FINANCIAL SECTOR DEVELOPMENT AND ECONOMIC GROWTH IN KENYA

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ABSTRACT

Surmounting the socio-economic setbacks such as those posed by crises and pandemics can particularly be arduous, especially with regard to quick economic comeback. Critical to a thriving economy is a sound financial decision mix stemming from a vibrant business environment. This study aimed at determining the causalities with economic growth, of: -Financial sector depth, sector service access, stability and efficiency, in the Kenyan context: Quarterly secondary time series data over the 2001-2023 sample period was collected on all the delineated variables and visualized via exploratory techniques. The research design employed was quantitative with such underlying theories as Agency, Endogenous growth, Financial Intermediation and Liquidity preference. The series were diagnosed for the order of integration where a mixed integration profile was established and an ARDL (1,1,1,1) model was developed using the Akaike, Bayesian and Hannan-Quinn information criteria. The study found out that safe for financial sector service access with a significant negative long-run effect, financial sector depth, stability and efficiency had significant long-run effects on economic growth in Kenya. The short-run dynamics revealed a 64.8% speed of mean reversion which was highly statistically significant. The study concluded that with a -0.648 error correction mechanism, economic planners and financial sector stakeholders could take advantage of the structurally stable mean-reverting economic system to reliably plan economic development, with the right level of financial sector service access level.

INTRODUCTION

Study Background

Economic growth is important for livelihoods because to many countries it presents a number of benefits. First it improves living standards of citizenry so that each person representing a region of the country is financially enabled to deal with daily requirements of the family's life (Weil, 2013).

Samuelson and Nordhaus (2019) provide evidence that economic growth creates employment so that industry rebounds if it was in limbo and the young generation gets jobs to feed themselves their families and their relatives too. Apart from the individual and households (Samuelson & Nordhaus, 2019), governments create revenue from economic growth so that higher economic growth levels lead to higher government revenues and therefore the governments are able to facilitate activities they have planned in their physical calendars.

Moreover development benefits are far reaching leading to poverty reduction whereby citizens are able to afford the minimum earnings according to the International poverty line. By doing so, the citizens are able to invest and therefore national development encourages investment to the extent that everyone is able to manage or own a business because of their income at first. This is the idea in Mankiw (2021).

According to Adam Smith 1776 sighted in Adams (2002), an economically developed country by extension has improved infrastructure whereby business and economic activities are run without technological or technology and funding hiccups. By extension, a more developed country has a higher level of investment in development infrastructure because a country cannot develop without adequately investing in infrastructure.

Again, the more developed a country is the more confident its Political leadership is in capacity to bargain the country's position on the international arena and therefore stability is a direct result of economic development. This is the idea in the World Bank (2022).

Father the more developed a country is the more developed also its technological infrastructure which is a pivot to more development in other economic aspects. Without technological development for example it is difficult for a country to achieve its midterm or long term development objectives, because the world today is technology-led And even will be in the future.

The importance of an economy's growth as linked to the wellness of any people and the indubitable progression effect on the posterity a citizenry are found in a plethora of literary works. Further, the foremost benefit of economic growth to a country is that of raising average incomes, thereby lowering the levels of absolute poverty. Pettinger (2019) considers economic growth of the

twentieth century as responsible for dimming absolute poverty and raising life expectancy. This is supported by the reality that firm production thrives during good economic times and this expansion in production capacity leads to demand for more workforce. Adams (2002) contents that this development-driven format of poverty reduction works by reducing the level of inequality of between the existing workforce and those taken in thanks to economic vibrancy. This is the idea in Chen 1997.

According to Adams (2002), pro-poverty reduction-driven economic growth is evident, through which a number of cross country studies have settled at the finding that a 10% increase in a country's average income reduced poverty level by 20%.

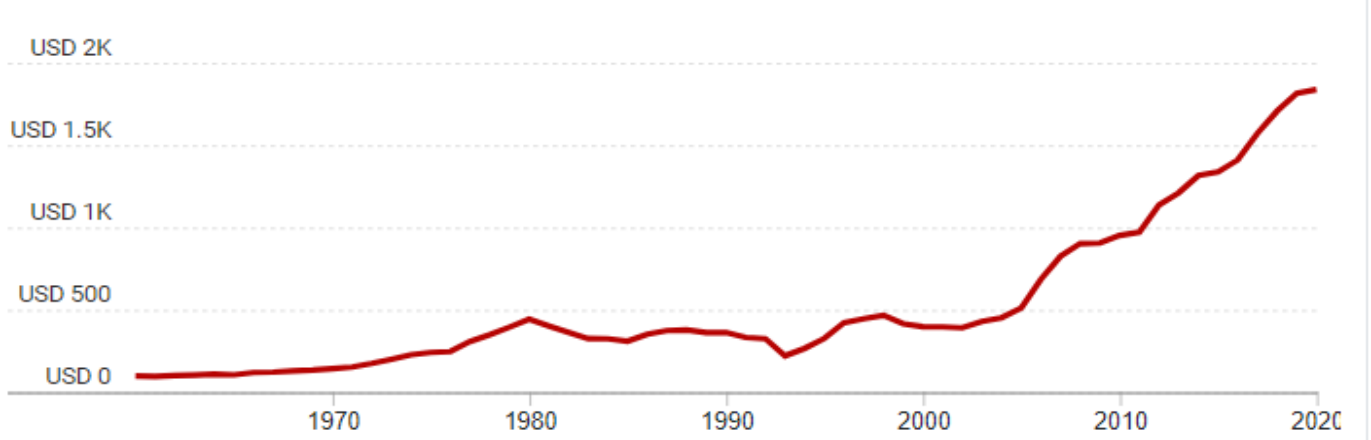
Economic growth has another benefit of improving government revenues through higher tax revenues, which in turn raises the level of provision of public services and consequently translates to reduced government debt. Accordingly, health services get better as with living standards, education and life expectancy. Evidence from a study by Wilhem and Fiestas suggested that increased economic growth boosted tax collections. For a low-income country, a 10% rise in the average level of GDP raised tax revenues by 12.7%, boosted education expenditure by 11%, and health expenditure by 11.4%. This had the effect of shifting borrowing for health financing by upto 33 years.

Other advantages of seeking economic growth include economic development-the sustained version of economic growth over years, more consumer or spending choice thanks to investment diversification and environment protection.

Comparative Economic Growth Statistics-Kenya and the World

Kenya's annual economic growth rate per capita hovered around U$ 1,800 in 2020. Africa's was U$ 1,450. This is according to Figures 1.1.

Figure 1.1 Kenya's Annual Economic Growth Rate per Capita



Source: The World Bank (2022)

Compared to its individual African neighbor's, in 2021 the economy performed relatively dismally.

Table 1. 1 Top 20 African Economies by Annual GDP per Capita

RANK IN AFRICA	COUNTRY	ANNUAL GDP PC U$
1	Seychelles	30,486
2	Mauritius	25,029
3	Gabon	18,647
4	Botswana	18,113
5	South Africa	14,239
6	Egypt	14,023
7	Tunisia	13,417
8	Algeria	11,829
9	Namibia	9,542
10	Morocco	9,339
11	Eswatini	9,186
12	Ghana	8,343
13	Cabo Verde	7,728
14	Republic of Congo	7,119
15	Angola	6,878
16	Ivory Coast	5,360
17	Nigeria	5,280
18	Kenya	5,274
19	Libya	4,746
20	Mauritania	4,563

Source: Summary of World Bank (2021),

This is a demonstration of comparative dwarfing of Kenya (ranking 18th) by peer African economies, pointing to the possibility that there is more to be done to get better livelihoods by her citizenry.

Financial Sector Development

According to the World Bank (2020), the development of a country's financial sector happens when financial instruments, markets, and intermediaries ease the effects of information, enforcement, and transactions to better provide their key functions to the economy. The group's Global Financial Development Database "*a handy and simple-to- grasp financial development measurement framework"*, which includes: financial depth, access, efficiency, and stability.
The indicators of the sectorones development are the ones that one can focus on so as to get a clear picture of how the relationship looks like whether it is reciprocal one way or nonexistent. This is the idea in Kigabo and Okello (2019).

Key financial sector development indicatore are identified by different sources of literature and key ones are: financial sector efficiency and stability (Mishkin, 2022), financial deepening and financial sector access-the latter measured by credit to private sector (Levine, 2022; Azimi,2022) and financial inclusion (World Bank,2022); Cecchetti & Schoenholtz,2021).

According to Beck et al. (2020), Kigabo and Okello (2015) and Levine (2000) there is a total of 21 financial sector development indicators as summarized in Table 1.2, ensuing

Table 1. 2: Financial Sector Development Indicators

	FINANCIAL SECTOR DEVELOPMENT INDICATORS-INSTITUTIONS		
COMPONENT	**INDICATOR**	**COMPONENT**	**INDICATOR**
1. DEPTH	Private Sector Credit to GDP		Net interest margin
	Financial Institutions' asset to GDP	3. EFFICIENCY	Lending-deposits spread
	M2 to GDP		Non-interest income to total income
	Deposits to GDP		Overhead costs (% of total assets)
	Gross value added of the financial sector to GDP		Profitability (return on assets, return on equity)
			Boone indicator (or Herfindahl or H-statistics)
2. ACCESS	Accounts per thousand adults(commercial banks)	4. STABILITY	Z-score
	Branches per 100,000 adults (commercial banks)		Capital adequacy ratios
	% of people with a bank account (from user survey)		Asset quality ratios
	% of firms with line of credit (all firms)		Liquidity ratios
	% of firms with line of credit (small firms)		Others (net foreign exchange position to capital etc)

Source: Summary of Beck et al., (1999)

The indicators in yellow fill are a consensus for different studies such as Beck *et al.* (2020) Kigabo and Okello (2015), Levine (2000). As for stability, the researcher chooses net foreign exchange position as a matter of researcher preference. Depth will be measured by narrow money (M2) to GDP ratio, access will use Credit to Private Sector (in Kigabo & Okello (2015) for its relevance to Beck *et al.* (2020) and Efficiency, indicated by profitability.

In the Kenyan context, it is evident that over the last score to 2019, financial sector growth related positively with economic growth but whether the measures used for the conclusion were adequate or not and whether this is a long or short-term narrative remains unclear.

In pursuit of economic development, Kenya's rate of economic growth has been rising and has even out-performed Africa's in the last decade. Gross Domestic Product has similarly been on the rise to U$ 5,274 in 2020, earning the country a pleasant 18th of 53 positions in Africa and on the global arena, a mediocre 176th of 196 economies, only above the likes of Syria and Cambodia. Statistically, 8 countries in the African continent had at least double the GDP of Kenya, not to mention others globally (some of which are up to 20 times richer). This scenario connotes a greater opportunity for growth for Kenya, but the question of whether the extra growth is necessary or not abounds.

According to KNBS (2020), the GDP of Kenya has witnessed an unstable (and falling) real GDP trend but a falling of the real GDP gap over the last decade. The falling trend is a counter development concern. Meanwhile the Kenya National Treasury (2022) provides an escalating national debt burden with an increasingly negative fiscal deficit. For the decade to 2020, the debt/GDP ratio has remained (way) above the 40% sustainability benchmark and therefore the

economic growth in Kenya is not only makeshift but also untenable. This justifies requirement for more growth.

Key among the pillars of economic development is financial a sound financial sector, which, according to Gitogo (2019) is a hinge around which most of economic activities and transactions are conducted. Empirical literature is clear on the finance-industry nexus but is conflicted on the direction of causality. This way, the literature suggests a shift in studies establishing causality to those of its nature-Whether finance (financial Sector Development) leads Enterprise (Economic Development) or otherwise.

Regarding the reciprocity of Finance and Enterprise, three research categories have emerged, posing ambiguity: - Finance preceding Enterprise (Okello & Kigabo, 2015 and Mishkin, 1995), Enterprise preceding Finance (Puatwoe & Piabuo, 2017 and Abdelhafidh, 2013) and, reciprocity or no conclusive lead-lag relationship between the two (Besci & Wang, 1997; Lavine at al., 2000). In the case of Kenya, it would be interesting to investigate this causality for insight on optimal combination of policy channels.

Secondly, to such an extent that the government can use financial sector in spurring economic growth, another puzzle arises as to the efficiency with which policy actions are fully quartered by the target economic agents-the speed and completeness of policy pass-through. Again, empirical evidence is conflicting, so that country- specific factors play critical pass-through roles. Literature identifies financial sector development a crucial and necessary component of monetary policy transmission (in Égert et al., 2007; Mishkin, 1995, Alfredo, 2012; Ansari, 2014), but mostly ignores the possibility of country-contextual impediments to the sector's development such as effectiveness, (as in Mishkin, 1995), the degree of banking sector competition (depth), allocation efficiency, credit risk, asset liquidity and the degree of dollarization in the economy (Mishkin, 1995, Leibeg and Schwaiger, 2007; Hamadi & Awdeh, 2012). Lack of such information is a potential setback to policy planning.

This study is inspired by the two ambiguities regarding finance-industry profile in Kenya, first on causality direction and secondly, on effectiveness of each determinant on the real sector.

Objectives and hypotheses of the Study

In the case of Kenya, this work sought to determine the relationship between finance-industry lead-lag relationships. It was guided by the following specific research objectives.

1. To analyze the effect of financial sector depth on economic growth in Kenya.
2. To determine the effect of financial sector service access on economic growth in Kenya.
3. To analyze the effect of financial sector stability on economic growth in Kenya.
4. To assess the effect of financial sector efficiency on economic growth in Kenya.

The study was founded on the following directional alternative hypotheses:

H_{11}: Financial sector depth has a significant effect on economic growth in Kenya.
H_{12}: Financial sector service access has a significant effect on economic growth in Kenya.
H_{13}: Financial sector stability has a significant effect on economic growth in Kenya.
H_{14}: Financial sector efficiency has a significant effect on economic growth in Kenya.

LITERATURE REVIEW SUMMARY

In this section, the theoretical underpinnings and exposition of extant literature are presented, culminating in a summary and conceptualization diagram. The theories considered here included Agency theory, Endogenous growth theory, Financial intermediation and Liquidity preference.

Empirical Literature Review

This section discusses empirical literature thematically, under four objective-aligned categories. These are interrogated sequentially, as financial sector development, as per the ensuing discussion.

In an endogenous growth model optimization study of China, Jun, Yue and Hongyan (2019) relate the economy's growth rate with financial deepening and inclusive finance. They collected historical data on Financial Deepening Index (FDI) and Inclusive Finance Index (IFI), collected as secondary data sources. Using the Hamiltonian function and first order optimization techniques, they collect data on the two variables from different provinces of the country, on four sectors of the economy. First, they find that financial sector deepening is critical to the sector's development. Secondly, the function determines that both financial deepening and inclusion significantly boost economic growth. The authors hence recommend promotion of financial deepening, innovation, resource reallocation and technological advancement as development as key focus areas towards maturity of the financial market.

This study postulates methodological and contextual gaps, the former being the use of the Hamilton function compared to time series modeling; the latter being the use of indices and inclusive Finance. Proposed in the current study are methodology differences and different indicators of financial deepening. Besides, inclusive finance is separately dealt with.

In a similar study, Igwe, Edeh and Ukpere (2014) examine the relationship between financial deepening and economic growth in Nigeria. Over the 1981-2012 sample period, they use broad and Private Sector Credit as indicators of financial deepening. They conduct integration and unit root tests on this data against the supply-leading-demand hypothesis. The result discloses mixed causality where broad money is positively significant while private sector credit has a trivial negative short run effect, with a 25.51% adjustment speed. Since this study does not find a material basis of conclusion on the relationship, it cannot be generalized to the Kenyan context on grounds of economic development and policy disparities between Kenya and Nigeria. Furthermore, policy effect dynamics may not be the same in the two countries, due to geopolitical context differences.

This contextual gap is bridged by localizing this research to Kenya, even though replicating some methodology.

On a 20-year sample period to 2014, Bist and Read (2018) examine 16 low-income countries outside Africa for the industry-finance integration-cointegration dynamics. They use panel unit root and panel cointegration analysis on an annual data of a 20-year period to 2014. Using panel stationarity tests, fully-modified and dynamic Ordinary Least Squares techniques, they find material evidence of dependency both in the panel dimension and for most of the individual countries, but a low flow of private sector credit. Here, two research gaps emerge-the first occasioned by methodological disparity and the second is dissimilarity of the economic contextual differences. Since the findings point to positivity, the current research attempts to investigate the relationship otherwise-methodologically and geopolitically.

In a study with empirical evidence from developing nations, Amena, Asif and Ramisa (2024) studied the growth-inclusion causality Bangladesh. They reviewed extant literature and came up with models related to different financial inclusion-related factors, establishing relationship pathways for the growth indicators using correlation analysis. Specifically, the models depicted positive correlation between financial inclusion with both GDP growth and poverty reduction.

From the Bangladeshi study, a knowledge gap is evident. The paper examined the two sets of variables from unfamiliar variables and though the conclusions are similar to others in empirical literature, it can cannot specifically and directionally be concluded from correlation analysis that financial inclusion leads to economic growth. Further, a contextual gap is evident in that although the country context is developing for both Kenya and Bangladesh, their economic environments are not necessarily the same.

A global study on the growth-finance nexus was conducted by Azimi (2022). Seeking to determine whether customizing the cost of financial services to affordability of more citizens would provide economic vibrancy, the study covered 19 years to 2020. With countries and regions classified according to income tiers, the study first developed a comprehensive financial inclusion index series for the sampled countries. The author conducted panel Cointegration with the test variables as economic growth; financial inclusion, and income level; regionalism as the control variables, then used the GMM (generalized method of moments) for model estimation. Across all panels, the research found evidence of bidirectional causality between the two variables.

While this empirical study uses a financial inclusion index and Generalized Method of Moments in its data processing, the current one is purposed for Autoregressive Distributed Lag (ARDL) modeling. There is therefore a methodological divergence in the studies. Besides, the Azimi (2020) study is global and written in panels. This may overshadow local contextual effects and this evidence gap is addressing in particularizing the extant study to Kenya.

Seeking to assess the Access-Stability-Growth link Boldbaatar and Lee (2015) conducted a global study from Mongolia. The authors built a dynamic panel model relating financial accessibility and economic growth with data over the 2004-2011 sample period collected from 165 countries. The findings affirmed a positive result for in third-world countries but the impact was not necessarily so for the developed world.

The Boldbaatar and Lee (2015) study covers different countries regardless of development clustering. Kenya is a frontier economy. The findings cannot be generalized to the Kenyan context on evidence grounds; hence there is an evidence gap that can only be filled by a study on Kenya. Furthermore, the variables of the 2015 study would be different.

Regarding Financial Sector Stability and Economic Growth, different authors present empirical evidence: In a related study, Ahulu et al., (2021) interrogate the financial sector stability-economic growth link in African countries south of Sahara. Using data on world Development Indicators, they apply the Fixed Effects panel regression model on a 10-year panel (2010-2019). The results indicate a 71.8% coefficient of determination. This study can be said to present a methodological difference because of the different method of data analysis used. Here, a conceptual gap is also clear since the measures of the variables are not the conventional ones. Furthermore, there is contextual gap in terms of geopolitical differences between the country bases of the reviewed and current studies. Thus way, it is inappropriate to draw upon the findings of this empirical research.

Ozili (2024) studied the 1993-2017 time sample for the relationship. The author used z-score, nonperforming loans; capital adequacy and GDP respectively as the three independent and dependent variables. The proposition was upheld, especially with the z-score and nonperforming loans being positively to economic growth, though this was the opposite for capital adequacy. In the findings, one can cite an evidence gap, in that the indicators reveal ambivalent effects on the target variable-economic growth. Further, no methodology is cited and as such, the evidence gap is emphasized.

In a study of the correlation between the stability of the banking industry and that of the economy, Bayar et al. (2020) examine the EU over the 1998-2016 period. They employ panel cointegration and causality analyses with cross-sectional dependence between countries. Error correction modeling results revealed a momentous positive influence and an efficient error correction mechanism. Further, the causality between the two sets of study variables was found to be reverse, meaning that the governments could work directly or indirectly on either of the variable sets. This finding does not provide grounds of generalization. First, there is a contextual gap in that there are development disparities between Europe as a block and Kenya. Further, there is an evidence gap- the empirical study addresses Europe and is not country-specific so that the findings on a region cannot be localized to a specific country, which is even outside the studied region.

The next section reviews literature on Financial Sector Efficiency and Economic Growth.

Tadesse and Abebaw (2021) examine the development-growth hypothesis for 25 countries south of Sahara for the period 2010–2017.They incorporate three financial sector development indicators-depth, efficiency and access via a two-system GMM estimation. To measure the three indicators, they use credit to Private Sector to GDP, Return to assets and branch count per population of 100,000 adults respectively as the proxies. The findings uphold the hypothesis. These results may not directly be replicable to Kenya as an individual economy because of the different in the measurement concepts. The indicator proxies used are different as the current study are different, hence a conceptual gap to be filed by use of the Boone Index.

Dating back to the 1990's, efficiency-growth studies are abundant, albeit with ambivalent conclusions. Using cost-frontier and systematic cost deviation analyses respectively to proxy efficiency and wastage for instance, Lucchetti et al. (2001) find an important correlation. Koetter and Wedow (2006) offer some evidence in the same direction for Germany and Europe in general. Despite the general indication of the likelihood of bank efficiency to spur growth, generalizing these results to the Kenyan context requires application of contextual hypotheses and relevant efficiency indicators. Contextual and methodological divergence between these and the current studies are inherent.

In the case of Rwanda, Okelo and Kigabo (2015) examine the relationship between banking sector development and economic growth. The study sought to test two contrasting hypotheses-whether finance leads industry or industry leads finance. They study such variables such as credit to private sector, bank deposits, interest rate; broad money as the indicators of financial sector development, Gross Fixed capital formation as a control variable and real GDP as the indicator for economic growth. Time series data from *Banque Nationale du Rwanda* and National Institute of Statistics of Rwanda covers the period 2000Q1-2015Q4. Econometric methodology is used for analysis of the data and the results reveal bidirectional causality for the case of Rwanda, with long run relationship and the impulse and a slow adjustment speed. This study is based in Rwanda. Although the result may be generalized, there is an empirical gap, occasioned by financial sector depth and degree of monetization differences between the two economies. A Kenya-specific study is therefore desirable.

Conceptual Framework

The perceived relationship according to Chapters 1 and 2 can be visualized in the ensuing diagram. On the right hand side is the conceptualized dependent variable while on the other, the independent and its constructs (delineated in section 1.1.2) is presented. The two sides are hypothesized to have a one way or reciprocal causality or none at all.

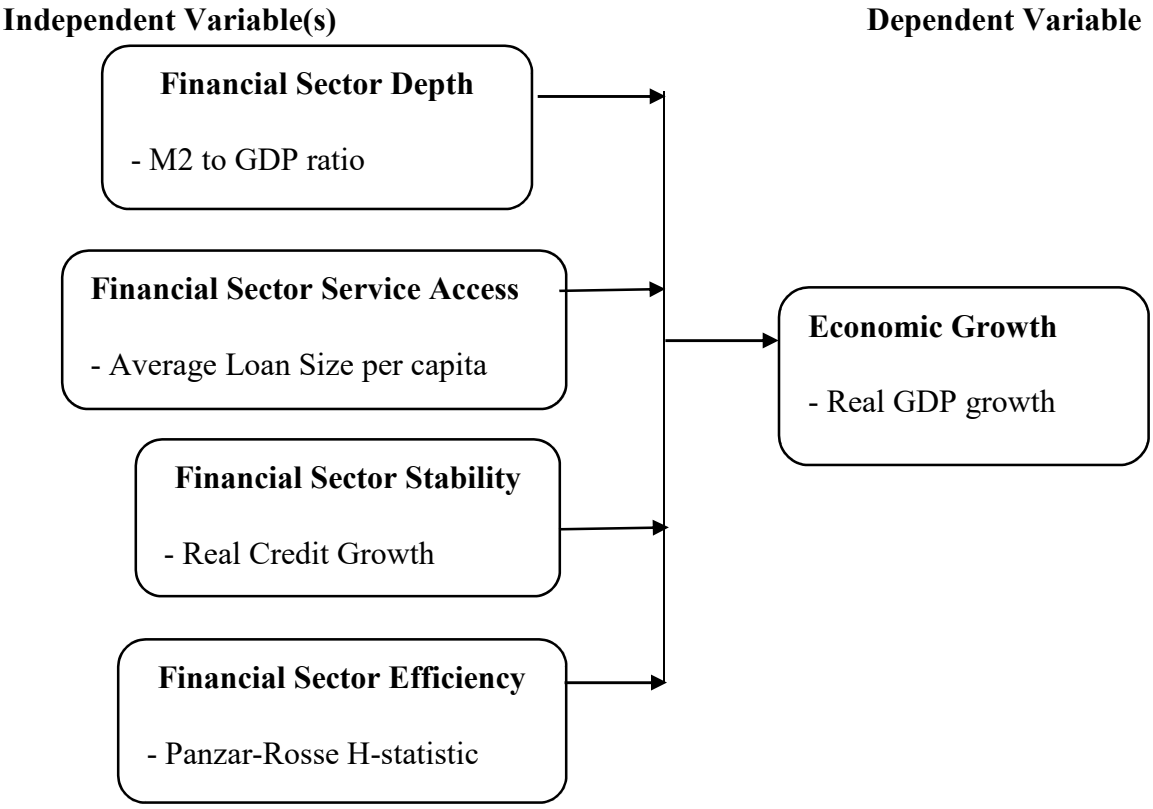


Figure 2. 1 Conceptual Framework
Source: Chapter 1 and 2 summaries (2025)

METHODOLOGY

Research Design

Quantitative research design focuses on analysis of numeric and unchanging data. This study will be mainly focusing on econometric modeling because of the different stationarity nature of variables with a particular view to incorporate the auto distributed lag which is suitable for that situation according to Beck et al. (2020).

Data and Modeling

Annual time series data covering the period from 2001Q1 to 2023Q4; was collected for this study. The data contained the following variables and their proxies. Economic Growth (EG) (proxied by GDP per capita), Average loan size per capita (ALS-to measure Access), Real Credit Growth (RCG-for banking sector Stability) and FS Efficiency (Panzar-Rose HStat-for Banking Sector Efficiency).

The data was collected from statistical reports summarized in an Autoregressive Distributed Lag Model, ARDL.

Data processing was conducted via stationarity analysis, cointegration testin, ARDL and Error correction modeling, in Econometric Views (Eviews) package.

The ARDL (p, q) model for each pair of variables (such as X) is presented in its reduced form as:
$Y_t = \emptyset_{0i} + \emptyset_1 X_{t-1} + \emptyset_2 Y_{t-1} + \sum_{i=1}^{p} \alpha_1 \Delta Y_{t-i} + \sum_{i=1}^{q} \alpha_2 \Delta X_{t-i} + \varepsilon_t$..... (5)
Where Y_t is the endogenous with its lags Y_{t-i} ; X_t is exogenous with its lags X_{t-i} ; ε_t as white noise process. $\emptyset$ Is a constant; $\emptyset_1$ and $\emptyset_2$ are the long run representation coefficients, Δ represents first differences. The coefficients α_1 and α_2 represent the short run dynamics.

RESEARCH FINDINGS AND DISCUSSIONS

Outcomes of analyses of the historical data collected from financial sector development sources is documented here. First, the findings are presented in an exploratory context then descriptive behavior of the variables examined.

Unit Root Tests and Order of Integration

All the five variables under the selected time scope were analyzed for assurance of robustness and elimination of spurious regression possibilities. Using the Augmented Dickey-Fuller (ADF) statistic. Against the alternative hypothesis of no-unit-root presence the research analyzed the data for stationarity across all these variables to present a staionarity overview at level form and 55 p-values. The results can be found as follows:

Table 4.1: Level-form Stationarity Analysis

Variable	Test Specification	ADF Statistic	p-value	Stationarity Status
Economic growth	Intercept only	-4.512	0.0002	Stationary I(0)
FS depth	Intercept only	-3.721	0.0078	Stationary I(0)
FS access	Intercept and Trend	-0.812	0.9983	Non-Stationary
FS stability	Intercept only	-2.214	0.1947	Non-Stationary
FS Efficiency	Intercept only	-1.045	0.7259	Non-Stationary

Source: Researcher (2026)

At level form, Real Gross Domestic Product and Broad Money to GDP exactingly reject the null hypothesis of non-stationarity at the 99% confidence level (yielding insignificant p = 0.0002 ; 0.0078 –in the rejection zone). Conversely, Average loan size per capita, real credit growth, and financial sector stability fail to reject the null hypothesis. Accordingly, a first-difference transformation was necessary to establish the integration nature of these three variables.

Table 4.2 First-difference stationarity

Variable (Δ)	Test Specification	ADF Statistic	p-value	Integration Order
ΔFS access	Intercept only	-4.383	0.0005	I(1)
ΔFS stability	Intercept only	-5.922	<0.0001	I(1)
ΔFS efficiency	Intercept only	-3.678	0.0088	I(1)

Source: Researcher (2026)

After first differencing, all non-stationary indicators resolve completely into stable, mean-reverting structures. The series are hence found to possess a mix of two integration orders, some I(0); others I(1) and no integration beyond I(1), necessitating preference of the ARDL method over as standard multi-equation framework.

Optimal Lag Structure Selection

An unrestricted vector autoregression (VAR) layout was deployed across the structural series to define the optimal tracking lag lengths, striking a balance between explanatory power and degrees of freedom conservation. With this regard, the series were evaluated via standard econometric lag length selection procedures and the outcomes postulated in Table 4.1.

Table 4.1: Lag Length Selection

Lag Length	Akaike Info Criterion (AIC)	Schwarz Bayesian (BIC)	Hannan-Quinn (HQ)
Lag 0	17.45	17.925	17.58
Lag 1*	15.152*	15.923*	15.411*
Lag 2	15.42	16.89	15.815

Source: Researcher (2026)

All information criteria (AIC, SIC/BIC and HQ) consistently minimize at Lag 1, setting the optimal lag ceiling for the subsequent ARDL structural specifications to avoid over-parameterization. Lag 1 is therefore the optimal length for the ARDL modeling procedure.

ARDL Modeling

Following the proposition of lag 1 in the foregoing criteria in Table 3.1, an Unrestricted ARDL (1, 1, 1, 1, 1) model was constructed with Real GDP as the primary dependent target. This models both the immediate short-term dynamic responses and underlying long-term levels synchronously. Here:

Table 4.4: Structural ARDL (1, 1, 1, 1, 1) Model Baseline

Regressor	Coefficient	Std. Error	t-Statistic	p-value
Economic growth (-1)	0.352	0.091	3.8681	0.0006
FS depth	0.0923	0.0241	3.83	0.0007
FS stability	0.1847	0.0412	4.483	0.0001
FS efficiency	2.6911	0.952	2.8268	0.0086
FS access	-0.0074	0.0021	-3.5238	0.0015
Constant	1.145	0.412	2.7791	0.0097

Source: Researcher (2026)

From Table 4.4, all the variables (M2/GDP-Financial sector deepening, RCG-Financial efficiency, H-stat-Financial sector stability and ALS-financial sector access) demonstrated significant influences (each with a p-value of less than the 0.05 conventional benchmark) on economic

growth. Moreover, safe for ALS-Financial sector access (with negative influence), the rest portrayed positive influence.

Bounds Test for Cointegration

To confirm whether the level variables share a permanent, non-spurious economic relation over time, an F-bounds test for linear constraints was performed on the lagged levels, following Pesaran et al. (2001). The Pesaran bounds test for cointegration was as follows:

Table 4.5 Bounds Cointegration Testing

Test Statistic	Value	I(0) Lower Bound (1%)	I(1) Upper Bound (1%)
F-Statistic	5.14	3.74	5.06
k(independents)	4	--	--

Source: Researcher (2026)

Because the empirical F-statistic (5.140) strictly outpaces the upper I (1) critical threshold limit (5.06) at the conservative 1% significance tier, the null hypothesis of no level association is firmly rejected. Cointegration is verified. Cointegration and long-run causal equilibrium are therefore established in the series under study.

Long-Run Equilibrium and Error Correction Analyses

Long-run equilibrium analysis

With cointegration established, the long-run multipliers and corresponding error correction mechanism (ECM) terms were calculated to track equilibrium adjustment patterns. Taking Economic Growth as the dependent variable, the long-run equilibrium relationship was derived with resulting coefficients as found in Table 4.6.

Table 4.6 Long-Run Equilibrium with Economic Growth Dependent

Variable	Coefficient (β)	Std. Error	t-Statistic	p-value
FS depth	0.1425	0.0461	3.0911	0.0067
FS stability	0.2851	0.088	3.2398	0.0044
FS efficiency	4.153	1.642	2.5292	0.0208
FS access	-0.0114	0.0038	-3	0.0071

Source: Researcher (2026)

From Table 4.6, the long-run equilibrium relationship among the variable found a significant placing everywhere (with respective probability values foe Financial sector depth, stability, efficiency and access as 0.007, 0.004, 0.028; 0.007-all of which are below the 5% threshold), accounting for important effects. Moreover, financial sector access (only-with a -3 t-statistic) had a negative effect. Meanwhile Financial Sector depth, stability and efficiency had positive influences on economic growth.

Short-run adjustment mechanism

In the short-run, the shock adjustment dynamics were as found in Table 4.7. First, all the lagged coefficients of the regressors (FS depth, stability, efficiency and access) had significant effects on the lagged value of economic growth, with p-values respectively as:- 0.0022, 0.0004, 0.0121; 0.0036. This finding is postulated in the table, following.

Table 4.7 Error Correction Modeling

Regressor (Δ)	Coefficient	Std. Error	t-Statistic	p-value
ΔFS depth	0.0712	0.021	3.3905	0.0022
ΔFS stability	0.1524	0.038	4.0105	0.0004
ΔFS efficiency	2.115	0.785	2.6943	0.0121
ΔFS access	-0.0051	0.0016	-3.1875	0.0036
ECT (-1)	-0.648	0.098	-6.6122	<0.0001

Source: Researcher (2026)

In Table 4.7, the error correction coefficient (ECT) is properly negative, highly distinct, and active at -0.6480. This confirms structural convergence, indicating that approximately 64.8% of any short-run operational disequilibrium or external shock is corrected back to the steady-state growth line within a single annual cycle.

Model Robustness diagnostics

To confirm parameter stability, a comprehensive residual diagnostic testing sweep was executed alongside structural stability tracking checks. This robustness check involved tests for serial correlation (Breusch-Godfrey LM test), heteroskedasticity (Breusch-Pagan-Godfrey test), normality of distribution of the residual error term (Jarque-Bera test) and model stability (Ramsey RESET test). These tests, significance levels and conclusions on them are in Table 7.1.

Table 4.8 Classical Residual Diagnostic Tests

Diagnostic Test	Statistical Methodology	Metric Value	p-value	Conclusion
Serial Correlation	Breusch-Godfrey LM	$\chi^2 = 0.542$	0.462	Passed - No Autocorrelation
Heteroskedasticity	Breusch-Pagan-Godfrey	F = 1.120	0.385	Passed - Homoskedastic
Normality Profile	Jarque-Bera Statistic	JB = 1.450	0.484	Passed – Normal
Functional Form	Ramsey RESET Test	F = 0.890	0.355	Passed-Well-Specified

Source: Researcher (2026)

Based on the foregoing observations, the residual diagnostics were within classical recommended ranges and confines, meaning that the model was reliable for forecasting. All the probability values were within the no-rejection regions (p-values greater than 5%) for the different null hypotheses. Accordingly, serial correlation (p-value of 0.462>0.05) was absent, heteroskedasticity (p-value of 0.385>0.05) too, normality of distribution of the residual error term (p-value 0.484) was not rejected. Further, the model was confirmed to be structurally stable. The structural Stability Profiles was formally tracked using the CUSUM and CUSUMsquare, each confirming parameter

stability. Again, both recursive residual metrics lay squarely within the dual 5% significance envelopes across the 1990–2025 timeline, proving that the coefficients are structurally constant with zero permanent variance breaks or missing regime shifts. The model does not therefore suffer vulnerability to structural breaks.

Results of Hypothesis Tests

The focus of this study was founded on four specific objectives (1, 2,3 and 4), to each of which was postulated a contemporaneous non-directional alternative hypothesis (respectively, H_{11} , H_{12} , H_{13} and H_{14}). This section presents the empirical evidence on the hypotheses and a brief corroboration with literature on each.

H_{11}: Financial sector depth has a significant effect on economic growth in Kenya: From the data analyzed, the results upheld this proposition because the effect of financial sector depth was positive and statistically pronounced, with a 3.0911 t-value and p-value of 0.0067.

The second hypothesis (H_{12}) Financial sector service access has a significant effect on economic growth in Kenya. This hypothesis was affirmed in the findings. The long-run relationship in this study was found to be significantly negative (t = -3 ; probability = 0.0071>0.05. Given the negative nature of the finding on the coefficient, the study is divergent from that of Boldbataar and Lee (2015), who found financial success to be an inconclusive predictor of economic growth.

Hypothesis 3 (H_{13})- Financial sector stability has a significant effect on economic growth in Kenya was not debunked. Financial. sector stability had a positive (t= 3.2398) and significant long-run effect on economic growth (p= 0.0044<0.05).

Finally, H_{14}: Financial sector efficiency has a significant effect on economic growth in Kenya, was also upheld. This study found a significant long-run relationship between financial sector efficiency and economic growth (Beta = 2.5292 and probability = 0.0208< 0.05).

CONCLUSIONS AND RECOMMENDATIONS

Summary

The variables under study (financial depth, financial service stability, financial service access and financial service efficiency) were found to significantly impact the long-run economic development level. It was thus evident that financial sector development materially affected economic development in Kenya in the long-run. Although financial service access did so in a negative direction, the rest of the indicators were positive.

In the short run, it was found that shocks were restored to the long-run equilibrium with a 64.8 percent speed, meaning that 64.8 percent of the shock or disturbance vanished the following year.

Corroborated with extant literature, there was no evidence of generality of these findings and this was mainly occasioned by contextual, methodological, conceptual and evidence disparities amongst the compared studies.

On the basis of the summary section, two sets of conclusions can hereby be drawn: The first term relationships and mean reversion, the second deals with equilibrium restoration and the structural profile of the cointegrating system:-First, it can be averred that:-Financial sector depth is a critical determinant of Kenya's economic development, thus a deeper financial sector amounts to a more developed economy and the converse; an increase in financial sector stability will directly amount to a higher level of economic development for Kenya; more financial service access will lead to slower economic growth, which is a unique long-run characteristic of the model; financial sector stability improvement will directly lead to improved economic development in Kenya. Secondly, it can be concluded that structural breaks are of no consequence to the forecast situation because the residual diagnostics were within classical recommended ranges and confines.

Recommendations

To financial services sector managers, policy makers and other stakeholders, it is recommended that they closely watch the long-run and minimally emphasize on the short-run as the latter is purely temporary. By so doing, they will have assurance of gains from long-term performance stability. To other scholars, it is recommended that more financial sector indicators be explored to enhance forecast robustness, as these examined are 4-just a small part of the universe of determinants. The lead-lag relationship, impulse response mechanisms and Granger causality are also a vital consideration to validation of this set of findings.

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