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Macroeconomic and Firm-Specific Elements of Group Routine: A one-step system GMM dynamic section ideal

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Abstract
The study investigated the macroeconomic and bank-specific determinants of Ethiopian banks' performance from 2011 to 2020. All the 14 commercial banks that were operational during the study period were included. We employed a one-step system GMM dynamic panel data approach owing to its lower bias and higher efficiency than other approaches such as the standard first-difference GMM estimator. The dynamic character of the model specification has been manifested through significant coefficients of lagged performance indicators. The lag of ROE, credit growth, and interest rate showed a positive and significant effect on bank performance while branch expansion, economic growth, and capital adequacy ratio exhibited a negative and significant impact on the outcome variable. However, three macroeconomic factors: deposit growth, exchange rate, and inflation rate found to be insignificant to influence bank performance. The research concludes bank-specific factors predominantly influence the performance of the Ethiopian banking industry.

Keywords: Bank Presentation, Self-motivated Panel Data, Macroeconomic issues, Bank-specific influences

1. Introduction
Banks have a central and indispensable role in the global financial system. They take the lion's share of the value of total assets of global financial institutions. For instance, in 2002, 2010, and 2020 banks respectively assumed 46.12%, 45.4, and 38.75% of the total value of theassets of global financial institutions. In the last three decades, banks on average hold 42.75% of the asset of global financial institutions with an estimated value of over one hundred fifty trillion dollars. Pension funds (8.77%), insurance companies (8.64%), central banks (7.5%), public financial institutions (4,73%), and other financial institutions (27.8%) following banks assumed estimated total assets of over 30.78 trillion dollars, 30.32 trillion dollars, 26.34 trillion dollars, 16.50 trillion dollars, and 97.60 trillion dollars, respectively (Norrestad, 2021).Given the crucial role of banks in the functioning of an economy, their operational prudence and financial performance have continued to attract the attention of policymakers, practitioners,and academicians. Bank failure in an economy brings stagnation in customer deposits, breaking of loan relationships, and little or no credit lines (Demirgüç-Kunt & Detragiache, 2005; Didier et al., 2021). In addition, the negative externalities of bank failure, which normally have a dominant effect on the financial system performance, pose a systemic threat to the entire financial sector.

. To minimize the probability of bank failure and the subsequent bank run, central banks should strictly regulate and supervise the banking industry's operational prudence and performance. This helps to reduce the impact of related costs on the financial sector and the entire economy.The global banking sector has witnessed major transformations in the last four decades. This has impacted both its structure and performance (Hawkins & Mihaljek, 2001). The transformation is mainly associated with dynamic changes in the operating environment: internal and external (Rahman, Yousaf, & Tabassum, 2020A; Athanasoglou, Brissimis, & Delis, 2008).The triggering factors attributed to the change in a bank operating environment include financial innovations & technological breakthroughs, increased deregulation & privatization initiatives, pressing corporate governance challenges, growing competitive and complementary relations with financial markets, opening up of the market to international investors, and buddling corporate behavior related to disintermediation and shareholder value maximization (Hawkins & Mihaljek, 2001; Athanasoglou, Brissimis, & Delis, 2008).

On the other hand, banking in SSA has endured significant changes over the past 20 years (Beck and Cull, 2013). Improved institutional & regulatory capacity, growing cross-border banking, improved capital base & risk management practice, rising credit to the private sector, leading role in the deployment of mobile banking technology, growth in Pan-African banking group networks, improved competition, and progressive regulation are a few of the major positive changes (Bending et al., 2015; Mecagni, et al., 2015). However, high transaction costs, low and inefficient intermediation, short lending maturities, poor asset quality & high provisioning, as well as limited competition continue to inhibit the development of the sector.

The financial sector in Ethiopia is similarly set to see major policy shifts given the Government's plan to modernize the framework for deficit financing, monetary policy, and exchange rate determination. Before even these major policy changes are implemented, private banks in Ethiopia have steadily increased their market shares measured in terms of branch networks, deposits, loans, and profits (Ijara & Sharma, 2020). For the fiscal year ended 2019/20, the total new deposits mobilized by all private banks and Commercial Bank of Ethiopia (CBE) were Birr 89 Billion, and Birr 54 Billion, respectively.The fast-expanding branch network of private banks surpassed CBE for the first time in the 2019/20 fiscal year. Also, the total profit earned by all private banks (Birr 17 Billion) exceeded CBE (Birr 14 Billion) for the first time during the same fiscal year (NBE, 2019/20). Moreover, the private banks started to make strong gains assuming 43 percent of total bank deposits and 55 percent of bank loans during the fiscal year 2019/20.Extant literature in banking mainly focuses on bank ownership structure, capital structure, profitability, efficiency, and drivers of bank financial performance. The performance drivers are also categorized as bank-specific, industry-specific, and macroeconomic factors.

Extant literature is inconsistent in its claim of the relationship between macroeconomic factors, bank-specific factors, and bank performance. For instance, some authors claim a positive relationship between GDP and bank performance (Istan & Fahlevi, 2020; Javed & Basheer (2017),while others a negative relationship (Staikouras et al., 2004; Tan & Floros, 2012); Phan et al., 2020); a negative relationship between inflation and bank performance (Boyd et al., 2001; Umar et al., 2014), Aluko and Ajayi (2018), Guru et al. (2002), and Tan & Floros (2012) claim the opposite. Aburime (2008), Osuagwu (2014), Topak & Talu (2017) and Hasanov et al., (2018) found that exchange rate has an impact on bank profitability but others claim the reverse (Laryea et al., 2016; Ozgur & Gorus, 2016). A study by Lopez et al (2020) found a small effect of negative nominal interest rate on bank performance. Different from this, Altavilla et al (2018) claimed low-interest-rate has a negative impact on bank performance.Owning to the evidence we presented, byand large, we can fairly claim extant literature empirical gap on the relationship between macroeconomic factors, bank-specific factors, and bank performance. The gap mainly owes to context differences, model variations, differences in the choice of dependent and independent variable measures. The current study aims to examine the effect of bank-specific and macroeconomic factors using a balanced dynamic panel data approach in a developing economy and closed financial sector to foreign investors.The rest of the study is structured as follows. Section II at length discusses extant literature to identify empirical gaps, section III outlines the methodology used to analyze data, section IV discusses study results, and section V succinctly offers collusion in relation to research issues while highlighting relevant policy implications.

2. Related Literature Review

2.1 Roles And Functions Of Banks

Banks have both primary and secondary functions (Akrani, 2011). The primary function of banks includes mobilizing deposits (current, saving, fixed, and recurrent) and granting advances (overdraft, cash credit, loans, and bill discounting). The secondary function of banks, on the other hand, involves agency function (fund transfer, check collection, portfolio management, periodic collection & disbursement, etc) and utility function (letter of credit, safe custody, forex dealings, discounting services, etc). The function of banks, thus, can be summarised as saving, payment, mortgage, consumer, and business loan services, among others. As financial institutions, banks play a significant role in the smooth functioning of an economy by improving its allocative efficiency. In their intermediation role, banks facilitate the flow of money from those having little or no investment opportunity to those that have huge investment opportunities, and from low productive entities to high productive entities. Simply put, banks channel financial resources.

Banks play a significant role in the economic and overall development of nations (DAO, et al., 2020; Angraini & Prastiwi, 2020; Ma & Soh, 2021; Trung et al., 2021). Nowadays, it becomes very essential for commercial banks to analyze their performance continuously given the dynamic and less predictable nature of the macroeconomic environment they operate (Dai & Guo, 2020; Buallay et al., 2020; Anande-Kur, 2020; Muchoki & Njuguna, 2020; Vidal et al., 2021; Derbali, 2021; Yao & Song, 2021). Given the close interconnectedness of bank performance with the overall macroeconomic performance, the subject has continued to attract the attention of economists, practitioners, and policymakers alike since the great depression.

2.2 Operating Environment, Context, Research Variables, And Approachesoperating Environment

Financial globalization is a major phenomenon that unfolded as a result of privatization, liberalization, and opening up of markets to foreign investors. For instance, financial system privatization in many developing and emerging regions resulted in the acquisition and takeover of domestic banks by foreign banks. It also led to the merger,

amalgamation, and consolidation among domestic banks in East Asia and Latin America in the late 1990s, and Central and Eastern Europe in the early 1990s (Claessens, 2016). The banking sector's development, as well as its stability, is hugely affected by the economic and business environment it operates. For example, simultaneous openness to trade and capital, financial liberalization, economic growth, population density & ethnic diversity, and inflation was found to be the inhibiting and enabling factors for the stability of banks in SSA (Aluko & Ajayi, 2018). Moreover, fragmentation and reverse financial integration are the two probable outcomes of banks operating in a post-financial crisis business environment. For example, fragmentation and reverse financial integration were the post hoc phenomena of the 2007/2008 global financial and economic crisis. Since then, the level of integration in the global banking business remains lower compared to the pre-economic crisis.

2.3 Research Context

Various scholars have recently studied the performance of banks operating in various development contexts: developing countries (Hasan et al., 2020; Javed & Basheer, 2017; Saif-Alyousfi 2020; Tan & Floros, 2012; Thomas & Thakur, 2020), developed countries (Al-Own, 2020), and both developing and developed countries (Akhisar et al., 2015; Ali et al., 2018; Buallay et al., 2020; Faruqi et al., 2020; Le &Ngo, 2020). The results are conflicting and often contradictory owing to the difference in the contexts banks operate.

2.4 Research Approaches

Researchers have employed different models in their studies such as system of generalized method of moment (Le &Ngo, 2020), static panel regression analysis (Thomas & Thakur, 2020), dynamic panel data methods (Akhisar et al., 2015), static and dynamic panel GMM estimationtechniques (Saif-Alyousfi 2020); structural equation modeling (Faruqi et al., 2020), and both fixed-effect, and Ordinary Least Square Models (Al-Own, 2020). The studies followed explanatory design (Le &Ngo, 2020; Al-Own, 2020) and evaluative design (Thomas & Thakur, 2020) that aim to serve different purposes.

2.5 Research Variables

The most important outcome variables that have been investigated by previous researchers include financial stability (Ali et al., 2018), return on asset (Javed& Basheer, 2017; Le &Ngo, 2020; Istan & Fahlevi, 2020; Disemadi & Shaleh, 2020), return of equity (Hasan et al, 2020). Interaction variables such as bank size were used as a moderating variable (Hasan et al, 2020), and cash flows as mediating variables (Faruqi et al., 2020). Given that the primary objective of firms is shareholder value maximization, bank performance shall be measured using ROE than ROA or profit margin.Extant literature also studied antecedent factors including inside debt compensation (Al-Own, 2020), electronic banking services (Akhisar et al., 2015), corporate governance (Faruqi et al., 2020), concentration (Ali et al., 2018), capital structure (Saif-Alyousfi, 2020), balance sheet and profit & loss components (Thomas & Thakur, 2020), opportunity cost, capitalization, demand deposits, market risk, loan exposure, and growth (Saif-Alyousfi, 2020). Others used net interest margin, the ratio of operational expenses to operational profit, capital adequacy ratio, loan to deposits ratio (Hasan et al, 2020), GDP growth (Staikouras et al., 2004; Tan & Floros, 2012; Istan & Fahlevi, 2020; Disemadi & Shaleh, 2020; Phan et al., 2020), and macroeconomic instability (Athanasoglou et al., 2006). Still, others used inflation (Boyd et al., 2001; Umar et al., 2014), exchange rate (Nannyonjo, 2002; Taiwo & Adesola,2013; Lopez et al., 2020; Aburime, 2008; Osuagwu, 2014), Topak & Talu, 2017; Hasanov et al., 2018), and interest rate.

2.6 Research Gap

Extant literature is inconsistent in its claim on the relationship between GDP growth and bank performance. Some argue that GDP has a significant positive effect on banking sector performance (Istan & Fahlevi, 2020; Javed & Basheer (2017) while others claima negative significant relationship (Staikouras et al., 2004; Tan & Floros, 2012); Phan et al., 2020). However, Phan et al (2020) agree with Staikouras et al., (2004) and Tan & Floros (2012) only on the negative significant relationship between GDP growth and commercial, and savings banks but not cooperative banks. Phan et al (2020) opine a significant and positive relationship between GDP growth and cooperative bank performance. One plausible explanation for the negative relationship between GDP growth and bank performance would be a tight monetary policy to manage surging inflation might have constrained bank lending during the study period. However, as soon as price stability is achieved, we should expect a positive relationship between GDP growth and bank performance, through increased lending, improvement in bank asset quality, and decrease uncertainty associated with macroeconomic instability.

Inflation has a negative relationship with bank performance (Boyd et al.,2001; Umar et al., 2014) while Aluko and Ajayi (2018), Guru et al. (2002), and Tan & Floros (2012) claim the exact opposite. Umar et al., (2014) explain their findings arguing that inflation directly affects consumer purchasing power & bank exchange rate regime that raises the opportunity cost of holding currency which in turn influences the credit policy of banks and the disruption of business plans that ultimately lower bank performance. However, Boyd and Champ (2006) argue that such a relationship can only be true in two situations. First, in economies that have a small banking sector and equity market where loan supply to the private sector decreases through credit rationing. Second, in situations where banks are not quickly learning that inflation is steadily moving up. On the other hand, Guru et al. (2002) argue a positive relationship between

inflation and bank performance during periods where there exists a negative relationship between interest rate and bank performance.

A moderate increase in the interest rate is related to a higher volume of lending. Increasing the interest rate by a certain level would reduce the expected return of banks (Nannyonjo, 2002). A study by Lopez et al (2020) found that a negative nominal interest rate has a small effect on bank performance. They argue that bank losses in interest income are almost compensated by reductions on deposit expenses and gains in non-interest income, including capital gains on securities and fees. Different from this, Altavilla et al (2018) found that a low-interest rate has a negative impact on bank performance as a result of a decrease in the deposit rate.In summary, we can posit that extant literature is inconsistent in its claim on the relationship between macroeconomic factors, bank-specific factors, and bank performance. The inconsistencies mainly owe to context differences, model variations, differences in the choice of dependent and independent variable measures, among others.

3. Methodology

3.1 Model Specification

Panel data analysis allows us to study the dynamic nature of profitability (measured through return on equity) at the individual commercial bank-level (Sinha & Sharma, 2016; Rahman et al.,2020). Our econometrics model is based on Athanasoglou et al (2008), Flamini et al (2009), Ercegovac et al (2020), Ramadan et al (2011), and Francis (2021). In addition, following the works of Akbaşet al (2012), Osuagwu (2014), Jaouad & Lahsen (2018), Hasan et al (2020), and Haralayya & Aithal(2021) we use return on equity as a measure of bank performance (dependent variable).

$$\boldsymbol{lnROEit}=\boldsymbol{\beta}\mathbf{0}+\boldsymbol{\beta}\mathbf{1}\boldsymbol{lnROEit}-\mathbf{1}+\boldsymbol{\beta}\mathbf{2}\ln(\boldsymbol{TDit}.)+\boldsymbol{\beta}\mathbf{3}\ln(\boldsymbol{TLit})+\boldsymbol{\beta}\mathbf{4}\boldsymbol{lnBEit}+\boldsymbol{\beta}\mathbf{5}\boldsymbol{lnRGDPit}+\boldsymbol{\beta}\mathbf{6}\ln(\boldsymbol{CTARit}.)+\boldsymbol{\beta}\mathbf{7}\boldsymbol{IRt}+\boldsymbol{\beta}\mathbf{8}\boldsymbol{ERt}+\boldsymbol{\beta}\mathbf{9}\boldsymbol{inflat}+\boldsymbol{\varepsilon it}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where ROEit-1is defined as the value of return on equity at t-1and $\varepsilon it$is the error term. The remaining are described below.

3.2 Description of variables

Return on Equity(ROEit)

It is a dependent variable that is defined as a financial ratio that refers to how much profit a bank earned compared to the total amount of shareholder equity invested or found on the balance sheet in a year of commercial banks. In other words, it is what the shareholders look for in return for their investment at year. It reflects how effectively a bank's management is using shareholders' funds. It is calculated as the ratio of net income after taxes divided by total equity capital.

Total Deposit (TDit)

It is the overall deposit in commercial banks which is the sum of demand deposit, saving deposit, fixed deposit, foreign bank in their account, and trust funds in a year.

Total Loan(TLit)

It is the total amount of outstanding loans disbursed to customers which are calculated as Total Loans Advances (Including Receivable) Less Provision for Doubtful Debts in a given year.

Branch Expansion(BEit)

It is the total number of branches of a commercial bank in a given year.

Real Gross Domestic Product(RGDPit)

It is the total monetary or market value of all the finished goods and services produced within Ethiopia.

Capital to Asset ratio (CTAR)

It is also known as the capital adequacy ratio. It is calculated as the ratio of total capital to the total asset of given commercial banks in a given year.

Interest rate (IRt)

It is the amount paid by commercial banks on deposits of the account holder in a given year.

Exchange Rate(ERt)

It is the rate at which one USD will be exchanged for ETB on average in a given year.ix.Inflation:a general progressive increase in prices of goods and services in Ethiopia in a given year.

3.3 Data Source

The study covered commercial banks that operate in Ethiopia. The banks were chosen based on their operation during the study period. Fourteen banks that operate from 2011 to 2020 were included in the study based on the data set we got from the National Bank of Ethiopia. The study has 140 (1x14x10) observations that can be considered moderately high.

3.4 Specification And Estimation Procedures

Many econometric relationships are dynamic in nature. We employed panel data as it offers the researcher to better understand the dynamics of adjustment. These dynamic relationships are characterized by the presence of a lagged dependent variable among the regressors (Baltagi, 2021). For a dynamic panel data approach, the general framework of an autoregressive model of order of p with additional regressor xitcould be specified as (Baltagi, 2005):

$$Yit=\theta 1Yit-1+\cdots+\theta pYit-p+X'it\beta+\alpha i+\varepsilon it;t=1,....,T,i=1,.....,N \quad (2)$$

Where αi is a time-invariant individual effect whose treatment may be fixed or random, εitrepresents a disturbance term assumed to be uncorrelated with Xit, but for our case, the general specification of equation (2) reduces to a first-order model. In a static panel data model choosing between fixed or random effects yields a consistent and efficient estimator, whereas in a dynamic model the opposite exists because it will depend upon αi irrespective of the way we treat the latter (Verbeek, 2004). A within estimator applied to a first-order autoregressive model yields consistent estimates only when the number of time periodsTis very large (Green, 2003). (Arellano & Bond, 1991), introduced a two-step procedure based on differencing and instrumenting which is a consistent and efficient estimator. The first step consists of differencing the dynamic equation to remove the individual effects (αi). Cameron & Trivedi (2005)Wrote the first step of the procedure as:

$$\Delta Yit=\theta 1\Delta Yit-1+\cdots+\theta p\Delta Yit-p+\Delta X'it\beta+\Delta\varepsilon it \quad (3)$$

In this regard, we assume that εitare serially uncorrelated, otherwise, estimators are inconsistent. The second step deals with instrumental variable (IV) estimation of the first differenced (FD) model that uses appropriate lags of the dependent variable as instruments. According to Drukker (2008), these couple of steps does lead to consistent parameter estimates. The fixed or random effects panel data estimators are not appropriate even for the FD equation. In contrast to a static model, ordinary least squares on the FD data produce inconsistent estimates because the regressor ΔYit-1is correlated with the error Δεit, even if the εitare serially uncorrelated. For serially uncorrelated εit, the FD model error term Δεit= εit−εit-1has correlation with ΔYit-1= Yit-1−Yit-2because Yit-1depends on εit-1. However, Δεitis uncorrelated with ΔYit-kfor k≥2, opening up the possibility of IV estimation using lagged variables as instruments.

The Arellano-Bond estimator employs an IV estimation strategy based on the assumption that E(Yik, Δεit) = 0 for all k ≤ t-2in the level equation, so that the lags Yit-2, Yit-3, Yit-4,and so forth can be used as instruments in the first differenced equation. In the case of the system GMM estimator, we consider the additional condition that E(ΔYit-1, εit) = 0and incorporate the levels equation utilizing ΔYit-1as an instrument (Cameron & Trivedi, 2005). Similar additional moment conditions can be added for endogenous and predetermined variables, whose first differences can be used as instruments.Depending on the previous justifications, our equation to be estimated can be specified in the levels and first differenced forms as:

$$lnROEit=\beta 0+\beta 1lnROEit-1+\beta 2\ln(TDit.)+\beta 3\ln(TLit)+\beta 4lnBEit+\beta 5lnRGDPit+\beta 6\ln(CTARit.)+\beta 7IRt+\beta 8ERt+\beta 9inflat+\varepsilon it \quad (4)$$

$$\Delta lnROEit=\beta 1\Delta lnROEit-1+\beta 2\Delta\ln(TDit.)+\beta 3\Delta\ln(TLit)+\beta 4\Delta lnBEit+\beta 5\Delta lnRGDPit+\beta 6\Delta\ln(CTARit.)+\beta 7\Delta IRt+\beta 8\Delta ERt+\beta 9\Delta inflat+\Delta\varepsilon it \quad (5)$$

Using the latest version of Arellano-Bond GMM estimation, equations (4) and (5) are first estimated to determine the determinants of profitability. Since the Arellano-Bond method generates several instruments (for large T) leading to potentially poor performance of asymptotic results (when the number of groups is small), we have employed the least possible number of instruments. The Stata/SE 13.0 computer software was used for estimation.

4. Result and Discussion

4.1 Regression Results

Looking at our results displayed below in Table 1, the dynamic model estimation with predetermined variables has been implemented by applying a 1-step system GMM. The researcher chooses the one-step system GMM because it has a lower bias and higher efficiency than all the other estimators, including the standard first-differences GMM estimator (Blundell, 2001; Hayakawa, 2007; Kukenova & Monteiro, 2008; Soto, 2009; Hayakawa & Qi, 2020). Within this strategy, the first step to be considered is to identify theappropriate instruments for period t in the equations. Generally, a crucial assumption for the validity of GMM is that the instruments are exogenous. From the result below, the Hansen J test shows a case of no over-identifying restrictions. This suggests that the model seems to be valid in the present context. The AR (1) term is found to be significant with a p-value of 0.008 whereas AR (2) term is found to be insignificant with a p-value of 0.261. This implies the presence of a negative first-order autocorrelation though does not imply inconsistency in the results.We run the model across different time periods to assess the changes in the determinants, especially during the period as it would be of interest to see the impact of bank-specific and macroeconomic variables on profitability during the study period.

The dynamic character of the model specification has been confirmed through significant coefficients of lagged performance indicators (ROE). From the coefficient result, the lag of return on equity has a significant impact on return on equity. The result implies that the previous return on equity has a significant impact on the present return on equity. The positive significant coefficient of lag of return on equity (l.ROE) is close to zero, indicating lower persistence in performance of the bank using return on equity as an outcome variable, while a coefficient approaching one indicates higher persistence in bank performance. For instance, Lee & Hsieh (2013), Pervan et al (2015), and Chronopoulos et al (2016) have also found the low persistence of profitability and competitive market structure of East and Central Asian Banks, Croatia, and the USA, respectively. The second bank-specific factor, total deposit, was found to have an insignificant impact on return on equity. The insignificant impact of the total deposit is due to an increase in the liquidity of banks that res caused a decrease in the loan to assets ratio of the banking industry. The total amount of loan disbursed to customer has a positive and significant impact on return on equity. Other things remaining constant, increasing the total amount of loan disbursement by 1 percent in a year in each commercial bank resulted in increasing the return on equity by 0.64 percent. Credit has the highest share of bank income in Ethiopia. Most of the profit in Ethiopian commercial banks comes from interest income from a bank loan. The increasing demand for a loan by private sectors with higher lending rates resulted in increasing the performance and profitability of banks.

The fourth bank-specific variable branch expansion has a significant impact on return on equity. Ceteris paribus, increasing branch expansion by one percent per year resulted in a decrease in return on equity by 0.20 percent. A study by Redmond & Bohnsack (2007) showed a negative significant relationship between profitability and the volume of assets. From the result, we argued that growth in size causes diseconomies of scale in the Ethiopian bank industry during the study period. A further increase in assets could decrease their profitability because the smaller banks try to grow faster, even at the cost of their profitability. The increase in the number of branch openings is associated with higher expenses like salary, equipment, andother operational costs that outwash their profit. On the other hand, growing banks may face diminishing marginal returns causing average profits to decline with the increase in size after a certain period. The fifth variable, RGDP which is macroeconomic, has a considerable influence on return on equity. Increasing RGDP by 1 percent resulted in a 1.52 percent decrease in return on equity. This outcome has a variety of policy and economic implications. During economic downturns, the connection between economic activity and commercial bank revenue may be inverse. Other factors may be at play, such as the customer's desire or choice of depositing surplus cash and taking out loans, as well as informational asymmetry. a lack of knowledge about the country's economic development achievements and challenges. The sixth variable, the capital to asset ratio which is bank-specific has a significant impact on return on equity. Increasing CTAR by 1 percent, other variables as a given, resulted in decreasing of return on equity by 0.59 percent. The other bank-specific variable interest rate has also shown a significant impact on return on equity. Other things remaining constant, increasing interest rate by 1 percent resulted in increasing of return on equity by 0.03 percent, which has less impact than one might expect given the strong theoretical relationship between interest rate ROE. The remaining macroeconomic variables inflation and exchange rate didn't exhibit a significant effect on return on equity.

A further increase in assets could decrease their profitability because the smaller banks try to grow faster, even at the cost of their profitability. The increase in the number of branch openings is associated with higher expenses like salary, equipment, andother operational costs that outwash their profit. On the other hand, growing banks may face diminishing marginal returns causing average profits to decline with the increase in size after a certain period. The fifth variable, RGDP which is macroeconomic, has a considerable influence on return on equity. Increasing RGDP by 1

percent resulted in a 1.52 percent decrease in return on equity. This outcome has a variety of policy and economic implications. During economic downturns, the connection between economic activity and commercial bank revenue may be inverse. Other factors may be at play, such as the customer's desire or choice of depositing surplus cash and taking out loans, as well as informational asymmetry.

Table 1: A one-step system GMM panel data regression result

Regressors	One-step system GMM result	
	Coefficients	P- value
ln(l.ROE)	0.03	0.035
ln(TD)	-0.394	0.182
ln(TL)	0.64	0.020
ln(BE)	-0.20	0.001
ln(RGDP)	-1.52	0.010
ln(CTAR)	-0.59	0.001
IR	0.03	0.041
ER	0.02	0.162
Inflation	-0.01	0.328
Cons_	24.12	0.004
Hansen Test of Overid. Restrictions	chi2(31) = 33.88	Pr > chi2 = 0.330
Arellano-Bond Test for Autocorrelation	AR(1): z = -2.65	Pr > z = 0.008
	AR(2): z = -1.12	Pr > z = 0.261
No of observation	14 Commercial Banks* 10years =140 Observations	

5. Conclusion

The study analyzed factors that influence the performance of Ethiopian banks. One dependent variable and eight independent variables with one lagged dependent variable was chosen from notable past research studies to analyze study results. Of the eight input variables, three were macroeconomic while the rest five were bank-specific. We used the dataset from the National Bank of Ethiopia covering the 14 commercial banks of Ethiopia that were operational from 2011 to 2020. From the result, only six of the total eight independent variables were statistically significant in explaining bank performance. Lag of return on equity, credit growth, and interest rate have a significant and positive effect on bank performance measured by return on equity. On the other hand, branch expansion (branch growth), growth of the economy (RGDP), and capital adequacy ratio showed a significant and negative impact on return on equity.

6. Policy Implication

We believe that the above conclusions and the related policy recommendations would be useful in the decision-making process of bank management. Following study results, the banking industry leadership in Ethiopia including NBE needs to reconsider its policy of investing in branch expansion given its negative relationship with ROE. They also need to build their deposit to loan conversion capability. Of course, banks need to be prudent in their credit risk management approach. However, they still need to make quality loans. The banking leadership has to be curious that there is a decreasing trend of bank capital to asset ratio. Thus, the leadership needs to find a way on improving employee productivity and branch productivity to improve the declining bank capital to asset ratio.The negative relationship between RGDP and ROE is very interesting. This may be attributed to the viewthat low economic growth worsens the business environment that increases bank entry barriers. This consequently decreases competition improving bank profitability. However, regarding macroeconomic variables, bank-level decision-makers cannot influence them as these variables are macro-level. However, Banks should establish and strengthen research departments to properly analyze and forecast the macroeconomic changes so that they can exploit the opportunities and effectively manage the potential risks.

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