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THE RELATIONSHIP BETWEEN BANK PROFITABILITY AND ECONOMIC GROWTH FOR CONVENTIONAL BANKS IN GCC COUNTRIES

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Abstract: *Does bank profitability encourage economic growth? Even while it seems like political leaders are quite concerned about the low level of bank profitability, it is still unclear how bank profitability affects economic growth. It might help economic growth and financial stability, but it could also reduce competition and, as a result, slow down economic progress. We present the first empirical study to evaluate how bank profitability affects economic growth. Using the Generalized Method of Moments (GMM), we build an econometric model for 72 conventional banks across six countries from GCC region from 2000 to 2019. We find that the profitability of the banks has a positive short- and long-term impact on economic growth. For regulating the dynamics of bank profitability, these findings are trustworthy. Additionally, they are sensitive to deadlines, restrictions, and exchange measures.*

Keywords: Bank profitability; Economic growth; Conventional banks; Return on Assets.

1. Introduction

The Bank Profitability Study is used for traditional banks operating in the Gulf Cooperation Council (GCC) region. Studying the banking environment of the GCC is crucial because it has seen many challenges in its banking beginnings. The conventional banking sector plays a very important role in the development of the financial system by supporting economic growth in GCC countries. They act as intermediaries between donors and those in need of financing that contribute to economic growth. Economic developments in the GCC grew substantially in the 1970s as a result of higher oil exports. Economic growth is measured by gross domestic product (GDP) and exports of imports. Real GDP measures the size of the economy for each country. Within the GCC, real GDP has shown a remarkable improvement over the past decade. Conventional banks (CB) also play a role in carrying out a country's monetary policy. In this way, profitable banks will ensure continued economic growth and the stability of the financial system. The banks performance, and thus their profitability, can be evaluated by the return on assets (ROA).

The survey of banks' profitability is an important tool for evaluating banks' operations and determining management planning and strategic analysis. Banks contribute to economic growth, so if banks are performing exceptionally well, the economy as a whole is going to be strong. In the past, we have done research on banks' profitability. The relationship between bank profitability and economic growth has been studied by previous researchers. Mixed results are found in the literature. Several studies show that economic growth has either no significant impact (Sharma et al., (2013)) or a negative impact on bank profitability (Tan and Floros, (2012)). Short (1979), one of the earliest researchers on bank profitability, examined the connection between banks profit rates and concentration in relation to government ownership. Later, Bourke (1989) focused on concentration while also examining other variables as he investigated internal and external banking profitability determinates. Using Bourke (1989) as their starting point, Molyneux and Thornton (1992) investigated the factors influencing profitability in European banks. More bank attributes that either contributed to or affected performance are now included in more recent articles on profitability. Recent studies that looked into the factors affecting banks' profitability in Organization of Islamic Cooperation (OIC) countries did not include all of the member nations or all conventional banks on it (Sun et al., (2017); Rekik and Kalai, (2018); Yanikkaya et al., (2018)). Bank

profitability can be associated with economic growth through bank competition (Klein and Weill, (2022)). Competition is a major factor in bank profitability since it improves bank profits when there is less competition in the banking sector. Higher economic efficiency can be associated with economic growth, thus leading to better profitability. From another perspective, higher competition can decrease bank profits, and therefore, a negative correlation between GDP per capita and banks' profits can be expected. Numerous studies reported a negative correlation between profitability and GDP growth (Ben Ameur and Mhiri, (2013); Ben Naceur and Omran, (2011); Yanikkaya et al., (2018)).Fungacova and Weill (2017) provide empirical evidence that a decrease in bank competitiveness lowers the cost of credit for borrowers, facilitating credit access. According to Papanikolaou (2019), increased loan market competition can reduce bank lending rates while simultaneously increasing the possibility that unqualified borrowers will be able to obtain loans, which might affect banks' profitability.

The impact of bank profitability on economic growth is examined in our study for the first time empirically. Using the Generalized Method of Moments (GMM), we built an econometric model for 72 banks across six countries from 2000 to 2019. We discovered that the profitability of the banks has a positive short- and long-term impact on economic growth. For regulating the dynamics of bank profitability, these findings are trustworthy. Additionally, they are resistant to deadlines, requirements, and exchange measures.

The remainder of the document is organized as follows: section 2 is about reviewing the literature and developing research hypotheses. The methodological elements that can organize our model are identified in Section 3, the interpretations of the results are offered in Section 4, and we discuss and wrap up this paper in Section 5.

2. Literature review and hypotheses development

There have been several studies that have sought to investigate the link between economic growth and bank profitability for conventional banks in GCC nations. In this part, we provide a quick summary of the key conclusions drawn from this body of material related to the relationship between bank profitability and economic growth.

2.1.Bank profitability

A key metric for measuring a bank's performance is its profitability, which shows the rate of return the bank was able to achieve from the use of its resources and authority to create and market services. According to Yanikkaya and al., (2018), return on asset (ROA), return on equity (ROE), and net interest margin (NIM) are the three main measures used to measure banking profitability or efficiency. These measurements are typically modeled using similar bank- and country-specific variables in single step regressions.

ROA is defined as profit after tax to total assets and shows the profit earned per dollar of assets. ROE shows the return on shareholder's equity and is calculated as net income to average total equity. NIM is defined as the net interest revenue income over earning assets and measures interest spread for conventional banks (Asteriou and al., (2021)), Al-Harbi (2018)). According to Sufian and Chong (2008), ROA is the best indicator of bank profitability because it is unaffected by high equity multipliers and provides a more accurate picture of a company's capacity to earn returns on its asset portfolio.

In a recent study, Sun et al. (2014) used a fixed effect model to examine the factors that affect net interest margin for conventional and Islamic banks in OIC during the years between 1997 and 2010. Operational costs and lagged NIM, and capital adequacy are significantly positive determinants for both types of banks' performance. On the other hand, the study discovers that Lerner index (positive), implicit interest payments (positive), management efficiency (positive), risk aversion (negative), and these variables are important predictors of the success of simply conventional banks. Sun et al. (2017) repeats the previous NIM study for OIC banks between 1999 and 2010 with the GMM method, using data from 105 commercial banks over 14 years. Unlike the previous research with the fixed effects, lagged NIM is no longer significant for CBs. Rekik and Kalai (2018) analyze the determinants of the bank profitability and efficiency in conventional banks with the data from 110 banks over the period 1999–2012 using the panel data method generalized method of moments. The results suggest that researchers should probably focus more on profit efficiency than cost efficiency. Al-Harbi (2018) investigates the effect of internal and external variables on the profitability of conventional banks operating on developing and underdeveloped countries in OIC states.

2.2. Macroeconomic indicators

Economic growth is measured by GDP per capita and reflects differences in many factors that may omit from regression and affect banks' profitability such as the mix of banking opportunities and regulations. According to Sufian and Chong (2008), bank profitability is sensitive to macroeconomic conditions despite the trend in the industry towards greater geographic diversification and the greater use of financial engineering techniques to manage risk associated with business cycle forecasting. Generally, higher economic growth encourages banks to lend more and permits them to charge higher margins and improve the quality of their assets.

On the other side, economic growth is an increase in the production of economic goods and services, comparing one period of time to another. It can be measured in nominal or real adjusted for inflation terms. The annual GDP growth rate is used to control the effects of economic growth. NPL as well as other crucial factors can be used to evaluate the performance of banks and, consequently, their profitability (Beck and al., (2005)).

Goddard and al., (2004) provide the most recent study on profitability which concentrated on European banks. For a sample of 583 banks with various ownership characteristics located in five major European Union (EU) countries during the mid-1990s. Dynamic panel and cross-sectional regressions are utilized in this work to estimate growth and profit equations. Their research demonstrates that there is no evidence of mean-reversion in the size of the banks as revealed by the growth regressions. High capital-to-assets ratio banks have a propensity for delayed expansion, and this growth is correlated with macroeconomic factors. The growth of banks is often influenced in a systematic way. Comparing savings and cooperative banks to commercial banks, the persistence of profit seems to be higher.)

Using data extracted from 15 Islamic banks and 13 conventional banks in Malaysia during 2000-2010, Waemustafa and Sukri (2015) found a positive relationship between Inflation and bank profitability. High inflation rates are typically linked to high loan interest rates and can increase bank profits. However, there is a chance that bank costs could rise faster than bank revenues and negatively impact bank profitability if inflation is not expected and banks are slow to change their interest rates.

2.3.The relationship between bank profitability an economic growth

Economic growth, however, may increase demand for financial products and services offered by banks during cyclical upswings, thus improving bank profitability. Higher economic efficiency can be associated with economic growth, thus leading to better profitability. From another perspective, higher competition can decrease bank profits, and therefore, a negative correlation between GDP per capita and banks' profits can be expected. Numerous studies reported a negative correlation between profitability and GDP growth (Ben Ameur and Mhiri, 2013; Ben Naceur and Omran, 2011; Yanikkaya et al., 2018).

Tan and Floros (2012) examined the effect of GDP growth on bank profitability in China over the period 2003-2009. They used a one-step system GMM estimator to test the persistence of profitability in Chinese banking industry. The results show that the profitability in Chinese banking industry is significantly affected by the level of non-performing loans, and Chinese banks with higher level of capital have lower profitability. They found that there is a negative relationship between GP growth and bank profitability.

Using a sample of 110 banks from the EU-15 Member States for the 2001-2015, Martinho et al. (2017) look into how Europe's GDP growth affects business profitability. Due to the procyclical nature of impairments, they discover a positive correlation between real GDP growth and bank profitability.

Using a panel of 132 countries during the period 1999−2013 with a generalized method of moments (GMM) dynamic panel techniques, Le and Nago (2020) found a negative impact of market power on bank profitability, implying that competition improves bank profitability. Furthermore, the positive relationship between capital market development and bank profitability suggests that they should be considered as complementary to one another.

Klein and Weill (2018) investigate the impact of bank profitability on economic growth using a sample of 133 countries during the period 1999—2013. They found that bank profitability can be associated with economic growth through bank competition.

Klein and Weill (2022) examine a panel of 132 countries during the period 1999−2013 using generalized method of moments (GMM) dynamic panel techniques. They prove that

bank profitability has a positive effect on economic growth over the long and short terms. These results hold up well when bank profit dynamics are considered.

In order to study this phenomenon, our study offers the following hypothesis:

• *H1: There is a positive relationship between Bank profitability and economic growth.*

3. Methodology

In this part, we will outline our empirical strategy for estimating the influence of bank profitability on economic growth. First, we'll go through the data and variables that were used, and then we'll go over the methodology that was used.

3.1. Data Sources and Description

Our data on economic growth comes from the world bank database l for 72 banks across six countries from GCC region. We focused on the years 2000 to 2019, which is the most recent period for which data on bank profitability is available. According to previous research, we ignore annual data and use three-year averages to smooth out economic cycle fluctuations (eg. Beck and Levine,2004).

3.2. Empirical Model

Regression modeling will be the next step, and specific data will be used. In order to estimate dynamic models in a panel for our sample, we use the generalized moment's method (GMM). Consequently, Holtz-Eakin, Newey, and Robsen (1988), Arrelando and Bond (1991), and Arrelando and Bover (1992) all contributed to the development of the generalized Moments method (GMM) (1995). At the level of the data panel, this approach provides a number of benefits, including the ability to control issues like simultaneous bias, reversed causalities, and variable omission. Additionally, the GMM method allows the user to control both the temporal and specific effects as well as the compensation of endogeneity biases in the variables, particularly when there are several delays in the dependent variable's explanatory value. As a result, we estimate the models' following equations:

$$Y_{i,t} = \alpha_0 + \beta_1 \mathrm{Y}_{i,t-1} + \beta_2 \mathrm{ROA}_{i,t} + \beta_3 ROA_{i,t-1} + \beta_4 \sum_{k=1}^{k} \gamma_k \, control_{k,i,t} + \varepsilon_{i,t} \qquad (1)$$

Where:

$Y_{i,t}$: is the dependent variable which is the *GDP per capita growth*, measured in nominal.

$Y_{i,t-1}$, the lagged GDP, is used to measure the persistence of economic growth, i.e., the extent to which a bank remains in the same economic expansion.

α_0 **:** is a constant

$ROA_{i,t}$: is independent variable, such as i= 1…72 and t = the years 2000 to 2019.

$Education, Inflation, Openness, Government\ Exp, Labour, Capital\ Formation, Banking\ Crisis,$

$Z_{Score}, NPL, Bank\ Share, Private\ Credit;\ ROE, Lerner, GDP\ growth\ (annual\ \%),$

: are the control variables, such as i= 1…72 and t = the years 2000 to 2019.

$ROA_{i,t-1}$, is one period Lagged ROA, to account for the potential dynamics in bank profitability.

β_i : The coefficients related to the five variables, as i= 1…72

ε_{it} ; Error term

3.3.Variable measurment

The definition of the variables and the data sources are set out in **Table 1**.

3.3.1. The dependent variable

GDP per capita growth, measured as the annual percentage change of the country's real gross domestic product per capita. It is defined as the annual fluctuation of the GDP PIB per capita based on the current GDP per habitant in US dollars. (Asteriou and al., (2021); Klein and Weill (2022)).

3.3.2. The Independent variable

Return on assets (ROA), as measured by the ratio of net profits to total asset. This ratio reflects banks' capacity to generate overall profits (Endri, 2018a). The level of ROA is rising in accordance with the bank's increasing level of profit and its improved asset utilization

position, allowing ROA percentage to demonstrate the bank's capacity to make a profit from its whole asset value (Sari, 2019).

3.3.3. Control variables

Flowing Klein and Weill (2022), the control variables that can be addressed in the estimated model are: Education, Inflation, Openness, Government Exp, Labour, Capital Formation, Banking Crisis, Z-score, Non Performant Loans (NPL), Bank Share, Private Credit, Return on Equity (ROE), GDP growth , Lerner. We use logs for all control variables, with the exception of capital and labor formation, which are expressed as percentage ratios, as in the studies.

Education, we calculate human capital using the variable *Education*, which counts the number of years that the population over the age of 25 has been in school, using data from the Barro and Lee data source.

Inflation, we regulate inflation based on annual changes in the index of consumer price index in percentage. *Inflation* may have an impact on bank profitability since it determines how interest rates are structured. A higher rate of inflation will result in higher loan interest rates, which will increase bank profits. However, because a greater inflation rate affects the borrowers' budgets, endangering their liquidity and reducing their capacity to pay loans, the rising interest rates may increase the risk of loan repayment. (Pervan et al., (2015), Le and Ngo (2020)).

Openness, we take into account countries opening their markets to trade as a percentage of PIB.

Government expenditures, is the size of public administrations which is then controlled, with government spending defined as the final consumption expenditures of public administrations as a percentage of the PIB.

Labor, is the proportion of a country's population that is employed, in percent. Ages 15 and older are considered the working-age population.

Capital Formation, we define capital formation as the raw influx of capital in US dollars expressed as a percentage of the PIB in US dollars. Gross capital formation, in current US$, in percent of GDP in current US$.

Banking crisis, a dummy variable that takes a value of 1 for the period of 2007-08 and 0 otherwise, is employed to reduce the impact of the financial crisis (Le, (2019); Le and al., (2019), Le and Ngo (2020)). The recent world financial crisis did not have an equal impact on all nations. There is clear evidence of the global crisis' impact on bank performance, according to a number of studies (Andries and Ursu, 2016; Vu and Turnell, 2011). According to a number of research, the global financial crisis either negatively or insignificantly affects bank performance (Tzeremes, (2015), Gulati and Kumar, (2016)).

Z-score, the Z-scores of the banks, which compare the volatility of the returns on the assets the banks have (their own funds and operating income) to the volatility of those returns. More specifically, following the definition of the GDP, it is estimated as:

$$\text{Z-score} = (\text{ROA}+(\text{equity/assets}))/\text{sd}(\text{ROA}).$$

NPL, the ratio of non-performing loans to total gross loans, is used to proxy for credit risk. Several studies found that increased exposure to credit risk is related to low profitability (Le and Ngo (2020).

Bank Share, is measured as banks' private credit scaled by the sum of banks' private (Klein and Weill (2022)).

Private Credit, is measured as domestic credit to private sector as a percentage of GDP (Klein and Weill (2022)).

Return on Equity (ROE), Return on Equity indicates how much profit the bank has generated on money invested by shareholders. ROE is calculated by dividing net income by shareholders equity. Klein and Weill (2022) included ROE in their study.

GDPGR, the annual GDP growth rate, is used to control the effects of economic growth. The literature shows mixed findings. Several studies show that economic growth has either no significant impact (Sharma et al., 2013) or a negative impact on bank profitability (Tan and

Floros, 2012). Economic growth, however, may increase demand for financial products and services offered by banks during cyclical upswings, thus improving bank profitability.

Lerner, Lerner index represents market structure of banks. It is expected to show a positive relationship between Lerner index and intermediation margins in which banks, being as having market power, they could set higher margins (Maudos and Solís, 2009). Besides, banks with greater market power could set deposit and loan margins accordingly with greater freedom than those banks with no market power (Hawtrey and Liang, 2008).

Once more, the variables are obtained at the bank level and are first aggregated at the country level before the calculation is done. Finally, we look at the functions of monetary policy, banking development, economic development, and institutional development. We describe the corresponding variables in each subsection.

Table1. Variable definitions and data sources.

Variables	Definition	Sources
GDP growth per capita	GDP per capita growth (annual%). Calculation is based on theGDP per capita (current US$).	Bankscope and author's calculation
GDP per capita	GDP per capita atmarket prices (current US$).	Bankscope and author's calculation
ROA	Aggregated banks'return-on-assets (%, before tax)at the country-level.	Bankscope and author's calculation
Education	Years of schooling forp opulation aged 25 and over.Data available on a 5-yearbasis;	Bankscope and author's calculation
Inflation	Annual variation of theconsumer price index in %.	Bankscope and author's calculation
Openness	Trade (% of GDP).	Bankscope and author's calculation
Government Exp	General government final consumption expenditure (% of GDP).	Bankscope and author's calculation
Labour	Proportion of a country's population that is employed, in percent. Ages 15 and older are considered the working-age population.	Bankscope and author's calculation
Capital Formation	Gross capital formation, incurrent US$, in percent of GDP in current US$.	Bankscope and author's calculation
Banking Crisis	Banking crisis dummy (1 =banking crisis, 0 = none).	World bank and and author's calculation

Z_Score	The inverse of Z_Score for ROA=(ROA+ETA)/σROA.	World bank and and author's calculation
NPL	Ratio of defaulting loans	World bank and and author's calculation
Bank Share	Banks' private credit scaled by the sum of banks' private credit	World bank and and author's calculation
privvate Credit	Domestic credit to private sector as a percentage of GDP.	World bank and and author's calculation
ROE	Aggregated banks'return-on-equity (%, before tax) at the country-level.	World bank and and author's calculation
GDP growth (annual %).	Calculation is based on the GDP at market prices (current US$).	World bank and and author's calculation
Lerner	Measure of market power in the banking market. It compares output pricing and marginal costs.	World bank and and author's calculation

For all of the variables, descriptive statistics are provided in **Table 2**. Every economic variable is expressed in current American dollars or calculated using variables expressed in current American dollars. We are back with a panel of 6 countries from GCC region for 72 conventional banks for the years 2000 to 2019.

Table 2. Summary statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
ROA	1,819	2.488875	6.307348	-55.487	80.5
GDP Per capita	2,256	4194.777	6858.538	-6.428473	25243.6
GDP per capita	2,238	11770.99	16999.71	61.86204	85075.98
Education	1,521	12681.16	18238.9	13.39684	44498.94
Inflation	2,050	2.398871	2.771392	-4.863278	15.05015
Openness	1,812	98.13528	41.90775	24.23561	191.8726
Labor	1,422	25.36418	27.78745	.27	84.16772
Capital formation	2,263	27.85692	24.29894	1.3	72.749
Crises	2,264	.0962898	.2950534	0	1
Zscore	1,846	.1481343	.9215184	-.253071	21.4636
Npl	1,462	-.0004764	.2268214	-5.5	.714286
Bank share	2,263	.0004419	.0003192	0	.0014934
Private credit	2,115	31.86235	20.70327	6.732998	100.6361
ROE	1,817	8.932261	25.76916	-519.149	95.593
GDP growth	2,256	4.287879	4.300776	-7.076056	26.1702
Lerner _index	2,191	.469445	.0890317	.248615	.615341

We only calculate the ROAi, t in the first round of estimates. We determined the long-term impact of the ÉRO on the growth of the PIB in 2011 1. (p. ex., Abbassi et Linzert, 2012).

Then, in order to account for the potential dynamic of bank profitability, we add ROAi,t-1. In this scenario, the calculation of the long-term effect is 1+ 21 1. We estimate Equation (1) using four distinct approaches that gradually take into account potential economic flaws.

Following Beck and Levine (2004) and Arcand et al. (2015), we start conducting a regression analysis of MCO amongst countries. In addition to providing a first estimate (biased) of the coefficients, OLS regressions are helpful for (in) describing the data. For three reasons—a potential inverse causality, an omis bias variable, and a yt-1 adynamic regression coefficient—the OLSare error terms are most likely to be correlated with regressions. In order to tackle the issue of inverse causality in our échantillon and provide reliable estimates, we will, among other things, follow the methodology used by Beck and Levine (2004) and Arcand et coll. (2015) in the present paper. A regression (FE). Inverse causality or dynamic re-amplificator problems are not resolved by the regression of fixed effects per panel, just the omis variable bias.

We will go a little farther with an instrumental variable estimation (IV) by instrumenting the ERO using the Lerner index for the banking industry. The Lerner Index is a potentially valuable tool since bank competition has a direct influence on 7 banks profitability (see, for example, Goddard et al., 2004), but it is unlikely that it will be correlated with other growth factors or have a direct impact on the growth of PIB per capita. the standard validity tests for this instrument, including stepwise regressions. While a FE model on panel IV resolves the issue of the missing bias variable and the inverse causality, it does not address the issue brought about by a dynamic regression.

Therefore, our final step is to get reliable estimates using a system GMM model with first-difference, in accordance with Arellano and Bond (1991) and Blundell and Bond (1998). We briefly introduce the MGM estimators below and then turn to Roodman (2006) for a more in-depth examination. The MGM estimators are designed for panel data analysis using a dynamic process, with fixed individual effects, endogenous, predicted, and exogenous regressions, serial correlation and heteroscedasticity within individuals, and non-correlated differences between individuals. They can withstand a panel with a specific number of periods and numerous people (« little T, big N »).

Our ability to address the issue of endogeneity and pinpoint the causal relationship in our sample is made possible by MGM estimators' use of the variable's decrements as an instrument (p. ex., Beck et Levine, 2004). We use all available decimals starting with the second decimal for endogenous variables and the first decimal for predetermined variables. All contextual factors—with the exception of education—are classified as endogenous. The definition of predetermined variables includes education. Exogenous elements are defined as the annual fixed effects and the Lerner index. 5 The model is estimated using fixed panel effects at the national level. With the help of Windmeijer's (2005) correction of finished pattern, which groups the error types at the panel level, we calculate resilient error types (pays). kinds at the panel level (pays).

4. Findings

Table 3 :The table below presents OLS, Panel fixed-effects (FE), and System GMM regressions. The dependent variable is nominal GDP per capita growth.. T-statistic based on robust variances is reported in parentheses. *, ** and *** denote an estimate significantly different from 0 at the 10 %, 5% and 1% level, respectively.

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	(1)	(2)	(3)	(4)
	OLS	**Panel FE**	**System GMM**	**System GMM**
ROA	0.00181***	0.000451***	0.000627**	0.000879**
	(0.94)	(0.34)	(-1.79)	(-2.11)
ROA_{t-1}				-0.00300**
				(-2.46)
$GDP\ Per\ Capita\ Growth_{t-1}$	0.348***	-0.177***	-0.477***	-0.230***
	(8.84)	(-4.88)	(-14.18)	(-3.74)
GDP growth	-0.0000371***	0.0354***	-0.000658***	-0.000502***
	(-9.84)	(10.43)	(-25.74)	(-12.96)
Education	-0.866***	-1.770***	-2.386***	-1.972***
	(-17.70)	(-9.22)	(-19.35)	(-13.49)
Inflation	-0.0733***	-0.0831***	-0.0421***	-0.0578***
	(-11.85)	(-13.66)	(-20.12)	(-26.54)
Openness	-0.00794***	0.00902***	0.0544***	0.0459***
	(-7.17)	(4.66)	(22.93)	(13.95)
Government Exp	-0.0419***	-0.0617***	0.00814***	0.00288**
	(-6.21)	(-8.75)	(12.06)	(2.29)
Labor	0.0183***	0.0173***	0.00743***	0.0150***
	(5.39)	(7.92)	(8.29)	(7.61)
Capital Formation	-0.00933***	-0.178***	-0.0683***	-0.0502***
	(-5.50)	(-8.68)	(-6.52)	(-4.53)
Lerner	0.578**	0.102	0.736***	0.641***
	(2.10)	(0.50)	(7.59)	(4.58)
_cons	8.801***	-53.08***	21.92***	17.27***
	(12.58)	(-7.42)	(18.06)	(11.68)
N	299	299	299	299

Results are presented in this section. We first focus on the key estimates, such as the current and projected levels of bank profit margins. We evaluate the roles of banking risks and banking crises in the next subsection. The evaluation of the roles played by monetary policy and financial development, as well as strategies for economic growth and institutional development, is covered in the third subsection.

Reference results, section 3.

The estimates are shown in Table 3 while taking into account the current ÉRO level as the main explanatory variable. OLS, Panel FE, IV Panel FE, and System GMM estimates are provided via the various columns. The main finding supports the idea that bank profitability encourages economic growth by having a significantly positive ROA coefficient across all calculations. In contrast to Panel FE's coefficient of 1,511 percent and Regression IV's anesthesia of 2,031%, the Model OLS provides a lower limit of 1,242 percent. 3,025 percent is the estimate given by the GMM system. Or, to put it another way, a 1% increase in the nominal ROA results in a 3% increase in nominal economic growth over the course of three years. 6 With the aid of significant F statistics and Chi2, the models are correctly specified. There is no evidence of over-identification using the non-significant Hansen statistics for IV Panel FE and System GMM. The first difference in errors is not significantly auto-correlated in the first order, as it should be for the system's GMM predictions. Regarding the other explanatory factors, we note that the historical rate of growth of the PIB per capita contributes favorably to the level of growth now experienced and that public spending has a detrimental effect on growth. The dynamic of bank profitability is examined next, and system GMM estimates are revised to include the impact of past performance on the activity of banks (ROAt-1). The panel FE models are not suitable for dynamic models since they do not correct the auto-correlation in terms of error, particularly in panels with few periods and many individuals. The results are shown in the final college of Table 3. We continue to see a positively significant coefficient of effectiveness, or ROA, of equal magnitude, confirming the beneficial effect of the banks' current level of profitability on economic growth. We couldn't find a statistically significant ROAt-1 coefficient. The effect that long-term bank profitability will have on economic growth is a major concern. We analyze and calculate the long-term impact of bank profits. The results are shown at the bottom of Table 3. A primary result emerges. When considering both the current influence of the ÉRO on PIB growth and

the effect of the previous level of the ÉRO, the long-term impact of the ÉRO is positive and significant. This is the case with OLS, fixed-effects, IV, and GMM regressions. This finding suggests that bank profitability not only influences the upward portion of the economic cycle but also has positive effects outside of it. As a result, our estimates lead to two key findings. First and foremost, bank profitability encourages short-term economic growth. We find that the level of bank profitability now is positively correlated with stronger economic growth. Second, we see a positive and significant influence of bank profitability(profitability) on long-term economic growth when examining the dynamics of bank profitability(profitability) and taking into account both the impact of previous and current bank profitability(profitability) levels.

3.2. Variable interactions at the national level

Our key projections show that bank profitability(profitability) has a favorable short- and long-term impact. We can determine whether the country's institutional and economic framework has an impact on this relationship. In order to reach this conclusion, we will look at four aspects of this framework: monetary policy, financial development, economic growth, and institutional quality.

We have thus far only discussed the isolated effects of the relationship between monetary policy and bank profitability. By include the ROA coefficients, ROA at 1, and the interaction between ROA and monetary policy, we provide an estimate of the whole impact of profitability at the bottom of the table. We also provide the Chi2correspondante statistic to assess its significance. This enables us to calculate the overall impact of the interaction between monetary policy and bank profitability on economic growth. When the M2 is used as a measure of monetary policy, the result is positive and significant: an increase in the total amount of money in circulation as well as an increase in bank profitability, including their combined effect, have a positive influence on economic growth. But with M3, the impact is negligible. This supports the role that a loose monetary policy has had in weakening the positive relationship between bank profits and economic growth.

We will now examine the roles of economic and financial development while asking if they have an impact on the relationship between bank profitability and economic growth. Recent studies on the relationship between finance and growth have shown that the influence of

financial development indicators on economic growth may depend on the country's level of development (Arcand et coll., 2015; Benczur et coll., 2019; Rioja et Valev, 2004). This finding implies that the relationship between bank profitability and economic growth may be influenced by the degree of financial development.

Table 4. Financial development. System GMM panel regressions

The dependent variable is nominal GDP per capita growth. The t-statistic is reported in parentheses. *, ** and *** denote an estimate significantly different from 0 at the 10 %, 5% and 1% level, respectively. Appendix A gives the definitions of the variables.

	(1)	(2)	(3)	(4)
ROA	0.00207***	0.00309***	0.00207***	0.00372***
	(-3.25)	(1.28)	(-3.25)	(1.33)
ROA_{t-1}	-0.00307***	-0.00301***	-0.00307***	-0.00319***
	(-4.92)	(-2.98)	(-4.92)	(-3.74)
Private Credit	-0.160***	-0.159***		
	(-38.28)	(-45.31)		
ROA x Private Credit		-0.000279***		
		(-2.61)		
Bank Share			-0.160***	-0.156***
			(-38.28)	(-42.77)
ROA x Bank Share				-20.60**
				(-2.34)
GDP growth	-0.000522***	-0.000518***	-0.000522***	-0.000516***
	(-31.87)	(-29.77)	(-31.87)	(-40.70)
Education	-2.767***	-2.759***	-2.767***	-2.730***
	(-34.49)	(-41.06)	(-34.49)	(-40.68)
Inflation	-0.0885***	-0.0901***	-0.0885***	-0.0882***
	(-57.41)	(-31.80)	(-57.41)	(-30.83)
Openness	0.0993***	0.0992***	0.0993***	0.0976***
	(52.96)	(63.90)	(52.96)	(52.59)
Government Exp	-0.00699***	-0.00779***	-0.00699***	-0.00748***
	(-7.30)	(-8.08)	(-7.30)	(-7.66)
Labor	0.0339***	0.0343***	0.0339***	0.0332***
	(40.36)	(13.43)	(40.36)	(27.85)
Capital Formation	-0.0850***	-0.0848***	-0.0850***	-0.0826***
	(-12.10)	(-11.90)	(-12.10)	(-11.24)
Lerner	0.884***	0.810***	0.884***	0.886***
	(10.91)	(7.04)	(10.91)	(9.96)
_cons	21.96***	21.87***	21.96***	21.71***
	(24.60)	(25.61)	(24.60)	(29.21)
N	286	286	286	286

Financial and economic development frequently coincides with weaker knowledge asymmetries (Fungacova et coll., 2017; Godlewski et Weill, 2011). With the knowledge and skills of bank employees, which are positively related to economic and financial development, the quality of risk analysis improves. This argument holds that because these countries are less affected by information asymmetries, we want to make the profitability of banks less advantageous for economic growth in those nations where financial and economic development is more significant. Therefore, the idea that a high profitability coupled with little competition would be advantageous for credit access would be less relevant as the rentable banks would be better able to gather information about the borrower.

We use two indicators to gauge financial development: internal private sector credit at the PIB (private sector credit) scale, and private bank credit at the scale of the total assets of private and central banks (part de la Banque). The results are shown in Table 5. The relationship between bank profitability and economic growth is unaffected by the control of the financial environment. Private lending has a detrimental effect on economic growth. This is somewhat at odds with the literature on the relationship between growth and finance, but it may be explained by include bank profits in the equation and using more recent data and a larger sample size. We could not find a statistically significant coefficient for the term "interaction," which suggests that the level of financial development has no bearing on the effect of bank profitability on economic growth.

We're going to look at the whole effects of bank profitability and financial development once more, as well as their individual and combined effects. The results are shown at the end of the table along with the appropriate Chi2 statistic. The findings support a positive and significant influence of the combined and overall impact of bank participations on bank profitability and private credit availability.

Using the classification of revenues provided by the World Bank, we take economic development into account. The World Bank divides the countries into four income groups: low income (income group = 1), middle income (income group= 2), upper middle income (income group = 3) and high income (income group= 4). In the sixth graph, we first show the model that does not alter the effect of bank profitability on economic growth. Next, we

investigate whether the relationship between bank profitability and economic growth varies according to income groups. To do this, we use a factorial variable for each type of income (i.e., low income, average income, average income above average, and high income, increasing the order of income) and interact with the ERO.

We note a significant coefficient for the term of interaction between the ERO and the groups with medium and low income. The impact of bank profitability on economic growth is greater than that of economies with middle-class incomes when compared to other income groups. The opposite is true for those with lower incomes, for whom the correlation is negative and significant. However, generally speaking, the ROA coefficient is positive and significant. Therefore, our findings point to a generally positive influence of bank profitability on economic growth, but one that is strengthened for middle-income economies and diminished for low-income ones.

At the conclusion of the table, we list all of the effects of bank rentability. In all models, the full effect becomes positive and significant, but model 5 stands out. This demonstrates that economic development does not have a significant role globally. Finally, we take into account the significance of institutional quality. The relationship between bank profitability and economic growth is subject to a variety of institutional influences. As has been noted, the profitability of banks influences economic growth through promoting financial stability. However, financial stability may be advantageous to or detrimental to economic growth. Financial stability has a negative effect since financial liberalization along with financial instability may spur economic growth. This beneficial effect of financial stability on growth may be constrained by strong institutional quality, which ensures that the institutions affected by financial crises are not weak and persistent. The positive influence of bank profitability on growth is due to its high profitability in combination with its low level of competition in the market for data collection on borrowers. This may be related to high institutional quality such that barriers put in place by the authorities to protect the monopolistic profits of the holder banks do not result in high rentability. Therefore, it is appropriate to consider if institutional quality influences how profitability of banks affects economic growth.

Robustness test :

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The robustness test in Table 5, which keeps the sample size at six countries and yields results that are similar.

Table 5.

Robustness check: Banking Crisis. System GMM panel regressions. The dependent variable is nominal GDP per capita growth.. The t-statistic is reported in parentheses.*, ** and *** denote an estimate significantly different from 0 at the 10 %, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
ROA	0.000283***	0.000518***	0.000662***	0.0000958***
	(-0.58)	(0.49)	(1.02)	(-0.11)
ROA_{t-1}	-0.00184	-0.00167	-0.00665**	-0.00378**
	(-0.91)	(-0.98)	(-2.41)	(-2.13)
Crises	-0.0313**	-0.0317	-0.00353	-0.0560***
	(2.10)	(1.36)	(0.17)	(2.72)
ROA x Crises		-0.00286		
		(-1.49)		
ROA $_{t-1}$ x Crises			-0.00765***	
			(2.88)	
ROA x Crises $_{t-1}$				-0.00144
				(-0.68)
Crises $_{t-1}$				-0.0916***
				(-2.73)
GDP growth	-0.000508***	-0.000509***	-0.000529***	-0.000525***
	(-13.21)	(-14.81)	(-12.64)	(-14.82)
Education	-1.945***	-1.950***	-2.043***	-2.014***
	(-13.43)	(-13.72)	(-13.61)	(-14.52)
Inflation	-0.0593***	-0.0595***	-0.0590***	-0.0622***
	(-23.53)	(-17.76)	(-21.23)	(-20.03)
Openness	0.0465***	0.0467***	0.0479***	0.0496***
	(13.60)	(14.40)	(13.49)	(14.57)
Government Exp	0.00372***	0.00339**	0.00329**	0.00511***
	(3.26)	(2.52)	(2.45)	(3.23)
Labor	0.0146***	0.0146***	0.0126***	0.0144***
	(8.93)	(7.70)	(5.16)	(6.97)
Capital Formation	0.0455***	0.0457***	0.0506***	0.0476***
	(-4.15)	(-3.98)	(-4.60)	(-4.33)
Lerner	0.860***	0.846***	0.812***	1.037***
	(6.41)	(5.10)	(5.66)	(5.99)
_cons	16.85***	16.88***	18.03***	17.30***
	(11.60)	(11.96)	(11.68)	(12.35)
N	286	286	286	286

Conclusion

The evidence supporting the impact of bank profitabilityon economic growth is the focus of this paper. Given that political decision-makers are concerned about the low bank rentability, it is crucial to consider whether an increase in bank profitabilityactually spurs economic growth. In the first place, we find that bank profitabilityencourages short-term economic growth. Second, there is a positive long-term effect when the dynamic of bank profitabilityis taken into consideration throughout the activity cycle. Furthermore, we have noticed that the monetary policy affects how profitable banks are in terms of economic growth.

Imagine a monetary policy that lessens but does not completely eliminate the influence of bank profits on economic growth. It is significant to highlight that the control of the M3 monetary aggregate strengthens the cyclical component of bank profits. When different levels of income are considered, the positive impact of profitabilityon economic growth is maintained; however, in comparison to other groups, economies with middle-class incomes benefit more from this relationship, while economies with low incomes benefit less. Contrarily, we do not observe any appreciable effects of varying economic development or institutional quality.

These findings may be interpreted as pointing to the beneficial impact of bank profitabilityon financial stability. A higher profitabilityenables banks to increase their base capital and encourages them to screen more loans and monitor borrowers. Due to this relationship between financial stability and economic growth, bank profitabilitycontributes to both short- and long-term increases in economic growth. From a political perspective, these findings support the idea that authorities should encourage the profitabilityof banks for reasons of growth. Positive effects might be seen both immediately and over time. Furthermore, it contributes positively to short-term goals.

Our research is a first step in understanding the influence of bank profitabilityon financial stability. Our work may be improved in a variety of ways. It would be interesting to examine the applicability of our findings for time periods other than 1999 to 2013. Additionally, it would be quite interesting to do research on a much longer time frame in order to include long-term economic growth. Moreover, the use of regional data may provide a more precise

identification strategy dependent from regional economic growth and banking rentability. We leave these steps up to the search.

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