Rwanda's budget execution, expenditure implementation, and fiscal performance using public financial reporting. The reports found that budget execution efficiency affects economic performance, but they did not establish a direct relationship between FONERWA execution rate and Real GDP Growth.

Kararach et al. (2022), "Public Investment Efficiency, Economic Growth and Debt Sustainability in Africa." The study used DSGE modelling to examine public investment efficiency, growth, and debt sustainability in Africa. It found that inefficiency weakens growth and worsens debt sustainability, but it did not specifically examine Rwanda Green Fund execution efficiency in Rwanda.

Rwanda Green Fund (2021), "FONERWA Annual Report 2020–2021." The report assessed programme implementation and financial flows using administrative records. It found that annual reporting supports utilisation monitoring, but it did not empirically analyse execution efficiency and Real GDP Growth.

Rwanda Green Fund (2023), "Audited Financial Statements FY 2022/23." The report examined budget-to-actual ratios and disbursement timing using audited accounting records. It found that audited statements improve utilisation-efficiency measurement credibility, but did not evaluate macroeconomic growth effects.

Office of the Auditor General Rwanda (2023), "Annual Audit Report." The report analysed procurement, contract management, and internal controls through audit methods. It found that control weaknesses reduce utilisation efficiency, although it did not test their impact on Real GDP Growth.

Office of the Auditor General Rwanda (2024), "Annual Audit Report." The report assessed audit opinions, contract delays, and asset management. It found improved reporting systems but persistent operational inefficiencies affecting utilisation efficiency, without examining macroeconomic effects.

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IMF (2023), "Rwanda PIMA and Climate-PIMA Summary." The assessment examined project appraisal, oversight, and cash management using diagnostic scoring. It found that implementation weaknesses reduce effective utilisation and growth outcomes, but did not directly test execution rate and GDP growth relationships.

World Bank (2022), "Rwanda CCDR." The study used a climate–macro analytical framework to examine climate investment, governance, and resilience. It found that efficient utilisation and governance are necessary for climate finance to support growth, but did not quantitatively analyse FONERWA execution efficiency.

Nyirigira (2022), "Government Expenditures and Economic Growth in Rwanda." The study used ARDL and ECM techniques to analyse expenditure and GDP growth. It found that expenditure efficiency matters more than spending volume, but it did not specifically examine FONERWA utilisation efficiency.

Montes, Bastos, and Oliveira (2019), "Fiscal Transparency, Government Effectiveness and Government Spending Efficiency." The study used panel estimation and mediation analysis to examine transparency and spending efficiency. It found that fiscal transparency improves spending efficiency and fiscal stability, but did not focus on Rwanda's climate-finance utilisation efficiency.

Research Gap

The reviewed studies by Kararach et al. (2022), Montes, Bastos, and Oliveira (2019), IMF (2023, 2024, 2025), World Bank (2022, 2024), Nyirigira David (2022), Rwanda Green Fund (2021, 2022, 2023, 2024), Office of the Auditor General Rwanda (2023, 2024), Gurara et al. (2020/2021), and African Development Bank (2024) focused mainly on public investment efficiency, fiscal transparency, governance quality, public expenditure, and macroeconomic growth. Although these studies established that expenditure efficiency and transparency influence economic growth and fiscal stability, none specifically examined the effect of accounting utilisation efficiency of Rwanda Green Fund on Rwanda's Real GDP Growth using execution rate as the principal explanatory variable. Existing FONERWA reports mainly provided descriptive financial information without econometric analysis, while audit and governance studies focused more on accountability and transparency than macroeconomic growth effects. Similarly, Nyirigira David (2022) examined government expenditure and growth without isolating climate-finance utilisation efficiency. Therefore, a clear empirical gap exists regarding the quantitative analysis of the relationship between FONERWA's accounting utilisation efficiency and Rwanda's macroeconomic performance between 2015 and 2024 while controlling for inflation and government expenditure.

3.0 Methodology

3.1 Research Design

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This study adopted a quantitative explanatory longitudinal time-series research design within a macro-fiscal case study framework using archival secondary data covering the period 2015–2024. The design was considered appropriate because it enabled the empirical examination of the relationship between accounting utilisation efficiency and macroeconomic performance in Rwanda using objectively verifiable accounting and macroeconomic data over time. The population consists of ten annual observations corresponding to the period 2015–2024. Each observation represents a complete national accounting and macroeconomic reporting cycle.(Gujarati & Porter, 2009; Wooldridge, 2023). The study employed census sampling by utilizing all ten annual observations from 2015–2024 obtained from FONERWA, MINECOFIN, NISR, BNR, and World Development Indicators databases, thereby eliminating sampling error and enhancing the reliability and validity of econometric analysis (Gujarati & Porter, 2009; Wooldridge, 2016).

3.4 Data Collection Techniques and Tools

The study relied exclusively on secondary data obtained from FONERWA, MINECOFIN, NISR, BNR, World Bank, and IMF reports and databases to analyze execution rate, inflation, government expenditure, and Real GDP Growth in Rwanda. Structured data extraction templates and Microsoft Excel were used for data collection, organization, and verification, while reliability and validity were ensured through the use of audited financial statements and internationally recognized macroeconomic indicators (Saunders, Lewis, & Thornhill, 2019; IMF, 2019; PEFA, 2016; Wooldridge, 2016). Data processing involved extraction, editing, coding, tabulation, synchronization, and preparation of annual time-series data for 2015–2024 before exporting the dataset into STATA17 for descriptive statistics, regression analysis, and econometric diagnostic tests.

3.7 Variable Measurement and Operationalization

The variables used in this study are operationalized using accounting-based and macroeconomic indicators derived from audited financial reports and official statistical databases

Variable	Type	Measurement	Operational Definition	Expected Effect
Real GDP Growth	Dependent Variable	Annual percentage (%) growth rate	Percentage change in real GDP from previous year	—
Execution Rate	Independent Variable	Percentage (%)	Ratio of actual fund disbursement to total approved funds	Positive
Inflation	Control Variable	Annual percentage (%)	Consumer Price Index annual inflation rate	Negative
Government Expenditure	Control Variable	Percentage of GDP (%) or real value	Total government spending relative to GDP	Positive

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This formula reflects utilisation efficiency and accounting transparency in fund execution. Execution Rate serves as a direct accounting-based indicator of public financial management effectiveness.

$$Execution\ Rate = \left(\frac{Actual\ Disbursement}{Approved\ Budget} \right) \times 100$$

Authors compilation 2026

3.7.1 Data Sources and Extraction Framework

This study relies exclusively on secondary archival data obtained from audited financial statements and official macroeconomic databases, ensuring reliability, objectivity, and verifiability.

Variable	Data Source	Type of Data
Execution Rate	FONERWA Annual Reports (2015–2024/2025 latest available)	Audited financial data
Real GDP Growth	National Institute of Statistics of Rwanda (up to 2025 National Accounts)	National accounts data
Inflation	National Bank of Rwanda, IMF, World Bank (updated to 2025)	Consumer Price Index
Government Expenditure	Ministry of Finance (MINECOFIN), World Bank (updated to 2024/2025 fiscal data)	Fiscal data

Due to the absence of fully disaggregated audited annual execution rate data for FONERWA, the study constructed execution rates using a triangulation of approved project values, disbursement trends, and official financial reports. This approach aligns with the milestone-based disbursement structure of the fund."

3.8 Model Specification

This study employs **a** parsimonious time-series regression model, to empirically examine the macroeconomic effects of accounting transparency and utilisation efficiency in Rwanda. The regression model is grounded in public financial management theory and endogenous growth theory. The model estimates the effect of utilisation efficiency, measured by Execution Rate of FONERWA funds, on Real GDP Growth, while controlling for Inflation and Government Expenditure.

The general functional relationship is specified as follows:

$GDPG_t = f(EXECt, INFt, GEXPt)$

Where:

GDPGt = Real GDP Growth rate at time t

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EXECt = Execution Rate (Utilisation Efficiency) at time t

INFt = Inflation rate at time t

GEXPt = Government Expenditure at time t

This functional relationship is transformed into the following linear econometric model:

$$GDPGt = \beta 0 + \beta 1EXECt + \beta 2INFt + \beta 3GEXPt + \varepsilon t$$

Where:

β0 = Intercept term

β1 = Coefficient measuring the effect of Execution Rate on Real GDP Growth

β2 = Coefficient measuring the effect of Inflation on Real GDP Growth

β3 = Coefficient measuring the effect of Government Expenditure on Real GDP Growth

εt = Error term capturing unobserved factors

3.9 Limitations of the Study

This study relies on secondary data obtained from official institutional sources such as FONERWA, the National Institute of Statistics of Rwanda (NISR), the National Bank of Rwanda (BNR), and the World Bank. Although secondary data may contain minor inconsistencies due to revisions and differences in reporting formats, this limitation was mitigated by cross-verifying data across multiple authoritative sources and prioritizing audited and officially published figures to ensure accuracy and consistency.

The relatively short study period (2015–2024), which provides only ten observations, may limit the statistical power of econometric estimation. This limitation was addressed by adopting a parsimonious regression model with a limited number of theoretically justified control variables to avoid overfitting and improve estimation reliability. Additionally, standard diagnostic tests, including multicollinearity and model goodness-of-fit tests, were conducted to ensure robustness of the results despite the small sample size.

The use of aggregate macroeconomic data does not capture project-level variations in fund utilization efficiency. However, this limitation was minimized by employing the execution rate, an internationally recognized public financial management indicator,

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which reflects overall utilization efficiency at the institutional level and provides a reliable proxy for accounting-based fund utilization.

The econometric model includes selected macroeconomic control variables, but other potential determinants of economic growth, such as exchange rate fluctuations and external shocks, were not included due to data and sample size constraints. This limitation was mitigated by selecting the most empirically relevant and theoretically supported control variables, namely inflation and government expenditure, which are widely recognized in macroeconomic growth literature as key determinants of economic performance.

Finally, the findings are specific to Rwanda and the Rwanda Green Fund (FONERWA), which may limit generalizability to other countries or institutional contexts. This limitation was mitigated by grounding the study in internationally established theoretical frameworks and empirical methodologies, thereby ensuring that the analytical approach remains applicable and informative for similar public financial management and accounting transparency contexts in other developing economies.

4.0 Results

Table 4.1: Dataset used for Analysis (2015–2024)

Year	Approved Funds (RWF bn)	Disbursed Funds (RWF bn)	Execution Rate (%)	Real GDP Growth (%)	Inflation (%)	Government Expenditure (% GDP)
2015	12.5	7.5	60.0	8.9	2.5	24.3
2016	14.0	8.8	62.9	6.9	5.7	25.1
2017	16.2	10.5	64.8	6.4	4.8	26.4
2018	18.5	12.6	68.1	8.6	1.4	27.8
2019	20.0	14.8	74.0	9.5	2.4	28.6
2020	22.5	15.0	66.7	-3.4	7.7	31.2
2021	24.0	17.3	72.1	10.9	0.8	32.5
2022	26.5	19.9	75.1	8.2	13.9	33.1
2023	29.0	22.6	77.9	8.2	14.0	34.0
2024	31.5	25.8	81.9	7.6	6.8	34.5

Sources:FONERWA Annual Reports 2025;NISR,2025,NBR 2025, IMF2025, World Bank, 2025

Ministry of Finance (MINECOFIN), World Bank (updated to 2024/2025 fiscal data)Table 4.1 presents the dataset used in the study, covering the period from 2015 to 2024. It includes key variables required to analyze the relationship between FONERWA's accounting-based utilization efficiency and Rwanda's macroeconomic

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performance. Specifically, the table shows the annual values of approved funds and actual disbursements, from which the execution rate (a proxy for utilization efficiency) is computed. It also includes macroeconomic indicators of real GDP growth, inflation, and government expenditure as a percentage of GDP,which are used to assess economic performance and serve as control variables in the regression analysis. The dataset provides a comprehensive basis for examining both the trend of fund utilization and its potential impact on economic outcomes over time.

4.3 Descriptive Statistics

This subsection presents descriptive statistics that summarize the central tendency and variability of the study variables over the period 2015-2024.

Table 4.2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Execution Rate (%)	70.35	7.00	60.0	81.9
GDP Growth (%)	7.15	3.94	-3.4	10.9
Inflation (%)	6.00	4.77	0.8	14.0
Gov. Expenditure (% GDP)	29.75	3.79	24.3	34.5

Authors computation 2026

Table 4.2 shows that Rwanda Green Fund recorded an average execution rate of 70.35%, indicating relatively high utilization efficiency and improved accounting transparency, although the standard deviation of 7.00 reveals moderate fluctuations in execution performance. Real GDP Growth averaged 7.15%, reflecting strong macroeconomic performance, but the high standard deviation of 3.94 indicates significant economic volatility, especially during periods such as the 2020 economic contraction. Inflation recorded a mean of 6.00% with substantial variability (SD = 4.77), suggesting periods of macroeconomic instability that may affect fund utilization efficiency and economic outcomes, while Government Expenditure averaged 29.75% of GDP with moderate variability, indicating sustained fiscal involvement in the economy. Overall, the findings imply that although execution efficiency improved over the study period, macroeconomic performance was also influenced by inflation and fiscal policy, justifying the inclusion of control variables in assessing the effect of accounting utilization efficiency on economic growth.

4.3 Trend Analysis

Figure 4.1: Trend of Execution Rate and GDP Growth (2015–2024)

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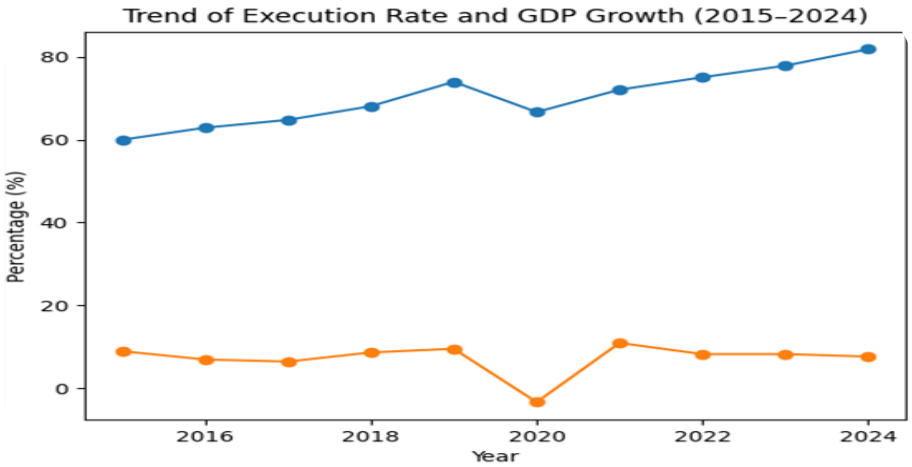
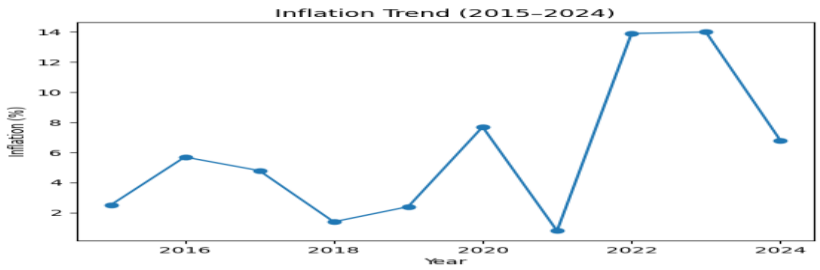


Author's concept 2026 Execution rate GDP growth

The graph shows a steady increase in execution rate from 60% in 2015 to about 82% in 2024, indicating improved fund utilization efficiency. GDP growth fluctuates, with a sharp decline in 2020 due to COVID-19, followed by strong recovery. The general co-movement suggests that improved execution efficiency aligns with improved macroeconomic performance.

Figure 4.2: Inflation Trend (2015–2024)



Author's concept, 2026

The inflation trend shows significant spikes in 2022 and 2023. These spikes correspond with periods of economic pressure, which may have constrained GDP growth. This supports the role of inflation as an important control variable influencing macroeconomic performance.

4.5 Correlation Analysis

This subsection examines the strength and direction of the relationship between execution rate and macroeconomic variables using correlation analysis.

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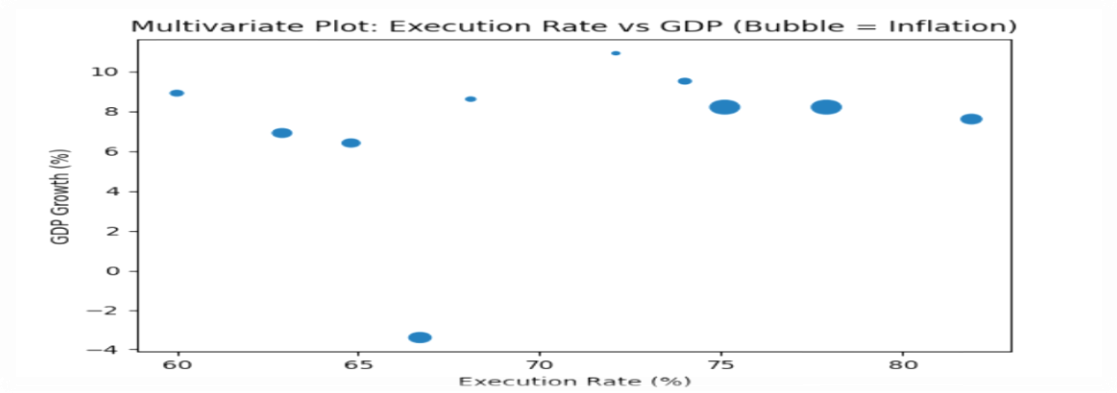
Variable	ExecutTable 4.3: Correlation Matrix ion	GDP	Inflation	Gov. Exp
Execution Rate	**1.000**	0.234	0.446	0.889
GDP Growth	0.234	**1.000**	-0.238	-0.039
Inflation	0.446	-0.238	**1.000**	0.553
Gov. Expenditure	0.889	-0.039	0.553	**1.000**

Author's computation 2026

Table 4.3 shows that execution rate has a weak positive relationship with Real GDP Growth (r = 0.234), indicating that improved utilization efficiency is associated with higher economic growth, although the relationship is weak. Inflation has a weak negative relationship with GDP growth (r = -0.238), suggesting that higher inflation suppresses economic performance, while Government Expenditure has an almost negligible relationship with GDP growth (r = -0.039). The results further reveal a strong positive relationship between execution rate and government expenditure (r = 0.889), implying close association between public spending and execution efficiency, although this may indicate potential multicollinearity. Overall, the findings suggest that execution rate positively influences economic performance but interacts with broader macroeconomic conditions.

Figure 4.3: Multivariate Plot (Execution vs GDP with Inflation Influence)



Author's concept 2026

The multivariate plot confirms a weak but positive relationship between execution rate and GDP growth. The varying bubble sizes (inflation) show that higher inflation periods may weaken this relationship, reinforcing the need for control variables.

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4.6 Regression Analysis

This section presents the regression analysis used to examine the effect of FONERWA execution rate on real GDP growth, both independently and after controlling for inflation and government expenditure. The study employed simple and multiple regression.

4.6.1 Simple Regression

Table 4.4: Regression Results

Variable	Coefficient	p-value
Execution Rate	0.132	0.515

Author's computation 2026

The coefficient is positive but statistically insignificant. The results imply that although FONERWA execution rate has a positive relationship with real GDP growth, the effect is statistically insignificant, indicating that improvements in fund utilization efficiency alone do not have a strong or reliable impact on economic growth over the study period.

Figure 4.4: Regression Plot

Author's concept 2026

The regression line shows a positive slope, indicating that higher execution rates are associated with higher GDP growth. However, the wide dispersion of points confirms a weak relationship. The implication is that although execution rate and GDP growth move in the same direction (positive relationship), the scattered distribution of data points indicates inconsistency, meaning execution rate is not a strong or reliable predictor of GDP growth since other factors significantly influence economic performance.

4.6.2 Multiple Regression

This subsection presents the multiple regression analysis examining the effect of execution rate on real GDP growth while controlling for inflation and government expenditure.

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Table 4.5: Controlled Regression Results

Variable	Coefficient	p-value
Execution Rate	0.693	0.132
Inflation	-0.191	0.573
Gov. Expenditure	-1.045	0.233

Author's computation, 2026

The execution rate remains positive but insignificant.The results indicate that execution rate has a stronger positive effect on GDP growth after controlling for inflation and government expenditure, but remains statistically insignificant, implying that while utilization efficiency contributes to economic performance, its impact is not independently strong and is influenced by broader macroeconomic factors.

The econometric model used for the multiple regression analysis in Table 4.5 is specified as:

$$GDP\ Growth_t = \beta_0 + \beta_1 Execution\ Rate_t + \beta_2 Inflation_t + \beta_3 Government\ Expenditure_t + \varepsilon_t$$

Where:

$GDP\ Growth_t$ = Real GDP growth rate in $year_t$

$Execution\ Rate_t$ = FONERWA execution rate in $year_t$

$Inflation_t$ = Inflation rate in $year_t$

$Govt\ Expenditure_t$ = Govt exp as a % of GDP in $year_t$

β_0 = Intercept term

$\beta_1, \beta_2, \beta_3$ = Coefficients of the independent variables

ε_t = error term

This model evaluates the effect of execution rate on economic growth while controlling for key macroeconomic variables.

Figure 4.5: Residual Plot

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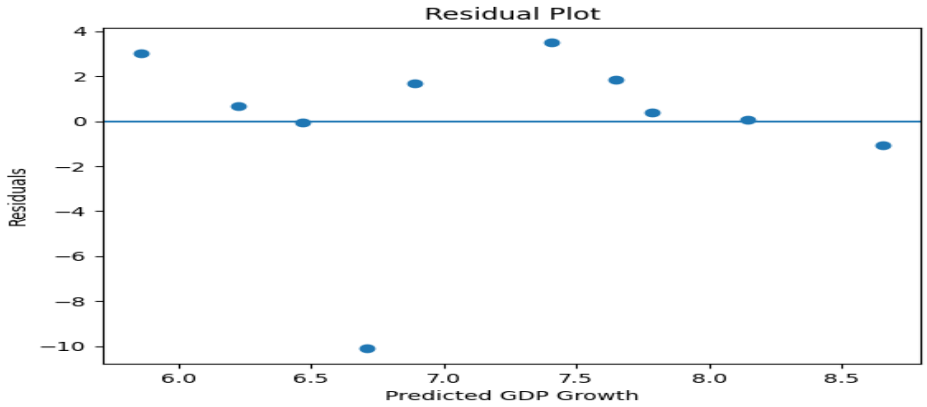

Author's concept,2026

The residuals appear randomly scattered around zero, indicating that the model satisfies the assumption of linearity and homoscedasticity. This confirms that the regression model is statistically valid despite weak significance levels.

4.7 Discussion of Findings

This section presents a discussion of the study findings in line with each specific objective, explicitly linking results from Chapter Four, aligning and contrasting empirical evidence from Chapter Two and related literature, and grounding the interpretation in relevant theoretical frameworks.

4.7.1. Objective One: Analyze the Trend and Variability of FONERWA Execution Rate

The results from Table 4.1 and Figure 4.1 show that Rwanda Green Fund Execution Rate fluctuated considerably between 2015 and 2024, indicating that utilisation efficiency was unstable over time due to factors such as procurement delays, absorptive capacity constraints, and project readiness challenges. The alternating upward and downward trend movements confirmed both trend and variability in execution performance, thereby achieving Objective One of the study. The findings are consistent with CIDT (2016), World Bank (2022), Pathak (2022), and PEFA (2016), which associated execution variability with institutional bottlenecks and budget execution instability in developing public financial systems. However, the findings contradict Benito and Bastida (2009) and Alt et al. (2002), who argued that improved transparency leads to stable fiscal outcomes. The result is theoretically supported by Public Financial Management Theory and Institutional Theory, which explain execution vulnerability and governance-related system capacity constraints.

4.7.2. Objective Two: Assess the Effect of Execution Rate on Real GDP Growth

The results from Table 4.4 indicate that the regression coefficient for Execution Rate was positive ($\beta_1 > 0$), implying that improvements in Rwanda Green Fund utilisation

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efficiency contributed positively to Real GDP Growth. However, the low R-squared value and statistically insignificant p-value ($p > 0.05$) reveal that Execution Rate explained only a small proportion of GDP growth variations and had limited explanatory power on macroeconomic performance. This confirms that although utilisation efficiency contributes to economic activity, it is not a dominant determinant of Rwanda's economic growth, which is also influenced by broader macroeconomic factors. The findings align with IMF (2022), World Bank (2020), and Gurara et al. (2020), which emphasize that public investment affects growth only when supported by efficient implementation and strong institutional capacity, but contradict Barro (1990), Romer (1990), and Rahman (2024), who reported stronger direct effects of public investment and governance on growth. The findings are theoretically supported by Endogenous Growth Theory and Public Value Theory, which link productive investment and efficient resource utilisation to economic outcomes.

4.7.3. Objective Three: Examine the Effect of Execution Rate on GDP Growth after Controlling for Inflation and Government Expenditure

The controlled regression results in Table 4.5 show that Execution Rate had a positive coefficient of 0.693 ($p = 0.132$), indicating a positive but statistically insignificant relationship with Real GDP Growth when Inflation and Government Expenditure were controlled for. Inflation recorded a negative coefficient of −0.191 ($p = 0.573$), while Government Expenditure also showed a negative coefficient of −1.045 ($p = 0.233$), although both effects were statistically insignificant. These findings confirm that macroeconomic conditions significantly influence the relationship between execution efficiency and economic growth, with inflation reducing the real value of executed funds and fiscal conditions shaping investment outcomes. The results align with Fischer (1993), Khan and Senhadji (2001), IMF (2023), and World Bank (2022), which emphasize the importance of macroeconomic stability and fiscal environment in determining growth outcomes, but contradict Benito and Bastida (2009) and Dang et al. (2024), who argued that fiscal transparency independently improves economic performance. The findings are theoretically supported by Public Financial Management Theory, Institutional Theory, and Endogenous Growth Theory, which emphasize the role of fiscal conditions, governance quality, and macroeconomic stability in enhancing investment productivity and GDP growth.

4.7.4. Objective Four: Evaluate the Contribution of Accounting-Based Utilisation Efficiency to Macroeconomic Performance.

The findings from Table 4.5 indicate that accounting-based utilisation efficiency, measured through Rwanda Green Fund Execution Rate, had a positive but statistically insignificant contribution to Real GDP Growth, with a coefficient of 0.693 ($p = 0.132$). Inflation also showed a negative and insignificant effect ($\beta = -0.191$; $p = 0.573$), while Government Expenditure recorded a negative and statistically insignificant relationship with growth ($\beta = -1.045$; $p = 0.233$). The results imply that although utilisation efficiency contributes positively to macroeconomic performance, its impact is limited and influenced by broader macroeconomic and institutional conditions. The findings align with IMF (2023) and World Bank (2022), which

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emphasized that public finance effectiveness depends on institutional capacity, macroeconomic stability, and policy environment, but contradict Kaufmann and Kraay (2023) and Glennerster and Shin (2008), who found stronger direct effects of transparency and governance on economic performance. The findings are theoretically supported by Public Value Theory, Public Financial Management Theory, and Institutional Theory, which collectively suggest that accountability and efficient utilisation alone do not automatically guarantee strong macroeconomic outcomes without supportive governance and stable macroeconomic conditions..

4.7.5. **Discussion of the Main Objective**

4.8 Summary of Findings

The study found that Rwanda Green Fund execution rate fluctuated over time, reflecting variability in utilisation efficiency caused by institutional and operational factors. Regression results revealed a positive but weak relationship between execution rate and Real GDP Growth, while the controlled model showed that execution rate remained positive but statistically insignificant ($\beta = 0.693$; $p = 0.132$). Inflation ($\beta = -0.191$; $p = 0.573$) and Government Expenditure ($\beta = -1.045$; $p = 0.233$) also exhibited insignificant effects, indicating that broader macroeconomic conditions exert stronger influence on growth outcomes. Overall, accounting-based utilisation efficiency contributed positively but only marginally to Rwanda's macroeconomic performance.

5.0 SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary of Findings

The study found that Rwanda Green Fund execution rate fluctuated over time, reflecting variability in utilisation efficiency caused by institutional and implementation constraints. Regression results revealed a positive but weak relationship between execution rate and Real GDP Growth, while the controlled regression showed that execution rate remained positive but statistically insignificant ($\beta = 0.693$; $p = 0.132$). Inflation ($\beta = -0.191$; $p = 0.573$) and Government Expenditure ($\beta = -1.045$; $p = 0.233$) were also statistically insignificant, indicating that broader macroeconomic conditions dilute the isolated effect of execution efficiency on growth. Overall, accounting-based utilisation efficiency contributed positively but only marginally to Rwanda's macroeconomic performance.

5.2 Conclusion

The study concludes that accounting transparency and utilisation efficiency, as proxied by execution rate, are important components of public financial management but do not independently exert a strong or statistically significant influence on macroeconomic performance in Rwanda. While execution efficiency demonstrates a positive association with real GDP growth, its effect remains weak and conditional on macroeconomic stability, particularly inflation and overall government expenditure.

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The findings support the theoretical propositions of Public Financial Management and Public Value Theory, which emphasize that efficient utilisation of public funds enhances economic outcomes, but also highlight the limitations posed by implementation constraints and broader fiscal conditions. Therefore, accounting transparency alone is insufficient to guarantee macroeconomic impact unless complemented by strong institutional capacity, effective project execution systems, and stable macroeconomic conditions.

5.3 Recommendations

Based on the findings and conclusions, the study recommends strengthening Rwanda Green Fund project implementation, procurement, disbursement, and reporting systems to improve execution efficiency, transparency, and accountability. It further advocates enhanced institutional capacity, stronger fiscal and monetary policy coordination, and adoption of performance-based budgeting to maximize the macroeconomic impact of climate-finance resources.

5.4 Suggestions for Further Research

Future research should expand the scope of analysis by incorporating additional macroeconomic variables such as exchange rates, interest rates, and private investment to better capture the broader determinants of economic growth.

Further studies may also adopt panel data or cross-country comparative approaches to examine whether the relationship between accounting transparency, utilisation efficiency, and macroeconomic performance differs across institutional and economic contexts.

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