**Is there any impact of public spending on bank performance? Empirical evidence from the MENA region**

**By**

**Ahmed Kchikeche[[1]](#footnote-1) and Assil El Mahmah[[2]](#footnote-2)**

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# Abstract

This paper investigates the role of the level and composition of government spending as a determinant of three different aspects of banks performance in 179 banks from the MENA region between 2001 and 2019 using the first-difference GMM estimation method. To control for the impact of the oil sector on the banking system for some countries in the region, we divide our sample into two groups of banks, depending on whether they are from net oil importers or net oil exporters.

Our results show that there is a negative effect of government spending on bank performance in the MENA region. Furthermore, the results from sample separation reveal the importance of government spending composition and oil dependency on the studied relation. In fact, our findings indicate that while current spending has a positive impact on bank performance, capital spending harms bank profitability. Finally, while government spending constitutes a net benefit for oil exporters, the results show an overall negative effect of government spending on bank performance in oil-importing countries.

Keywords: Bank performance; Government spending, Oil prices, GMM, MENA.

JEL classification: E44; E62; G21 ; H50

# Introduction

The impact of government spending on the economy has always been a central question in economic theory. However, it seems that there is little interest in studying how government spending affects banking performance, especially in the Middle East North Africa region (MENA)[[3]](#footnote-3). In fact, this region has its particularities. On one hand, about ‎ half of the countries (Algeria and the GCC countries) are depending mainly on oil revenues where hydrocarbon accounts for roughly 50% of the region’s GDP, benefitting from significant liquidity during periods of high oil prices. On the other hand, the rest of the region are net oil-importing countries, where any hike in oil price affects negatively government fiscal balances and economic growth, causing a squeeze in liquidity and credit. Hence, the net impact of government intervention on banking performance is still ambiguous.‎

To the best of our knowledge, there is no theoretical framework that directly ties government spending to bank performance. This gap in the literature is rarely addressed as the studies related to bank performance don’t consider the importance of the role played by government intervention (Alshammari, 2020; Djalilov & Piesse, 2016). Thus, our paper aims to empirically investigate the role of government spending as a determinant of bank performance in the MENA region.

Taking this into consideration, the first part of our paper is a two-phase literature review on this subject. In the first part, we examined the impact of government spending on economic growth, to have some insights on how government spending can affect macroeconomic conditions (mainly economic growth). In the second phase, we analyzed bank performance determinants and essentially how macroeconomic conditions affect bank performance. This allows us to understand the relationship between government spending and bank performance by analyzing both their interactions with economic growth. The data and methodology section present our panel dataset and describe the econometric methodology used in our paper. The third section presents the analysis of the results. We concluded our paper with a discussion of the results and their policy implications for the MENA region.

# Literature review

The impact of government intervention on the economy has always been a central question in economic theory. However, it seems that there is little interest in studying how government affects banking performance. This gap in the literature is rarely addressed as the studies working on bank performance do not consider the importance of the role played by government intervention (Alshammari, 2020; Djalilov & Piesse, 2016).

To our knowledge, the only study that considers the relationship between government spending and bank performance as the main research objective was done by Alshammari (2020) who investigated the spillover effect of government spending on bank performance in Kuwait. The author used standard panel techniques (pooled OLS, fixed effect, and random effect) to investigate the indirect effect of government spending on seven Kuwaiti commercial banks. He found that massive government spending tends to crowd out the role of the private sector, affecting negatively banks performance.

Few other studies considered government intervention as a determinant of bank performance. For instance, Djalilov & Piesse (2016) studied the determinants of bank profitability in 16 transition countries using a GMM panel model. The study’s results suggest that government spending harms bank performance for late transition countries but does not affect early transition countries. In addition, Daly & Frikha (2017) explored the performance of 12 Bahraini banks using Data Envelopment Analysis. The study uses two variables associated with government intervention (government effectiveness and regulatory quality) and shows that they both harm conventional banks' performance.

The observed lack of interest in the relationship between government spending and bank performance may be explained by the fact that is only a spillover effect. In this sense, the relationship between government spending and bank performance is quite intuitive. Succinctly, Government spending is argued to have a significant (positive or negative) effect on economic growth. This effect can extend to affect bank performance through a growth effect channel as growth represents an increase in aggregate demand including the demand for financing and other banking services, which, in turn, have a direct effect on banking performance. To illustrate this relationship, our review of the literature will be conducted in two phases. The first is a review of the literature on the impact of government spending on economic growth and the second is an analysis of bank performance determinants in the empirical literature.

## II.1. The growth effect of government spending

According to Keynesian theory, government spending boosts economic growth via two main channels. The first channel affects economic growth directly by increasing production and aggregate demand using expansionary fiscal policy (Nyasha & Odhiambo, 2019). According to Romer (1986), by having access to tax revenues, the government can support the economy’s social optimum by subsidizing the holdings and the accumulation of capital or by subsidizing it and taxing the other factors of production. The second channel affects growth indirectly by laying the groundwork for private investment. This is mainly done by reducing and managing conflicts between private and social interests, increasing productive investment, and directing economic growth toward the social optimum (Ram, 1986). Government capital spending can also facilitate private investment in countries with less developed markets by building the necessary infrastructure that allows private capital to be more productive (Ghali, 1999).

On the other end of the argument, classical, neoclassical and public choice theorists argue that government intervention is detrimental to economic growth (Nyasha & Odhiambo, 2019). This is mainly due to the well-known crowding-out effect (Ghali, 1999; Ram, 1986); as Public participation in the economy reduces the available opportunities for private enterprises. Furthermore, laissez-faire economists view the government as an inefficient economic actor (Ghali, 1999; Landau, 1983). According to this point of view, government interventions like subsidies programs and public investments are inefficient, have a high opportunity cost and distort economic incentives, and lower the productivity of the economic system (Ram, 1986).

A more elaborate explanation of the spending-growth nexus is that the relationship changes according to the degree of government intervention and the composition of its spending (Nyasha & Odhiambo, 2019). According to Barro (1990) and Friedman (1997), government spending plays an important role in promoting economic growth but just up to a certain “optimal” point. After this point, more government intervention hinders economic growth. This inverted U-shaped curve dynamic relationship between government spending and economic growth is argued to be a mixed result of the public goods effect and the law of decreasing marginal returns (Dobrescu, 2015).

Furthermore, even productive spending could become unproductive if used in excess (Devarajan et al., 1996). According to Devarajan et al (1996), it is the mix between productive and unproductive government spending, not its level, that has an impact on economic growth. Thus, studying the effect of government spending composition on growth can lead to more interesting results. To settle this debate, extensive empirical work has been conducted to measure the growth effect of government spending in developing countries (See, for instance, Asimakopoulos and Karavias, 2016; Bose et al., 2007; Butkiewicz and Yanikkaya, 2011; Devarajan et al., 1996; Ghosh and Gregoriou, 2008; Gupta et al., 2005; Kimaro et al., 2017; Landau, 1983; Olaoye et al., 2020; Wahab, 2011). The consulted empirical literature yielded conflicting results. These conflicting results may be the results of differences in government structural policies, resource allocation efficiency, and the quality of its institutions. A breakdown of the consulted empirical literature on the growth effect of government spending is summarized in appendix A.

## II.2. The determinants of bank performance

A large part of the literature on bank performance distinguishes between internal and external determinants of bank performance (Alshammari, 2020). Internal determinants are bank-specific factors that affect performance, while external factors are the exogenous macroeconomic conditions that affect the demand for financing and intermediation services as well as the bank’s capacity to accumulate resources. It should be noted that some empirical examinations of bank performance focus only on the internal determinants (Abdul Hadi et al., 2018; Daly & Frikha, 2017; Owusu-Antwi et al., 2014; Sun et al., 2017), while others include external factors mainly GDP (or another proxy of economic growth), as a main external determinant of bank performance (Djalilov & Piesse, 2016; El Mahmah & Trabelsi, 2021; Grigorian & Manole, 2006; Jara‐Bertin et al., 2014; Nouaili et al., 2015; Rashid & Jabeen, 2016; Sufian & Noor Mohamad, 2012).

As we stated before, understanding the direct relationship between economic growth and bank performance should help us better understand the spillover effect of government spending on bank performance. Unsurprisingly, the majority of the consulted empirical literature supports a positive effect of economic growth (measured either by real GDP, GDP growth, or GDP per capita) on banking performance indicators (El Mahmah & Trabelsi, 2021; Grigorian & Manole, 2006; Jara‐Bertin et al., 2014; Nouaili et al., 2015; Sufian & Noor Mohamad, 2012). This confirms our hypothesis that government spending can affect bank performance through its effect on economic growth. A breakdown of the consulted empirical literature on the determinants of bank performance is summarized in Appendix B.

According to intuition and most of the consulted empirical literature, economic growth is most likely to have a positive effect on bank performance. As the profitability of the banking activity relies heavily on good macroeconomic conditions to boost the demand for credit and other intermediation services. We can consider economic growth as a main external driver of bank performance.

We can thus presume that the effect of government spending on economic growth and bank performance is the same. That is, by affecting economic growth government spending indirectly affects bank performance. For instance, if we assume that spending has a positive growth effect and that economic growth boosts bank performance, then, by boosting economic growth, government spending also, indirectly, boosts bank performance. The same logic applies if we consider that government spending has a negative or a nonlinear effect on economic growth. Accordingly, if we assume that economic growth positively affects bank performance, then government spending affects performance, indirectly, in the same way that it affects economic growth.

# Data and methodology

This section presents our adopted approach to examine the relationship between government spending and bank performance in the MENA region. To this end, we describe the selected variables, according to data ‎limitation and the intended objectives. Then, we specify the appropriate econometric model, which tackles all statistical problems, taking into consideration the specific ‎characteristics of the MENA countries.‎

## III.1. Data description

To test for the impact of government spending on bank performance, we employed both bank-level and country-level data. The dataset is based on banks’ balance sheets sourced from Bureau van Dijk’s Bankfocus database as well as country-level variables sources from various international institutions (IMF and World Bank) and national authorities (Central banks and ministries of finance). The initial dataset covers banks from 12 MENA[[4]](#footnote-4) countries over the period 2002-2019. After removing banks with a high number of missing data (more precisely, with more than 25% of the data missing), we removed the top and bottom 1% of observations for the dependent variable, to reduce the outliers’ effects. After adjustments, the final sample includes 179 banks over the period 2002-2019, giving a total of around 3300 observations per variable. (see Table 1).

To explain the banks’ performance, we selected three dependent variables namely: Return on Assets (ROA), Return on Equity (ROE), and Lending growth (LNDG). The ROA and ROE are measured as the ratio of total operating return to average total assets and equity respectively, while lending growth is the year-to-year difference of the log of gross loans. The return on assets denotes the percent return on each dollar of assets and represents the bank’s ability to manage and allocate its assets to generate profits, or in other words, the performance of its investment policy (Jara‐Bertin et al., 2014). On the other hand, the return on equity denotes the percent return on each dollar of equity and the performance of the bank financing policies (Sufian & Noor Mohamad, 2012). Finally, lending growth is analogous to the turnover of a nonfinancial company and arguably represents performance. It should be noted that while lending growth is not a precise indicator of performance, other indicators used in the literature also have their limitations. For instance, the ROA does not represent profits from off-balance activities while the ROE neglects the risks and costs associated with leverage (Sufian & Noor Mohamad, 2012). Using three different indicators of bank performance is a way to account for these differences and the different ways in which bank-specific and country-specific factors affect various aspects of bank performance in the MENA region.

Regarding the main selected independent variables, the internal determinants include the standard bank characteristics, which are the size (Size), liquidity (Liq), and capital adequacy (Cap). The three variables are measured as follow:

**A bank size (Sizei,t)** is the log of total assets minus the average level for the bank over the study period.

(1)

This bank size can be interpreted as a proxy for the degree of monopoly. The bigger the size of the bank, compared to its competitors, the higher the degree of monopoly power (El Mahmah & Trabelsi, 2021). Ideally, bigger banks have more internal resources and can access money and equity markets more easily. By contrast, in the presence of capital markets imperfections, smaller banks have, comparatively, more difficulties accessing money markets (Kashyap & Stein, 1995). Consequently, it is reasonable to assume a positive relationship between the comparative size of a bank and its overall performance. However, (Nouaili et al., 2015) showed that the size of a bank negatively affects performance. The authors argue that this can be a result of the diseconomies of scale. Furthermore, according to existing literature, bigger banks with aggressive growth strategies can reduce their interest margins to gain market share.

**Capitalization** **(Capi,t)** is given by the ratio of equity (E) to total assets, minus its average value for the bank over the study period.

(2)

By defining size and capitalization in this way, we ensure that the internal factors capture pure differential effects. For each period, the variable averages to zero, being negative for banks whose specific characteristic (size and capitalization) is below average (henceforth called small or less capitalized banks) and positive for banks whose specific characteristic is above average (henceforth designed as large or well-capitalized banks). Furthermore, in the presence of asymmetric information, rising capital becomes costly for undercapitalized banks. Faced with such a situation, undercapitalized banks can only extend low-risk loans or reduce their credit supply altogether to meet the capital adequacy ratio (Watanabe, 2007). We expect well-capitalized banks to perform better.

**Liquidity** **(Liqi,t)** is measured by the ratio of liquid assets (LA) to total assets minus the per-bank average over the study period.

(3)

The variable is supposed to measure each bank's perception of its excess liquidity. The banks are supposed to have an internal evaluation of excess liquidity according to their balance sheet characteristics and risk perception. Thus, the variable measures each bank’s estimated risk of not having sufficient liquidity to cope with the withdrawal of deposits and the insolvency risk. As liquidity management is supposed to be one of the banking sector's most important functions, we expect liquid banks to perform better. On the other hand, (Abdul Hadi et al., 2018) argued that there is a positive opportunity cost for holding excess liquidity. Illiquid investment yields in general higher returns. Thus, banks that hold more excess liquidity can be less profitable.

As per the external determinants of bank performance, we included a set of key macroeconomic factors that reflect the specificities of MENA countries. In line with a parsimonious specification, we used three variables, namely, real GDP growth, interest rate, and Inflation. GDP growth {GDPG} is the year-to-year growth of real gross domestic product and is expected to be positively related to bank performance as a rise in economic activity indicate higher aggregate demand for good and services including financing and financial intermediation. The inflation rate {INFL} is the year-to-year growth rate of the consumer price index. A rise in inflation could negatively harm aggregate demand by increasing uncertainty and the operating cost of firms (Jara‐Bertin et al., 2014; Nouaili et al., 2015). However, (Djalilov & Piesse, 2016) argue that by anticipating its rise, banks can adjust their nominal interest rates to keep up with inflation and improve their profitability. Finally, the short-term lending interest {IR} rate is expected to be positively related to bank performance as it is positively related to earning on lending. However, excessively high-interest rates could discourage credit demand and thus reduce bank performance.

Concerning the government intervention indicators, we use three measures of government spending {GTS for total spending, GCS for current spending, and GKS for capital spending) expressed as ratios to GDP, to investigate the effect of the level and composition of government spending on bank performance. Given the importance of public expenditures in financing investment and consumption activities, we distinguished in our paper between current and capital expenditures, to examine the effect of different channels through which government spending can contribute to bank performance. Finally, to check the robustness of our results, we include in our model the oil price, given the importance of the oil sector to the banking system in some of the MENA countries. It is worth noting that the stationarity of the adopted variables was tested using the Augmented Dickey-Fuller test (ADF), which indicates that all the series selected in this model are stationary[[5]](#footnote-5).

To account for the fact that oil price shocks affect oil importers and exporters differently, we divided our sample into two subsamples. Table 1 presents the number of banks and observations, as well as some descriptive statistics, showing interesting results.

**Table 1: Selected descriptive statistics of bank performance indicators in the MENA region**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Country** | **Full sample** | | | **Oil exporters** | | | **Oil importers** | | |
| **ROA** | **ROE** | **LNDG** | **ROA** | **ROE** | **LNDG** | **ROA** | **ROE** | **LNDG** |
| **Total banks** | 179 | 179 | 179 | 88 | 88 | 88 | 91 | 91 | 91 |
| **observations** | 3315 | 3315 | 3142 | 1623 | 1623 | 1537 | 1692 | 1692 | 1605 |
| **Mean** | 1.83 | 14.49 | 0.10 | 2.06 | 13.49 | 0.11 | 1.60 | 15.50 | 0.08 |
| **Median** | 1.71 | 14.03 | 0.07 | 1.93 | 13.38 | 0.08 | 1.40 | 14.64 | 0.06 |
| **Min** | -2.79 | -21.42 | -0.68 | -3.22 | -20.91 | -0.87 | -2.67 | -23.43 | -0.62 |
| **Max** | 7.50 | 61.83 | 0.97 | 7.55 | 44.55 | 1.13 | 7.42 | 67.00 | 0.70 |
| **Std. Dev.** | 1.36 | 10.37 | 0.18 | 1.38 | 8.72 | 0.21 | 1.31 | 11.90 | 0.17 |

## III.2. Stylized facts

After describing all the collected data and the selected samples of counties, a brief statistical analysis is important to understand how banks’ performance differs from a group of countries to another in the MENA region.

**Figure 1: The differences in the median of bank performance indicators based on oil dependency**



Source: the panel dataset used in this paper

Figure 1 shows clearly the significant difference between banks’ performance indicators in the oil-exporting countries and those in oil-importing countries. This can be attributed to inherent differences in economic structure and the development of financial systems. In fact, given that economic activity in oil-exporting countries is reliant on oil prices, higher oil revenue boosts government spending, which leads to abundant liquidity in the banking system and strong confidence in the private sector, resulting in higher deposits and credit in support of the growth of the non-oil sector, and improving consequently the banks’ performance. However, any rise in oil prices puts pressure on net oil-importers, by causing a decline in government spending and slower growth of monetary aggregates, liquidity, deposits, and credit, which harm banks’ performance in those countries.

For more details, Appendix C presents three panels that show some examples of the key differences in macroeconomic structure between the two subsamples of countries included in our study. Oil exporters experienced during the study period higher levels of economic growth, investment, and price stability (panel 1) compared to oil importers. Panel 2 highlights the difference in levels of government spending, as countries with abundant natural resources benefit from higher revenues. Finally, given the differing trends in terms of oil and fiscal balance dependency, as well as with different levels of economic and institutional development, Panel 3 shows that oil exporters are net lenders and have less government debt compared to oil importers.

Regarding banks’ indicators, oil dependency can also have a lasting impact on the structure and the performance of the banking sector. Comparing some baking development indicator for the two subsamples in Appendix D show that the banking sectors in oil-importing countries are bigger and have access to more clients but are less capitalized more exposed to systematic and diversifiable risk. These differences in both the macroeconomic environment and balance sheet constraints should make banks in the two subsamples exhibit measurable differences in investment strategies, assets management, and risk tolerance.

Based on these observations, we will estimate a baseline model for the full sample before dividing it into two subgroups and measuring the effect of oil price changes on bank performance in each subsample.

## III.2. Model specification

For the empirical investigation, our baseline parsimonious specification can be generally written as follow:

(4)

Where *Perf* is a vector of the bank performance indicators, as measured by the Return on Assets (ROA), Return on Equity (ROE), and the Lending growth (LNDG). IF is a vector of internal determinants of bank performance, which are the size (Size), liquidity (Liq), and capital adequacy (Cap). It should be noticed that these characteristics are lagged one period, given that the bank’s characteristics are items of the bank balance sheet and, as such, could be highly correlated with the dependent variable. XF is a vector of external macroeconomic determinants of bank performance, and GS is the measure of government spending.

Finally, we include an autoregressive component of the bank performance indicator, as bank profits persist over time (Berger et al., 2000; Djalilov & Piesse, 2016). Thus, our baseline specification could be written as follow:

(5)

Where are the dependent variable, are the bank-specific internal determinants of bank performance, are the country-specific external determinants of bank performance, are the measures of government spending, the unobserved country-specific effect and is the error term.

To avoid the problem of endogeneity, we used two Generalized Method of Moments (GMM) estimation methods proposed by (Arellano & Bond, 1991). One advantage of this estimation method is that it does not require complete information about the distribution of the data generation process (Owusu-Antwi et al., 2014).

The “First difference GMM” estimator was proposed by (Arellano & Bond, 1991) to estimate dynamic panel data models that contain the lag of the dependent variable and a set of non-strictly exogenous independent variables. To account for endogeneity (e.g. the correlation between the lagged value of the dependent variable and the country-specific effect) (Arellano & Bond, 1991) proposed differencing the explanatory variables and thus removing the time-invariant fixed effect from the error term. The first difference GMM estimator is valid under the assumption that the lagged values of the independent variables are valid instruments and that there is no serial correlation among the errors. The first difference GMM specification could be written as follow:

(6)

To test the validity of our models we use the (Arellano & Bond, 1991) tests of second-order serial correlation and the (Sargan, 1958) test of instruments validity.

# Empirical results

Taking the structural differences between the ecosystems of the banking industries in oil-importing and oil-exporting countries. It is reasonable to assume that banks in the two samples react differently to their macroeconomic environment and are thus affected by the regressors differently. Furthermore, we argue that each of the adopted indicators, namely, the return on assets, the return on equity, and credit growth measures different aspects of banking performance, which we will call henceforth, investment efficiency, leverage efficiency, and output intensity. We also argue that the three aspects of bank performance are not necessarily correlated. This can be illustrated by comparing the correlation coefficients between the independent variables across our two subsamples (see appendix E). For instance, while the correlation between ROA and lending growth in the full sample is 0.12, its value is 0.24 for oil exporters and practically 0 for oil importers.

To take these considerations into account, we rearrange our results in Tables 2 through 4 to analyze the determinants of investment efficiency, leverage efficiency, and output intensity across our samples.

**Table 2: The estimation results for the ROA models**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Full sample | | | Oil importers | | | Oil exporters | | |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| ROA(-1) | 0.413  (0.00) | 0.387  (0.00) | 0.384  (0.00) | 0.344  (0.00) | 0.364  (0.00) | 0.369  (0.00) | -0.064  (0.02) | -0.084  (0.00) | -0.049  (0.08) |
| Size | -0.466  (0.00) | -0.543  (0.00) | -0.496  (0.00) | -0.398  (0.37) | -0.472  (0.27) | -0.241  (0.56) | -1.133  (0.00) | -1.149  (0.00) | -1.033  (0.00) |
| Liq | -3.574  (0.00) | -3.670  (0.00) | -3.765  (0.00) | -0.966  (0.00) | -0.734  (0.01) | -0.724  (0.00) | -0.008  (0.99) | 0.076  (0.58) | -0.611  (0.42) |
| Cap | 2.494  (0.00) | 1.390  (0.00) | 1.574  (0.00) | 3.850  (0.00) | 3.650  (0.00) | 3.875  (0.00) | 6.916  (0.00) | 6.798  (0.00) | 8.810  (0.00) |
| Gdpg | -0.003  (0.11) | -0.000  (0.90) | 0.000  (0.98) | 0.022  (0.00) | 0.022  (0.00) | 0.025  (0.00) | -0.011  (0.04) | -0.026  (0.00) | -0.028  (0.00) |
| Infr | 0.004  (0.00) | 0.003  (0.00) | 0.004  (0.00) | 0.016  (0.00) | 0.013  (0.02) | 0.013  (0.05) | 0.007  (0.18) | 0.013  (0.02) | 0.002  (0.75) |
| ir | 0.016  (0.00) | 0.015  (0.00) | 0.013  (0.00) | -0.107  (0.00) | -0.081  (0.00) | -0.096  (0.00) | -0.040  (0.31) | -0.076  (0.04) | -0.064  (0.07) |
| ∆Brent | - | - | - | -135.158  (0.00) | -121.862  (0.00) | -110.644  (0.00) | 68.534  (0.00) | 78.865  (0.00) | 67.813  (0.00) |
| Gts | -0.005  (0.00) | - | - | 0.022  (0.00) | - | - | 0.020  (0.01) |  |  |
| Gcs | - | -0.005  (0.00) | - | - | 0.022  (0.00) | - | - | 0.024  (0.00) | - |
| Gks | - | - | -0.011  (0.00) | - | - | -0.019  (0.41) | - | - | -0.034  (0.00) |
|  | | | | | | | | | |
| AR(2) | 1.61  (0.11) | 1.47  (0.14) | 1.45  (0.15) | 0.86  (0.39 | 1.13  (0.26) | 0.47  (0.64) | -1.82  (0.07) | -1.96  (0.05) | -1.67  (0.09) |
| Sargan | 131.33  (0.21) | 143.1  (0.07) | 142.42  (0.07) | 43.95  (0.60 | 43.96  (0.60) | 45.12  (0.55) | 60.48  (0.05) | 61.65  (0..06) | 51.56  (0.17) |

Table 2 presents the estimation results for the determinants of investment efficiency for the full sample (columns 1 to 3) as well as for oil importers (columns 4 to 6) and exporters (columns 7 to 9). The results reveal the persistency of profits in the banking sector across sub-samples as shown by the positive significant effect of the lag of ROA. The results also show that banks in the MENA region do not efficiently leverage their size and liquid assets to generate profits. *Per contra*, bigger banks in the oil-exporting country are less profitable. This can be because the banking sector is highly concentrated (the aggregate concentration rate is 80% in oil-exporting countries versus 60% in oil-importing countries). Thus, while banks in oil-importing countries are unable to mobilize their size in generating profits, the aggressive growth strategies of banks in the oil-exporting country effectively reduce their interest margins and harm their investment strategy. The results also show that well-capitalized banks are more profitable across subsamples.

The diverse macroeconomic environments in the MENA region present banks with different types of challenges. For instance, the growth of the economy affects the two subsamples differently as shown by the sign of GDP growth. As expected, GDP growth positively affects bank performance in oil-importing countries. In periods of good macroeconomic conditions, banks' profitability in oil-importing countries rises as a result of the increase in the demand for credit and banking services. However, economic growth negatively affects the performance of banks from oil-exporting countries. This is in line with the results of Rashid & Jabeen (2016) who argue that during prolonged periods of business cycle expansion, firms internally generate enough revenues to satisfy their working capital needs and rely less on external financing, which reduces the demand for bank credit and may reduce the banking sector profitability.

The results show a significant positive effect of inflation on ROE in oil-exporting countries. This effect is, however, generally insignificant for oil exporters. We can infer from this that banks in the MENA region can anticipate the rise in inflation and hedge its adverse effect on their profitability. We can also deduce that banks from oil-importing countries can better benefit from inflation hikes. Finally, the results show that sample separation uncovers the negative effect of interest rates on bank performance. Higher interest rates reduce investment efficiency by discouraging credit demand, thus reducing interest margins.

As per the impact of government expenditure, the coefficients are negative and statistically significant for the total spending as well for both components in the MENA region. However, capital spending has a positive effect on the investment efficiency of banks in oil-exporting countries, while it has no impact on banks from oil importers.

**Table 3: The estimation results for the ROE models**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Full sample | | | Oil importers | | | Oil exporters | | |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| ROE(-1) | 0.546  (0.00) | 0.553  (0.00) | 0.552  (0.00) | 0.588  (0.00) | 0.592  (0.00) | 0.634  (0.00) | 0.198  (0.00) | 0.067  (0.00) | 0.099  (0.00) |
| Size | 5.254  (0.00) | 1.890  (0.00) | 3.095  (0.00) | -6.726  (0.01) | -6.039  (0.01) | -7.654  (0.01) | 11.475  (0.00) | 7.343  (0.00) | 6.671  (0.00) |
| Liq | 5.743  (0.00) | -3.280  (0.00) | -3.494  (0.00) | 2.664  (0.01) | 2.171  (0.03) | 4.715  (0.00) | 14.809  (0.00) | 27.978  (0.00) | 32.270  (0.00) |
| Cap | 35.872  (0.00) | 34.589  (0.00) | 37.423  (0.00) | -9.397  (0.03) | -9.137  (0.04) | -7.469  (0.09) | 15.125  (0.00) | 12.980  (0.00) | 11.417  (0.00) |
| Gdpg | 0.023  (0.00) | 0.027  (0.00) | 0.024  (0.00) | 0.219  (0.00) | 0.200  (0.00) | 0.180  (0.01) | -0.082  (0.02) | -0.202  (0.00) | -0.240  (0.00) |
| Infr | -0.041  (0.00) | -0.022  (0.00) | -0.031  (0.00) | -0.178  (0.00) | -0.202  (0.00) | -0.345  (0.00) | -0.058  (0.04) | -0.089  (0.01) | -0.093  (0.00) |
| ir | 0.308  (0.00) | 0.133  (0.00) | 0.148  (0.00) | 0.488  (0.00) | 0.529  (0.00) | 0.688  (0.00) | 0.968  (0.00) | 0.921  (0.00) | 0.693  (0.00) |
| ∆Brent | - | - | - | -414.223  (0.00) | -380.132  (0.00) | -225.709  (0.07) | 488.235  (0.00) | 690.583  (0.00) | 623.668  (0.00) |
| Gts | -0.040  (0.00) | - | - | -0.055  (0.25) | - | - | 0.067  (0.03) |  |  |
| Gcs | - | -0.046  (0.00) | - | - | 0.071  (0.12) | - |  | 0.141  (0.00) |  |
| Gks | - | - | -0.105  (0.00) | - | - | -1.129  (0.00) |  |  | -0.143  (0.00) |
|  | | | | | | | | | |
| AR(2) | 1.79  (0.07) | 1.32  (0.19) | 1.24  (0.21) | 1.30  (0.19) | 1.29  (0.20) | 1.69  (0.09) | 1.34  (0.18) | 0.54  (0.59) | 0.51  (0.61) |
| argan | 136.95  (0.12) | 137.48  (0.12) | 135.73  (0.14) | 30.18  (0.97) | 53.09  (0.25) | 24.63  (0.99) | 46.67  (0.53) | 51.29  (0.72) | 49.13  (0.79) |

Table 3 shows that the financial health of banks in oil-exporting countries has a positive impact on the ability of banks to use their equity to generate profits. On the other hand, bigger and liquid banks in oil-importing countries are less profitable. Furthermore, similar to ROA, return on equity is persistent over time and responds as expected to variations in oil prices. Finally, our results reveal that while current spending has a positive effect on the leverage efficiency of banks in oil-exporting countries, it does not affect banks from oil importers. On the other hand, capital spending has a detrimental effect on ROE in both sub-samples.

**Table 4: The estimation results for the LNDG models**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Full sample | | | Oil importers | | | Oil exporters | | |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| LNDG(-1) | -0.021  (0.52) | -0.043  (0.19) | -0.044  (0.24) | -0.128  (0.00) | -0.139  (0.00) | -0.157  (0.00) | -0.232  (0.00) | -0.308  (0.00) | -0.161  (0.00) |
| LNDG(-2) | -0.072  (0.00) | -0.080  (0.00) | -0.045  (0.09) | - | - | - | - | - | - |
| Size | 0.005  (0.93) | 0.057  (0.44) | 0.093  (0.15) | 0.220  (0.01) | 0.211  (0.01) | 0.295  (0.00) | 0.146  (0.00) | 0.260  (0.00) | 0.125  (0.00) |
| Liq | -0.941  (0.00) | -1.016  (0.00) | -1.065  (0.00) | -0.084  (0.24) | -0.114  (0.10) | -0.106  (0.08) | 0.504  (0.00) | 0.378  (0.11) | 0.428  (0.00) |
| Cap | -0.851  (0.15) | -0.378  (0.51) | -0.725  (0.22) | 0.395  (0.05) | 0.383  (0.05) | 0.147  (0.44) | 0.190  (0.51) | 0.561  (0.03) | 0.413  (0.05) |
| Gdpg | -0.002  (0.39) | -0.002  (0.27) | -0.002  (0.29) | 0.014  (0.00) | 0.012  (0.00) | 0.012  (0.00) | 0.002  (0.20) | 0.005  (0.02) | 0.000  (0.80) |
| Infr | 0.007  (0.00) | 0.007  (0.00) | 0.006  (0.00) | 0.006  (0.00) | 0.005  (0.01) | 0.003  (0.16) | 0.009  (0.00) | 0.004  (0.22) | 0.007  (0.00) |
| ir | -0.000  (0.99) | -0.001  (0.80) | 0.004  (0.47) | -0.010  (0.12) | -0.008  (0.20) | -0.009  (0.16) | 0.045  (0.00) | -0.015  (0.19) | 0.050  (0.00) |
| ∆Brent | - | - | - | 5.414  (0.23) | 5.612  (0.21) | -0.536  (0.90) | 21.115  (0.00) | 12.599  (0.05) | 14.556  (0.04) |
| Gts | -0.006  (0.00) | - | - | -0.010  (0.00) |  |  | 0.004  (0.07) |  |  |
| Gcs | - | -0.005  (0.00) | - | - | -0.010  (0.00) |  | - | 0.005  (0.08) | - |
| Gks | - | - | -0.009  (0.00) | - |  | -0.019  (0.09) | - | - | 0.005  (0.00) |
|  | | | | | | | | | |
| AR(2) | 1.12  (0.26) | 1.60  (0.11) | 0.75  (0.46) | -0.78  (0.43) | -0.72  (0.47) | -1.05  (0.29) | -0.18  (0.86) | -1.00  (0.32) | 1.18  (0.24) |
| Sargan | 68.88  (0.20) | 68.69  (0.20) | 56.43  (0.61) | 60.31  (0.09) | 58.91  (0.11) | 62.54  (0.06) | 47.23  (0.23) | 27.45  (0.90) | 50.15  (0.21) |

Results in table 4 show determinants of banks' lending growth. Overall, government spending stimulates bank lending in the oil-exporting countries but has a detrimental effect in the case of an oil-importing country. Furthermore, we can say that while the demand for credit is mainly driven by economic growth in oil-importing countries, oil price hikes play a more important role in oil exporters. Our results also show that except for the insignificant effect of liquidity on banks in oil-importing countries, lending growth in the MENA region is positively affected by the size, liquidity, and capital position of banks in both subsamples. Finally and as expected, the inflation rate positively affects lending growth in both sub-samples. Finally, while lending growth is positively affected by higher interest rates in oil-exporting countries, lending growth in oil-importing countries is unaffected by interest rates levels. This could be an indication of the presence of credit rationing.

# Conclusions

This paper investigates the role of government spending as a determinant of three aspects of banks performance in 179 banks from the MENA region between 2001 and 2019. To control for the impact of the oil sector on the banking system for some countries in the region, we divide our sample into banks from oil-importing and oil-importing countries. Using a first-difference GMM estimation method, we evaluate the impact of government spending level and composition on three aspects of bank performance in the MENA region.

The results reflect the inherent heterogeneity of the MENA region economies. We found that the determinants of banking performance differ according to the nature of the reliance of the economy on oil. In fact, the oil prices impact bank performance differently in each subsample. For instance, while oil prices have a positive impact on bank performance for oil exporters, our results show that oil prices negatively affect bank performance in the country that rely on oil imports to satisfy their energy needs. These results can simply be explained by the role played by oil in each subsample. For oil exporters, oil is the main revenue for the government and is used to boost the private sector. A hike in oil prices increases spending and aggregate demand. However, for the net oil importers, rising price is a significant burden on the budget balance of the government and put a strain on aggregate demand, and bank performance.

In the same vein, the response of the banking sector's performance to government spending differs between oil importers and exporters. For oil-exporting countries, current spending has a positive impact on all measured aspects of bank performance. This is mainly due to the crucial role that current spending plays in stimulating aggregate demand. On the other hand, capital spending is detrimental to investment and leverage efficiency in banks in this sub-sample. Using oil revenues, oil exporters can undertake massive infrastructure projects without relying on internal debt. While this can lay the ground for a more profitable private sector in the future, capital expenditure crowd out private sector investment and demand for credit, which reduce bank performance. Overall, government spending in oil-exporting counties is a significant driver of the growth of the banking sector. However, the crowding-out effect of capital spending seems to reduce the profitability of banking operations in the region.

Analyzing the impact of government spending on banks from oil-importing countries paints a grimmer picture. Similar to its effect on oil exporters, capital spending negatively affects bank performance in oil-importing countries. On the other hand, the current spending effect on bank performance is more ambiguous as it improves ROA, harms lending growth, and does not affect ROE. Overall, the results show a negative impact of bank performance on oil importers through the negative effect of current and capital spending on credit intensity.

To sum up, our findings shed a light on the role of the government spending level and composition on bank performance. Fiscal policy in the MENA region is greatly affected by oil prices and can have unintended effects on the banking sector. While oil hikes permit oil exporters in the MENA region to use their fiscal revenues to boost aggregate demand and thus the demand for bank credit and intermediation services through current spending, their high levels of capital spending crowd out the private sector and put pressure on the banking sector's margins. On the other hand, both current and capital government expenditure in oil-importing countries harms credit growth, which can use an unintended negative effect on bank profitability. Further inquiry is required to assess the channels by which the negative effect of spending on credit affects bank performance in oil-importing countries.

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# Appendices

## Appendix A: A summary of the consulted empirical literature on the growth effect on government spending

|  |  |  |  |
| --- | --- | --- | --- |
| **Study** | **The type of the effect** | **The symmetry of effect** | **Results** |
| (Landau, 1983) | Aggregated | Symmetric | Negative effect of current spending |
| (Kimaro et al., 2017) | Aggregated | Symmetric | Positive effect of total spending |
| (Asimakopoulos & Karavias, 2016) | Aggregated | Asymmetric | Bell-shaped effect of total spending |
| (Kim et al., 2018) | Aggregated | Asymmetric | Bell-shaped effect of total spending |
| (Olaoye et al., 2020) | Aggregated | Asymmetric | Bell-shaped effect of total spending |
| (Gupta et al., 2005) | Disaggregated | Symmetric | Negative effect of current spending  Positive effect of capital spending |
| (Butkiewicz and Yanikkaya, 2011) | Disaggregated | Symmetric | Negative effect of total spending  Negative effect of current spending  Positive effect of capital spending |
| (Bose et al., 2007) | Disaggregated | Symmetric | No effect of current spending  Positive effect of capital spending |
| (Devarajan et al., 1996) | Disaggregated | Symmetric | Positive effect of current spending  Negative effect of capital spending |
| (Ghosh & Gregoriou, 2008) | Disaggregated | Symmetric | Positive effect of current spending  Negative effect of capital spending |
| (Wahab, 2011) | Disaggregated | Asymmetric | Positive effect of total spending  No effect of current spending  Bell-shaped effect of capital spending |

## Appendix B: A summary of the consulted empirical literature on the determinants of bank performance

|  |  |  |  |
| --- | --- | --- | --- |
| **Study** | **Empirical methodology** | **The growth effect** | **The government intervention effect** |
| (Sufian & Noor Mohamad, 2012) | Fixed effect model | Positive | NA |
| (Nouaili et al., 2015) | Random effect model | Positive | NA |
| (Abdul Hadi et al., 2018) | Random effect model | NA | NA |
| (Alshammari, 2020) | Ordinary least squares | Positive (investment) | Negative effect |
| Generalized | Generalized least squares | Negative | NA |
| (Grigorian & Manole, 2006) | Data Envelopment Analysis | Positive | NA |
| (Daly & Frikha, 2017) | Data Envelopment Analysis | NA | Negative effect (government effectiveness) Positive effect (regulatory quality) |
| (Owusu-Antwi et al., 2014) | System GMM | NA | NA |
| (Jara‐Bertin et al., 2014) | System GMM | Positive | NA |
| (Djalilov & Piesse, 2016) | System GMM | No effect | Negative effect |
| difference | First difference GMM | NA | NA |
| (El Mahmah & Trabelsi, 2021) | System GMM | Positive | NA |

## Appendix C: Selected macroeconomic indicators according to the dependency on oil

Source: Elaborated by the authors based on data obtained from national and international sources

Note: All variables are calculated as ratios to GDP and are sample averages for the full study period

## Appendix D: Selected macroeconomic indicators according to the dependency on oil

Source: Elaborated by the authors based on the World Bank’s Global Financial Development database

Note: All variables are calculated as sample averages for the full study period

## Appendix E1: The correlation matrix for the full sample

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Correlation | ROA | ROE | LENDG | SIZE | LIQ | CAP | GDPG | INFR | IR | GTS | GCS | GKS | BRENT |
| ROA | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| ROE | 0.62 | 1 |  |  |  |  |  |  |  |  |  |  |  |
| LENDG | **0.12** | **0.12** | 1 |  |  |  |  |  |  |  |  |  |  |
| SIZE | -0.10 | 0.07 | -0.04 | 1 |  |  |  |  |  |  |  |  |  |
| LIQ | -0.13 | -0.04 | -0.01 | -0.02 | 1 |  |  |  |  |  |  |  |  |
| CAP | 0.27 | -0.22 | -0.05 | -0.44 | 0.01 | 1 |  |  |  |  |  |  |  |
| GDPG | 0.15 | 0.10 | 0.25 | -0.08 | 0.10 | -0.02 | 1 |  |  |  |  |  |  |
| INFR | 0.22 | 0.30 | 0.11 | -0.17 | -0.04 | 0.01 | 0.18 | 1 |  |  |  |  |  |
| IR | 0.05 | 0.22 | 0.02 | -0.39 | 0.07 | 0.04 | 0.05 | 0.43 | 1 |  |  |  |  |
| GTS | -0.03 | -0.07 | -0.13 | 0.35 | -0.04 | 0.01 | -0.24 | -0.09 | -0.07 | 1 |  |  |  |
| GCS | -0.13 | -0.07 | -0.14 | 0.33 | -0.04 | 0.01 | -0.26 | -0.06 | 0.05 | 0.80 | 1 |  |  |
| GKS | 0.15 | 0.00\* | 0.02 | 0.04 | 0.00\* | 0.01 | 0.02 | -0.04 | -0.18 | 0.35 | -0.29 | 1 |  |
| BRENT | 0.06 | 0.05 | 0.07 | 0.11 | -0.14 | -0.07 | -0.06 | 0.29 | -0.24 | 0.06 | 0.09 | -0.03 | 1 |

Note : \* Negligent coefficient value. Not equal to zero

## Appendix E2: The correlation matrix for oil exporters

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Correlation | ROA | ROE | LENDG | SIZE | LIQ | CAP | GDPG | INFR | IR | GTS | GCS | GKS | BRENT |
| ROA | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| ROE | 0.62 | 1 |  |  |  |  |  |  |  |  |  |  |  |
| LENDG | **0.24** | **0.24** | 1 |  |  |  |  |  |  |  |  |  |  |
| SIZE | -0.27 | 0.06 | -0.13 | 1 |  |  |  |  |  |  |  |  |  |
| LIQ | -0.08 | -0.04 | -0.08 | -0.04 | 1 |  |  |  |  |  |  |  |  |
| CAP | 0.28 | -0.28 | -0.06 | -0.47 | 0.06 | 1 |  |  |  |  |  |  |  |
| GDPG | 0.17 | 0.15 | 0.23 | -0.18 | 0.05 | -0.01 | 1 |  |  |  |  |  |  |
| INFR | 0.22 | 0.16 | 0.26 | -0.20 | -0.02 | 0.04 | 0.26 | 1 |  |  |  |  |  |
| IR | 0.17 | 0.11 | 0.17 | -0.28 | 0.14 | 0.00\* | 0.15 | 0.30 | 1 |  |  |  |  |
| GTS | -0.14 | -0.16 | -0.23 | 0.37 | -0.07 | 0.03 | -0.40 | -0.18 | -0.10 | 1 |  |  |  |
| GCS | -0.19 | -0.22 | -0.24 | 0.53 | -0.04 | -0.01 | -0.36 | -0.26 | -0.33 | 0.84 | 1 |  |  |
| GKS | 0.08 | 0.09 | -0.02 | -0.24 | -0.06 | 0.062 | -0.10 | 0.11 | 0.37 | 0.36 | -0.21 | 1 |  |
| BRENT | 0.04 | 0.00\* | 0.04 | 0.18 | -0.10 | -0.08 | -0.09 | 0.17 | -0.22 | 0.10 | 0.07 | 0.05 | 1 |

Note : \* Negligent coefficient value. Not equal to zero

## Appendix E3: The correlation matrix for oil importers

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Correlation | ROA | ROE | LENDG | SIZE | LIQ | CAP | GDPG | INFR | IR | GTS | GCS | GKS | BRENT |
| ROA | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| ROE | 0.67 | 1 |  |  |  |  |  |  |  |  |  |  |  |
| LENDG | **0.00\*** | **0.04** | 1 |  |  |  |  |  |  |  |  |  |  |
| SIZE | -0.05 | 0.30 | 0.01 | 1 |  |  |  |  |  |  |  |  |  |
| LIQ | -0.15 | -0.04 | 0.05 | 0.1 | 1 |  |  |  |  |  |  |  |  |
| CAP | 0.34 | -0.21 | -0.06 | -0.47 | -0.03 | 1 |  |  |  |  |  |  |  |
| GDPG | 0.10 | 0.10 | 0.26 | -0.01 | 0.19 | -0.02 | 1 |  |  |  |  |  |  |
| INFR | 0.32 | 0.6 | 0.06 | 0.00\* | -0.06 | -0.05 | 0.19 | 1 |  |  |  |  |  |
| IR | 0.18 | 0.27 | -0.00\* | -0.14 | 0.01 | 0.02 | 0.12 | 0.45 | 1 |  |  |  |  |
| GTS | 0.06 | 0.10 | 0.05 | -0.15 | 0.08 | 0.01 | 0.18 | 0.1 | 0.38 | 1 |  |  |  |
| GCS | -0.01 | 0.11 | 0.06 | -0.16 | -0.03 | 0.01 | 0.04 | 0.1 | 0.49 | 0.83 | 1 |  |  |
| GKS | 0.10 | -0.04 | -0.03 | 0.06 | 0.18 | -0.09 | 0.20 | -0.023 | -0.31 | -0.01 | -0.57 | 1 |  |
| BRENT | 0.09 | 0.08 | 0.10 | 0.05 | -0.19 | -0.05 | -0.01 | 0.27 | -0.35 | 0.02 | 0.12 | -0.18 | 1 |

1. Mohammed V University in Rabat, Morocco. Email: ahmed\_kchikeche@um5.ac.ma [↑](#footnote-ref-1)
2. Email: assil.elmahmah@yahoo.fr [↑](#footnote-ref-2)
3. Due to data constraints, the MENA (Middle East and North Africa) group, in this paper, includes only 12 countries, namely Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, and the United Arab Emirates. [↑](#footnote-ref-3)
4. Due to data constraints, the MENA (Middle East and North Africa) group, in this paper, includes only 12 countries, namely Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, and the United Arab Emirates. [↑](#footnote-ref-4)
5. The results of the ADF test are not reported but are available from the author upon request [↑](#footnote-ref-5)