Financial Development and Source of Growth: New Evidence

By Sami Ben Naceur, Robert Blotevogel, Mark Fischer, and Haiyan Shi

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Abstract

This paper examines how financial development affects the sources of growth—productivity and investment—using a sample of 145 countries for the period 1960-2011. We employ a range of econometric approaches, focusing on the CCA and MENA countries. The analysis looks beyond financial depth to capture the access, efficiency, stability, and openness dimensions of financial development. Yet even in this broad interpretation, financial development does not appear to be a magic bullet for economic growth. We cannot confirm earlier findings of an unambiguously positive relationship between financial development, investment, and productivity. The relationship is more complex. The influence of the different dimensions of financial development on the sources of growth varies across income levels and regions.

JEL Classification Numbers: G21; O16; O40

Keywords: Financial Development, Growth, Total Factor Productivity, Capital Accumulation

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I. INTRODUCTION AND MOTIVATION

We provide new evidence that financial development is not a magic bullet for economic development. Instead, the relationship between finance, productivity, and investment is complex, and there is no unambiguously positive relationship where “finance” boosts productivity and investment everywhere and at all times. This result seems intuitive once we acknowledge that financial development has many dimensions. Consistent with Čihák et al. (2012), we distinguish between four dimensions: (i) financial depth; (ii) financial efficiency; (iii) financial stability and openness; (iv) and access to financial services. Financial stability and stock market efficiency are the only dimensions that appear related to productivity and capital accumulation across time and countries. The effect of other dimensions depends on country characteristics, such as income level and region. For example, financial openness can boost productivity in low-income countries, but the positive effect vanishes in advanced countries. Effects can also vary over time, with financial depth, for example, contributing positively to growth in the pre-2005 period.

We also examine whether financial development exerts particular effects in the CCA and MENA region. But we find only mild evidence for differential regional effects. CCA and MENA oil importing countries may stand to gain extra benefits from increasing the efficiency of their banking sector efficiency, measured by interest rate spreads and overhead costs. This result likely reflects the generally weak level of competition in these markets (see Rocha, 2011, for example), translating into high prices for borrowers and high operational costs.

Our paper complements the existing literature in three respects. First, we extend the data to include the recent global financial crisis and a large number of countries. Specifically, the sample contains unbalanced panel data for 145 countries from 1960 to 2011. We focus in particular on the CCA and MENA countries to see if financial development in these countries differs from other regions. Second, we use 16 different indicators of the four main dimensions of financial development—depth, efficiency, stability/openness and access—to capture all aspects of the financial sector. Our results about financial development are therefore more general than earlier contributions that rely merely on some financial indicator measuring countries’ financial depth. Third, we focus on how financial development affects the sources of growth, productivity and capital accumulation, and not growth itself.

The relationship between financial development and economic growth on the theoretical level has always been controversial. Robinson (1952) and Lucas (1988) believe that financial intermediaries develop in response to demand from the real sector. On the other hand, Schumpeter (1912), Gurley and Shaw (1955), Goldsmith (1969), Greenwood and Jovanovich (1990), and others see finance as an important contributor to growth by improving resource allocation through the provision of ex-ante information on investment projects, promoting saving through risk diversification, and easing exchange through the reduction of transaction costs.
The early consensus of the empirical literature on the finance and growth nexus has, by and large, supported the positive relationship between development and growth using cross-country, time-series, and panel data, as well as industry- and firm-level studies (see Levine 2005 for a literature review). More recent evidence, however, points to a more complex relationship, which depends on the level of financial and economic development, as well as the quality of institutions. Applying a threshold regression model, Deidda and Fattouh (2002) argue there is no significant relationship between financial development and growth in low-income countries, whereas the relationship is positive and strongly significant in high-income countries. Rioja and Valev (2004a) add that this relationship varies according to the level of financial development, finding a positive and significant effect of financial development on growth only with medium and high levels of financial development. Rioja and Valev (2004b) find that finance affects growth through capital accumulation in low-income countries and through productivity growth in middle- and high-income countries.

Recent papers by Cechetti and Karroubi (2012) and Arcand and others (2012) have revisited the finance-growth nexus, showing that the level of financial development is good for economic growth only up to a point between 90 percent and 100 percent of GDP, turning negative for high-income countries. This result is consistent with “the vanishing effect of financial development” (Law and Singh, 2014). These studies suggest that the positive effect of finance on economic growth may be more nuanced, but they do not reject the prevailing consensus that finance is good for growth.

The global financial crisis has been a turning point. Using recent data up to 2010, Rousseau and Watchel (2011) and Beck and others (2012b) find a much lower effect of finance on growth than previous studies. In fact, Rousseau and Watchel (2011) find that the finance-growth relationship disappeared during the period between 1990 and 2004. They attribute the vanishing effect to financial crises related to rapid and excessive financial deepening. Arcand and others (2012) suggest that the vanishing relationship between finance and growth could be attributed to “the fact that many countries have reached the point at which financial deepening starts having a negative effect on growth.” Beck and others (2012a) explain that the vanishing effect could also be related to the increase in the share of household loans to the detriment of company loans: they find that enterprise credit is positively associated with economic growth, whereas household credit is not. By extending the sample to include the global financial crises, though on a relatively small sample of 46 countries, Bezemer and others (2014) find a high ratio of bank credit to GDP has a negative effect on growth. They suggest that this negative relationship between finance and growth is due to a shift in the share of credit away from nonfinancial institutions.
This paper is organized as follows: section 2 describes the dataset, the empirical model, and the econometric methodology; section 3 discusses the empirical findings; and section 4 concludes with some plausible factors that might explain the vanishing effect of the finance-growth nexus.

II. DATA

This study utilizes available data on financial development and the sources of growth for a large number of countries between 1960 and 2011. Our dataset is limited only by source data availability. Accordingly, the number of observations across both country and time dimensions varies in each model. In line with prior work, we employ multi-year, non-overlapping averages of the available data when possible, which isolates and removes business cycle effects, focusing on the relationship between each financial indicator and the sources of economic growth. This section describes the measures of sources of growth, financial development, and control variables.

A. Sources of growth

We add to the literature by decomposing economic growth using standard growth-accounting practices into total factor productivity (TFP) growth and capital stock accumulation, both of which are extracted from the Penn World Tables. This dataset offers a comprehensive global database with estimates for capital stock and TFP since 1950. The methodology used accounts for heterogeneity in labor income over time and constructs the capital stock based on decomposed assets (higher weights to fixed assets), allowing for accurate and comparable estimates of TFP for a wide array of countries over a long-time period.3

B. Financial development indicators

We examine a wide range of financial indicators to capture the four main dimensions of financial sector development—depth, efficiency, stability/openness, and access. We therefore extend the analytical approach of much of the existing literature that focuses on credit and monetary aggregates. Relying primarily on the Global Financial Development Database, which includes a wealth of financial sector indicators, we consider the effects of depth, efficiency, stability, openness, and access on the two dominant sources of growth (productivity and capital accumulation). Due to a potentially non-linear relationship between economic growth and

2 For variables with shorter available time series, we use either three year non-overlapping averages or annual observations.

3 http://www.rug.nl/research/ggdc/data/pwt/v80/capital_labor_and_tfp_in_pwt80.pdf for more details on the construction of the database.

(continued…)
control variables, we transform all variables into natural logarithm forms. Table 1 defines each included indicator by dimension, while Figures 1 and 2 show basic relationships between the financial variables and the sources of growth.

C. Control variables

To assess the strength of an independent relationship between growth and financial development, we introduce control variables as suggested by the finance-growth literature. The logarithm of initial real GDP per capita is introduced to control for economic convergence. Average years of schooling are included to control for the level of human development. We also use the trade-to-GDP ratio, the ratio of government consumption to GDP, and oil prices to control for openness and the role of the state in the economy.

D. Empirical Methodology

The basic specification used in this paper follows the general regression model used in other studies (Levine 2005) and can be summarized as:

\[ g_{it} = \alpha y_{i,t-1} + \beta' F_{i,t} + \gamma' X_{i,t} + \eta_i + \lambda_t + \epsilon_{i,t} \] (1)

where \( g_{it} \) represents growth in either total factor productivity or the capital stock. \( y_{i,t-1} \) represents initial real GDP per capita and serves as a measure of the tendency for growth rates to converge across countries over time. The nexus of interest is the impact of \( F_{i,t} \), the financial dimension, on each respective component of economic growth. \( X_{i,t} \) represents the vector of macroeconomic control variables and includes initial GDP per capita, the trade to GDP ratio, average years of schooling, and the government consumption to GDP. \( \eta_i \) is an unobserved country-specific effect, \( \lambda_t \) is a time-specific effect, \( \epsilon_{i,t} \) is the time-varying error term, and i and t represent country and time period, respectively.

Rewriting Eq.1 using the first difference as suggested by Arellano and Bond (1991), we obtain the following equation:

\[ \Delta g_{it} = \alpha \Delta y_{i,t-1} + \beta' \Delta F_{i,t} + \Delta \gamma' X_{i,t} + \Delta \lambda_t + \Delta \epsilon_{i,t} \] (2)

Although this differentiation eliminates the country specific effect, it introduces a new bias because of the correlation of the new error term with the lagged new dependent variable.

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4 All variables are transformed into logarithms except for the Chinn Ito index, which is used in its original form.
Arellano and Bond (1991) propose that the lagged levels of the dependent variables be used as instruments in the regression equation in differences.

To reintroduce the cross-section dimension of the regression and to address the issue of the persistence of the lagged dependent variables as weak instruments in the GMM difference regression, we use the system GMM proposed by Arellano and Bond (1997). The new estimates consist of the stacked regression in differences and levels where the lagged levels are used as instruments in the difference regression and the difference as instruments in the level regression.

The consistency of the system GMM is tested using the tests proposed by Arellano and Bond (1997). The first is a Hansen test of over-identifying restrictions, which tests the validity of the instruments. The second test examines whether the differenced error term is second-order serially correlated. Failure to reject both tests lends support to our estimator.

To ensure that the Arellano-Bond test detects the desirable serial correlation properties in the residuals of the differenced equation, the capital accumulation regressions contain two lags of the dependent variable. In the TFP regressions, one lag of the dependent variable is sufficient. We restrict the number of instruments to less than the number of included countries to guard against a proliferation of instruments, which can bias the GMM estimates.

We supplement the baseline specification above to investigate heterogeneity and non-linearity within the sample. Descriptions of the five included specifications follow, each of which was estimated for each financial indicator and both sources of growth:

$$g_{it} = \alpha y_{i,t-1} + \beta' F_{i,t} + \delta' F_{i,t} \times INT + \gamma' X_{i,t} + \eta_t + \lambda_t + \epsilon_{i,t} \quad (3)$$

To capture non-linearities, we interact the financial variables with one of five alternatives: (1) income level; (2) inflation regime; (3) quality of institutions; (4) level of financial development; and (5) regional dummies. The dummy variables used in specifications (i-iv) were created by splitting the sample equally into three ranked subgroups. Regional subgroups include the Caucasus and Central Asia (CCA), Middle East and North Africa Oil Exporters (MENAPOE), and the Middle East and North Africa Oil Importers (MENAPOI).

**III - EMPIRICAL RESULTS**

We find evidence to support a nuanced view of the importance of financial development and economic growth. Our results display no unambiguously positive relationship between “finance” and the sources of growth. In some cases, excessive financial development may have detrimental effects on growth. We do find evidence, however, that the dimensions of financial stability and
efficiency are linked to growth. Nonperforming loans and stock market turnover emerge as the only two indicators of financial development to exhibit a general relationship with productivity growth and capital accumulation which is both robust and economically significant.

A. Unconditional correlations

Data plots (Figures 1 and 2) display simple scatter plots between each of the financial indicators and either TFP growth or capital accumulation. The data included for each financial dimension—access, depth, efficiency, openness, and stability—are represented in the logarithmic forms as discussed in the data section above. As shown in the panels, there is little evidence of a strong overarching relationship between any of our financial indicators and the sources of growth. This is echoed in unconditional correlation coefficients, presented in Table 3. Even when the effect is significant, it is small and fails to consider the important contributions from other relevant macroeconomic, institutional, regional, or developmental characteristics.

B. Dynamic panel regressions

Baseline regressions

Results for the productivity and capital accumulation regressions are reported in Tables 4-19. For each dependent variable (productivity growth or capital accumulation), column 1 displays the parsimonious baseline specification, while columns 2-6 include additional considerations for income differentiation (column 2), inflation regimes (column 3), institutional quality (column 4), financial depth (column 5), and regional characteristics (column 6). Consistent with other studies in the literature, measures of initial income levels, openness, government size, and human capital are included as control variables (Beck and others 2000c).

High nonperforming loans, per our results (Table 11), result in an economically sizable negative effect on productivity growth and capital accumulation. This result speaks to the importance of a healthy banking system for channeling financing to growth-enhancing investment, even in countries with developed sources of non-bank financing. A one standard-deviation decline in NPLs, corresponding to a decline in the ratio of NPLs to gross loans from 13 to 6 percent, is associated with a 1.2 and 1.5 percentage point improvement in annual TFP and investment growth, respectively. Similarly, the stock market turnover ratio has a significantly positive effect on TFP and capital accumulation, in line with theoretical and empirical work that emphasize stock market liquidity improves the efficiency of the capital allocation process and therefore facilitates long-term growth (Holmstrom and Tirole 1993; Bencivenga, Smith, and Starr 1995).

Financial depth and financial openness are two dimensions that also have significant associations with either TFP or investment in the benchmark specification. However, the significance of the
estimated coefficient seems to be due to specific country-year observations (more below), therefore making it difficult to generalize for the entire sample.

For all other dimensions of financial development, we fail to detect a general relationship with the sources of growth. Previous studies already found that deeper financial markets—banking and non-banking—do not lead to better growth outcomes (Loayza and Ranciere 2006; Rioja and Valev 2004a, 2004b; and Cecchetti and Kharroubi 2012). We analyze all other dimensions of financial development to generalize this finding: financial development is no magic bullet for generating growth.

Instead, our results support the notion that the relationship between financial development and the sources of growth are marked by thresholds and vary across country characteristics. Specifically, the effect of finance depends on a country’s: (1) income level; (2) policy regime; (3) institutional quality; and (4) region. While disappointing for advocates of the unfettered good of developing financial markets, our results underscore the complexity of the channels that lead from finance to growth. The effectiveness of financial development to accelerate productivity and investment appears to depend on the specific economic circumstances of individual countries.

**Income Thresholds**

We next investigate whether the role of finance changes as a country becomes richer. Our estimations suggest that some of the positive effects of financial development, touted by the traditional literatures on financial development, accrue only in low-income countries (Law and Singh, 2014). Advanced economies, on the other hand, can suffer from “excessive” financial development.

To uncover the differential impact of financial development across stages of development, we create time-varying income categories. In each period, we take the bottom third of countries in the income distribution to be low-income, the countries in the middle as middle-income, and the top third as advanced. Dummy variables designate each country observation to one of the three income categories. The interaction terms between the income dummies and the financial indicator then measure the differential impact of finance at three stages of development.

Column 2 shows the results for specifications that contain these interaction terms. Low-income countries with more borrowing from foreign banks experience significantly faster TFP growth than those without integration into the international banking system. Deeper credit markets also support TFP, although the coefficient is only significant at the 10 percent level. In addition to deepening, the health of the banking sector is crucial. The detrimental effects on investment from poor asset quality of banks are more pronounced in low-income countries than elsewhere. Stock
market development, on the other hand, does not emerge as an important determinant of growth in low-income countries.

Taken together, the low-income interactions suggest that integrating the domestic banking sector into international financial markets can deliver significant benefits at the early stages of development, if countries safeguard financial stability. The regressions do not identify the channels responsible for generating the growth benefits, but previous studies (Giannetti and others 2002) suggest that financial integration facilitates access to foreign technology and markets.

Our results do not suggest that financial development has a significantly different impact in middle-income countries. The middle-income interaction term is never significant. This result stands in contrast to the inverted U-shape hypothesis of financial development (Rioja and Valev 2004b) positing that financial development matters most at intermediate stages of development.

Advanced economies, on the other hand, can experience the downside of financial development having gone too far. According to the estimates in columns 3 and 9, deeper credit markets and more foreign borrowing from international banks depresses TFP in advanced countries. Previous studies have documented that cross-border banking flows can be destabilizing if they lead to current account reversals and exchange rate volatility. These phenomena were on striking display during the global financial crisis in 2008/09. Countries with the largest and most open banking sectors also suffered the largest output losses in that crisis (UNCTAD 2010). In unreported results that exclude the most recent observation from the estimations, the negative sign on the advanced country interaction disappears and the coefficient becomes insignificant.

**Inflation and Institution Thresholds**

We do not find robust evidence that the effect of financial development depends on a country’s policy regime or institutional soundness. Analogous to our approach in identifying income thresholds, we create three inflation and institution categories, respectively, for every period: low, medium, and high. Country observations in the bottom third of the distribution of inflation outcomes and institutional quality in each period are classified as low, the middle third as middle, and the top third as high. We interact the resulting dummy variables with the relevant financial indicator to examine the importance of policy regime and institutional quality.

The interaction terms of financial development with inflation and institution thresholds (Tables 4-19) are not significant, with two exceptions. First, the premium on safeguarding financial stability is larger in environments characterized by low inflation and high institutional quality. This result strikes an intuitive chord. In countries with high inflation and bad institutions, the marginal impact on productivity and investment from financial instability will be less given that
the non-conducive environment already saps the sources of growth. Second, macroeconomic stability and resilient institutions can bring out the beneficial effects from financial development. Financial integration under strong institutions and larger stock markets in low-inflation environments lead to faster investment growth. This result is particularly important for advanced countries to guard against the unwanted consequences of “excessive” financial development.

**Regions**

Finally, column 6 shows specifications that focus on three country groups—the Caucasus and Central Asia (CCA), as well as the oil exporters and importers in the Middle East and North Africa—to examine if financial development in these countries leads to systematically different outcomes than in other countries. The estimates suggest that all three country groups in fact exhibit some mild differences from the rest of the world.

The CCA countries seem to see economically large benefits from increasing the efficiency in their banking sectors. Regulatory barriers have protected incumbent banks in these regions, reducing pressures to increase efficiency in banking operations and credit allocation decisions.

For MENA oil exporters, the only financial dimension that appear significant in the regressions is efficiency measured by bank overhead costs to total assets. Puzzlingly, however, the dummy carries the wrong sign, suggesting that greater financial efficiency is associated with detrimental effects on productivity. Equally counterintuitive, oil-importing countries in the MENA region seem to suffer weaker productivity in response to tighter net interest margins and greater financial stability, measured by bank Z score and loan to deposit ratios. To make sense of these puzzling results, we underscore the notion that financial development can help support growth only if institutional prerequisites are in place. MENA oil importers and exporters, however, with a financial system dominated by banks, have weak creditor rights and supervisory regimes (Rocha et al, 2011). The case of MENA countries illustrates that increasing financial activity in environments without adequate infrastructure is more likely to undermine growth prospects than boost them.

**IV - CONCLUSION**

We fail to establish positive relationships between most financial development indicators, investment, and TFP growth. Most of the various dimensions of financial development are effective in bolstering the sources of growth depending on a country’s characteristics. The one indicator that jumps out in importance for economic growth is financial stability, particularly in the banking sector. This result implies for countries seeking to accelerate their financial development, the first and foremost attention must be on reducing risks to financial stability. A country’s risk of suffering a financial crisis increases as a function of the size of their financial
sector (Schularick and Taylor 2012). Rousseau and Wachtel (2011) show that the rising incidence of financial crises since 1990 is the single most important factor for explaining the vanishing growth effects of financial development.

Stability considerations aside, too rapid financial development may also engender other types of economic costs. Financial development can give rise to externalities that undermine economic growth, especially regarding the allocation of scarce resources. Skilled workers in the sense that entrepreneurs working in finance are not available to engage in research and development with higher productivity effects (Cecchetti and Kharroubi 2012). Similarly, financial sectors focusing on enabling the transfer of assets (real estate mortgages) instead of the purchase of goods and services may contribute to destabilizing asset price bubbles. The positive impact on real economic activity of asset transfers may be small or altogether zero (Bezemer and others 2014).

Instead, we support the nonlinearities in the finance-sources of growth relationship identified by some earlier studies: that the effectiveness of financial development as a means of generating growth varies across income levels and regions. For low- and middle-income countries, deeper financial markets tend to reduce productivity growth and investment which may be linked to the uncompetitive markets in these countries. Productivity growth in low-income countries seems to benefit from more open financial markets. In middle-income countries, better financial access is associated with higher growth on investment.

The results also suggest that financial development in the CCA countries, as well as the MENA oil exporters and importers, has slightly different effects than in the rest of the world. Indicators of financial stability and efficiency carry an unexpected sign for these regions, highlighting the need for a sound institutional framework based on effective creditor rights and banking supervision. We see some evidence that CCA and MENA oil importing countries stand to gain from increasing efficiency and competition in their banking sectors.

Our paper reinforces what policymakers across the world already know: financial development needs to proceed according to country-specific circumstances, and safeguarding financial stability is a pre-requisite to avoid entering the territory where financial development starts undermining, instead of fostering, growth.
REFERENCES


<table>
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<th>Variable</th>
<th>Description</th>
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<td><strong>Dependent Variables:</strong></td>
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<tr>
<td>Total Factor Productivity Growth</td>
<td>Percent change in total factor productivity at constant national prices (2005=1). Source: Penn World Tables.</td>
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<tr>
<td><strong>Control Variables:</strong></td>
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<tr>
<td>Government Consumption</td>
<td>Government consumption in percent of GDP. Source: IMF World Economic Outlook.</td>
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<td>Trade to GDP</td>
<td>Imports (of goods and services) in percent of GDP plus exports (of goods and services) in percent of GDP. Source: IMF World Economic Outlook.</td>
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<td><strong>Financial Variables:</strong></td>
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<td>Private Credit</td>
<td>Private credit by deposit money banks and other financial institutions in percent of GDP. Source: Global Financial Development Database.</td>
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<td>Liquid Liabilities</td>
<td>Liquid liabilities (broad money) in percent of GDP. Source: Global Financial Development Database.</td>
</tr>
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<td>Stock Market Capitalization</td>
<td>Total value of all listed shares in a stock market in percent of GDP. Source: Global Financial Development Database.</td>
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<td><strong>Efficiency:</strong></td>
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<td>Interest Rate Spread</td>
<td>Difference between lending rate and deposit rate. Lending rate is the rate charged by banks on loans to the private sector and deposit interest rate is the rate offered by commercial banks on three-month deposits. Source: Global Financial Development Database.</td>
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<tr>
<td>Stock Market Turnover</td>
<td>Total value of shares traded during the period divided by the average market capitalization for the period. Source: Global Financial Development Database.</td>
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<td>Variable</td>
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<td>Net Interest Margin</td>
<td>Accounting value of bank's net interest revenue as a share of its average interest-bearing (total earning) assets. Source: Global Financial Development Database.</td>
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<td>Overhead Costs</td>
<td>Operating expense of a bank as a share of the value of all assets held. Source: Global Financial Development Database.</td>
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<td>Non-Performing Loans</td>
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<td>Stock price volatility is the average 360-day volatility of the national stock market index. Source: Global Financial Development Database.</td>
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<td>Bank Z-Score</td>
<td>Captures the probability of default of a country's commercial banking system by comparing the buffers of a country's commercial banking system (capitalization and returns) with the volatility of those returns. Source: Global Financial Development Database.</td>
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<td>Loan-to-Deposit Ratio</td>
<td>The financial resources provided to the private sector by domestic money banks as a share of total deposits. Source: Global Financial Development Database.</td>
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<td>Foreign Claims to GDP</td>
<td>The ratio of consolidated cross-border foreign claims to GDP of the banks that are reporting to BIS. Source: Global Financial Development Database.</td>
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<td>Database of de jure capital controls based on information supplied by national authorities to the IMF's AREAER. Source: Chinn, Menzie D. and Hiro Ito (2006), Updated August 2014.</td>
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<td>Bank Branches</td>
<td>Number of commercial bank branches per 100,000 adults. Source: Global Financial Development Database.</td>
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- Bank lending deposit spread
- Stock market turnover ratio
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Annual Observations
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Note: Summary statistics are of untransformed annual observations.
### Table 3: Unconditional Correlations

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Note: Financial variables are included in log forms.
* denotes p<0.05, ** denotes p<0.01, and *** denotes p<0.001
Table 4: Private Credit

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Observations:  
- Number of clusters: 199.000  
- Hansen test p-value: 0.181  
- A-B(AR(2)) test p-value: 0.379  
- Highest number of observations included: 10.000  
- Average number of observations included: 6.642

Note: * p<0.1  ** p<0.05  *** p<0.01  
T-statistics in parentheses based on cluster-robust standard errors.
### Table 5: Liquid Liabilities

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* t-statistics in parentheses based on cluster-robust standard errors
** p < 0.1  *** p < 0.05  **** p < 0.01
### Table 6: Stock Market Capitalization

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Observations: 589, 589, 574, 558, 585, 589, 617, 617, 603, 580, 614, 617
Number of clusters: 92,000, 92,000, 92,000, 67,000, 92,000, 92,000, 92,000, 100,000, 100,000, 100,000, 100,000, 100,000
Number of instruments: 44,000, 56,000, 56,000, 56,000, 56,000, 60,000, 60,000, 60,000, 59,000, 59,000, 59,000, 59,000, 59,000, 65,000
Hansen test p-value: 0.154, 0.291, 0.225, 0.269, 0.346, 0.569, 0.660, 0.651, 0.711, 0.580, 0.854, 0.419
A-B(AR(1)) test p-value: 0.063, 0.003, 0.003, 0.003, 0.002, 0.062, 0.002, 0.001, 0.002, 0.002, 0.002, 0.001
A-B(AR(2)) test p-value: 0.252, 0.410, 0.038, 0.217, 0.207, 0.213, 0.265, 0.271, 0.159, 0.174, 0.262, 0.349
Lowest number of observations included: 1,000, 1,000, 1,000, 1,000, 1,000, 1,000, 1,000, 1,000, 1,000, 1,000, 1,000, 1,000
Highest number of observations included: 8,000, 8,000, 8,000, 8,000, 8,000, 8,000, 8,000, 8,000, 8,000, 8,000, 8,000, 8,000
Average number of observations included: 6,402, 6,402, 6,402, 6,414, 6,359, 6,402, 6,170, 6,170, 6,010, 6,170, 6,140, 6,170

Note: t-statistics in parentheses based on cluster-robust standard errors.

p<0.1  ** p<0.05  *** p<0.01
Table 7: Interest Rate Spread

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<td>Initial GDP per Capita</td>
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<td>Trade to GDP</td>
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<td>Years of Schooling</td>
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<td>Interest Rate Spread*CCA Dummy</td>
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Observations: 773
Number of clusters: 102,000 102,000 102,000 102,000 102,000 102,000 120,000 120,000 120,000 120,000 120,000 120,000 120,000
Number of instruments: 53,000 67,000 67,000 67,000 67,000 72,000 56,000 70,000 70,000 68,000 70,000 70,000 71,000
Hansen test p-value: 0.034 0.342 0.175 0.416 0.852 0.063 0.360 0.168 0.153 0.408 0.089 0.089 0.089
A-B AR(1) test p-value: 0.018 0.018 0.150 0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018 0.018
A-B AR(2) test p-value: 0.028 0.499 0.349 0.179 0.179 0.179 0.179 0.179 0.179 0.179 0.179 0.179 0.179
Lowest number of observations included: 11,000 11,000 11,000 11,000 11,000 11,000 11,000 11,000 11,000 11,000 11,000 11,000 11,000
Average number of observations included: 7,578 7,578 7,578 7,578 7,578 7,578 7,578 7,578 7,578 7,578 7,578 7,578 7,578

* p<0.1 ** p<0.05 *** p<0.01

Dummy variables for time periods were also included in each model. Results for these are not reported here.

T-statistics in parentheses based on cluster-robust standard errors.
## Table 8: Stock Market Turnover

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<td>0.975**</td>
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<td>0.849*</td>
<td>0.900***</td>
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<td>0.779</td>
<td>1.165**</td>
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<td>0.676</td>
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<td><strong>Initial GDP per Capita</strong></td>
<td>(-2.809*)</td>
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<td>(-3.371*)</td>
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<td>(-2.431*)</td>
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<tr>
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<td>-3.094**</td>
<td>(-1.42)</td>
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<tr>
<td><strong>Trade to GDP</strong></td>
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<td>3.977*</td>
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<td>2.392</td>
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<td>2.046</td>
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<td></td>
<td>3.455**</td>
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<tr>
<td><strong>Government Consumption to GDP</strong></td>
<td>1.827</td>
<td>(-5.54)</td>
</tr>
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<td></td>
<td>2.455</td>
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<td>(-3.54)</td>
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<tr>
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<td><strong>Years of Schooling</strong></td>
<td>3.888</td>
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</tr>
<tr>
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<td>3.265</td>
<td>(-7.012***</td>
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<td>5.527</td>
<td>(-6.152*</td>
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<tr>
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<td>8.443*</td>
<td>(-8.492***</td>
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<tr>
<td></td>
<td>4.617</td>
<td>(-7.012***</td>
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<td></td>
<td>6.786</td>
<td>(-6.152*</td>
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<td>-0.035</td>
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<td>0.375***</td>
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<td>0.363***</td>
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<td>0.414***</td>
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<td>0.399***</td>
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<td><strong>Stock Market Turnover*High Inflation</strong></td>
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<td>Dummy</td>
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<td><strong>Stock Market Turnover*Middle Inflation</strong></td>
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<tr>
<td>Dummy</td>
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<tr>
<td><strong>Stock Market Turnover*Low Institutional</strong></td>
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<td>Quality Dummy</td>
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<td>Institutional Quality Dummy</td>
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<td>Depth</td>
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<tr>
<td><strong>Stock Market Turnover*Medium Financial</strong></td>
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<td>Depth</td>
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<td><strong>Stock Market Turnover*MENAPOX Dummy</strong></td>
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<td>(-1.17)</td>
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<th>566</th>
<th>552</th>
<th>577</th>
<th>581</th>
<th>608</th>
<th>608</th>
<th>594</th>
<th>573</th>
<th>605</th>
<th>608</th>
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<tr>
<td>Number of instruments</td>
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<td>Hansen test p-value</td>
<td>0.172</td>
<td>0.101</td>
<td>0.419</td>
<td>0.383</td>
<td>0.159</td>
<td>0.614</td>
<td>0.865</td>
<td>0.881</td>
<td>0.591</td>
<td>0.421</td>
<td>0.208</td>
<td>0.192</td>
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<tr>
<td>A-B (AR(1)) test p-value</td>
<td>0.003</td>
<td>0.005</td>
<td>0.004</td>
<td>0.002</td>
<td>0.005</td>
<td>0.002</td>
<td>0.002</td>
<td>0.001</td>
<td>0.001</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
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<tr>
<td>A-B (AR(2)) test p-value</td>
<td>0.353</td>
<td>0.418</td>
<td>0.052</td>
<td>0.347</td>
<td>0.223</td>
<td>0.296</td>
<td>0.112</td>
<td>0.198</td>
<td>0.377</td>
<td>0.201</td>
<td>0.219</td>
<td>0.270</td>
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<tr>
<td>Highest number of observations included</td>
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<td>8,000</td>
<td>8,000</td>
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<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
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</tr>
<tr>
<td>Average number of observations included</td>
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<td>6,419</td>
<td>6,541</td>
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<td>6,141</td>
<td>6,141</td>
<td>6,161</td>
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</tbody>
</table>

* Dummy variables for time periods were also included in each model. Results for these are not reported here.

t-values in parentheses based on cluster-robust standard errors
* p<0.1  ** p<0.05  *** p<0.01
<table>
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<tr>
<th></th>
<th>TFP</th>
<th>Capital</th>
</tr>
</thead>
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<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Net Interest Margin</td>
<td>-0.420</td>
<td>-1.012</td>
</tr>
<tr>
<td></td>
<td>(-0.24)</td>
<td>(-0.60)</td>
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<td>Initial GDP per Capita</td>
<td>-3.800***</td>
<td>-2.461**</td>
</tr>
<tr>
<td></td>
<td>(-5.79)</td>
<td>(-2.28)</td>
</tr>
<tr>
<td>Trade to GDP</td>
<td>5.766**</td>
<td>4.965**</td>
</tr>
<tr>
<td></td>
<td>(2.15)</td>
<td>(1.96)</td>
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<tr>
<td>Government Consumption to GDP</td>
<td>-1.277</td>
<td>-3.077</td>
</tr>
<tr>
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<td>(-0.47)</td>
<td>(-0.91)</td>
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<tr>
<td>Years of Schooling</td>
<td>4.328</td>
<td>2.320</td>
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<tr>
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<td>(1.51)</td>
<td>(0.86)</td>
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<td>Lag 1 of TFP Growth</td>
<td>0.077</td>
<td>0.145**</td>
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<td>(2.21)</td>
<td>(2.21)</td>
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<td>Lag 1 of Capital Stock Growth</td>
<td>0.076</td>
<td>0.072</td>
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<td>(-0.12)</td>
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<td>Net Interest Margin*Low Income Dummy</td>
<td>0.595</td>
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<tr>
<td>Net Interest Margin*Middle Income Dummy</td>
<td>-0.085</td>
<td>-0.952*</td>
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<tr>
<td>Net Interest Margin*High Inflation Dummy</td>
<td>0.025</td>
<td>0.444</td>
</tr>
<tr>
<td>Net Interest Margin*Middle Inflation Dummy</td>
<td>0.102</td>
<td>0.509**</td>
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<td>Net Interest Margin*Low Institutional Dummy</td>
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<td>-0.659</td>
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<td>Quality Dummy</td>
<td>0.012</td>
<td>0.015</td>
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<td>Net Interest Margin*Medium Institutional Dummy</td>
<td>0.371</td>
<td>-0.228</td>
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<tr>
<td>Net Interest Margin*Low Financial Depth</td>
<td>1.881**</td>
<td>0.264</td>
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<tr>
<td>Net Interest Margin*Medium Financial Depth</td>
<td>1.462***</td>
<td>0.641**</td>
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<td>Net Interest Margin*CCA Dummy</td>
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<td>-0.388</td>
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<td>Net Interest Margin*MENAPOI Dummy</td>
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<td>Net Interest Margin*MENAPOX Dummy</td>
<td>0.384</td>
<td>1.659</td>
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Observations: 423
Number of clusters: 108,000
Number of instruments: 90,000
Hansen test p-value: 0.292
A-B AR(L) test p-value: 0.020
A-B AR(L) test p-value: 0.059
Lowest number of observations included: 1,000
Highest number of observations included: 4,000
Average number of observations included: 3,917

* p<0.1  ** p<0.05  *** p<0.01
### Table 10: Bank Overhead Costs

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<th>TFP</th>
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<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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<td>Bank Overhead Costs</td>
<td>-0.793</td>
<td>-1.233</td>
<td>3.215</td>
<td>1.382</td>
<td>1.529</td>
<td>-3.813</td>
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<td>(0.12)</td>
<td>(0.62)</td>
<td>(0.48)</td>
<td>(0.42)</td>
<td>(0.88)</td>
<td>(0.95)</td>
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<td>Initial GDP per Capita</td>
<td>-1.471</td>
<td>-3.669</td>
<td>0.052</td>
<td>-3.799</td>
<td>-0.430</td>
<td>-11.358***</td>
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<td>(0.78)</td>
<td>(1.39)</td>
<td>(0.03)</td>
<td>(1.40)</td>
<td>(0.27)</td>
<td>(3.19)</td>
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<td>Trade to GDP</td>
<td>9.218*</td>
<td>9.027*</td>
<td>5.725**</td>
<td>7.606</td>
<td>3.194*</td>
<td>4.610</td>
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<td>(2.14)</td>
<td>(1.87)</td>
<td>(2.10)</td>
<td>(1.54)</td>
<td>(1.82)</td>
<td>(0.80)</td>
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<td>(2.07)</td>
<td>(1.52)</td>
<td>(0.57)</td>
<td>(2.36)</td>
<td>(0.67)</td>
<td>(2.63)</td>
</tr>
<tr>
<td>Years of Schooling</td>
<td>-0.122</td>
<td>2.244</td>
<td>2.761</td>
<td>3.656</td>
<td>4.072</td>
<td>15.119</td>
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<td>(0.41)</td>
<td>(0.75)</td>
<td>(0.36)</td>
<td>(1.47)</td>
<td>(1.65)</td>
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<tr>
<td>Lag 1 of TFP Growth</td>
<td>0.053</td>
<td>-0.007</td>
<td>0.216**</td>
<td>0.012</td>
<td>0.209**</td>
<td>0.039</td>
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<td>(0.38)</td>
<td>(0.04)</td>
<td>(2.13)</td>
<td>(0.07)</td>
<td>(2.50)</td>
<td>(0.25)</td>
</tr>
<tr>
<td>Lag 1 of Capital Stock Growth</td>
<td>0.765***</td>
<td>0.775***</td>
<td>0.755***</td>
<td>0.782***</td>
<td>0.719***</td>
<td>0.761***</td>
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<td>(0.40)</td>
<td>(0.44)</td>
<td>(0.78)</td>
<td>(0.49)</td>
<td>(0.49)</td>
<td>(0.72)</td>
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<td>Lag 2 of Capital Stock Growth</td>
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<td>-0.034</td>
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<td>Bank Overhead Costs*Low Income Dummy</td>
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<td>Bank Overhead Costs*Middle Income Dummy</td>
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<td>(1.96)</td>
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<td>Bank Overhead Costs*Low Institutional Quality Dummy</td>
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<td>Bank Overhead Costs*Medium Institutional Quality Dummy</td>
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<td>Bank Overhead Costs*Low Financial Depth</td>
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<td>Bank Overhead Costs*Medium Financial Depth</td>
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<td>Bank Overhead Costs*MENAPOX Dummy</td>
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<td>-0.528</td>
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<td>(4.12)</td>
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### Observations
1252 1252 1234 1123 1162 1252 1466 1466 1441 1102 1367 1466

### Number of clusters
108,000 108,000 108,000 108,000 108,000 108,000 128,000 128,000 128,000 128,000 128,000 128,000

### Number of instruments
154,000 68,000 68,000 68,000 68,000 75,000 57,000 71,000 71,000 71,000 71,000 78,000

### Hansen test p-value
0.118 0.045 0.117 0.097 0.044 0.034 0.315 0.253 0.303 0.073 0.041 0.194

### A-B AR(1) test p-value
0.003 0.053 0.053 0.052 0.000 0.009 0.031 0.013 0.011 0.029 0.032 0.010

### A-B AR(2) test p-value
0.824 0.598 0.585 0.804 0.302 0.900 0.982 0.905 0.663 0.599 0.886 0.950

### Lowest number of observations included
1,000 1,000 1,000 1,000 1,000 1,000 1,000 1,000 1,000 1,000 1,000 1,000

### Highest number of observations included
12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000 12,000

### Average number of observations included
11,553 11,593 11,416 11,608 10,860 11,393 11,453 11,453 11,218 11,625 10,764 11,413

* Dummy variables for time periods were also included in each model. Results for these are not reported here.
** t-statistics in parentheses based on cluster-robust standard errors
*** p<0.1  ** p<0.05  *** p<0.01
### Table 11: Non-Performing Loans

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<th>Capital</th>
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</thead>
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<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Non-Performing Loans</td>
<td>-1.619*</td>
<td>-1.376**</td>
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<tr>
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<td>(-1.96)</td>
<td>(-2.14)</td>
</tr>
<tr>
<td>Initial GDP per Capita</td>
<td>-2.753**</td>
<td>-2.719**</td>
</tr>
<tr>
<td></td>
<td>(-2.49)</td>
<td>(-2.58)</td>
</tr>
<tr>
<td>Trade to GDP</td>
<td>1.837</td>
<td>2.621</td>
</tr>
<tr>
<td></td>
<td>(0.57)</td>
<td>(0.89)</td>
</tr>
<tr>
<td>Government Consumption to GDP</td>
<td>0.946</td>
<td>0.880</td>
</tr>
<tr>
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<td>(0.52)</td>
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<tr>
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<td>(0.04)</td>
<td>(0.50)</td>
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<tr>
<td>Lag 1 of TFP Growth</td>
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<td>-0.069</td>
</tr>
<tr>
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<td>(-0.75)</td>
<td>(-0.94)</td>
</tr>
<tr>
<td>Lag 1 of Capital Stock Growth</td>
<td>-0.027</td>
<td>-0.031</td>
</tr>
<tr>
<td>Lag 2 of Capital Stock Growth</td>
<td>0.100</td>
<td>0.966</td>
</tr>
<tr>
<td>Non-Performing Loans*Low Income</td>
<td>0.100</td>
<td>0.966</td>
</tr>
<tr>
<td>Dummy</td>
<td>(0.09)</td>
<td>(2.49)</td>
</tr>
<tr>
<td>Non-Performing Loans*Middle Income</td>
<td>-0.546</td>
<td>-0.775*</td>
</tr>
<tr>
<td>Dummy</td>
<td>(-1.83)</td>
<td>(-2.47)</td>
</tr>
<tr>
<td>Non-Performing Loans*High Inflation</td>
<td>0.860</td>
<td>0.684</td>
</tr>
<tr>
<td>Dummy</td>
<td>(1.47)</td>
<td>(1.24)</td>
</tr>
<tr>
<td>Non-Performing Loans*Middle Inflation</td>
<td>-0.037</td>
<td>0.191</td>
</tr>
<tr>
<td>Dummy</td>
<td>(-0.07)</td>
<td>(0.38)</td>
</tr>
<tr>
<td>Non-Performing Loans*Low Institutional</td>
<td>-0.324</td>
<td>-0.669</td>
</tr>
<tr>
<td>Quality Dummy</td>
<td>(-0.50)</td>
<td>(-1.15)</td>
</tr>
<tr>
<td>Non-Performing Loans*Medium</td>
<td>-0.705</td>
<td>-0.497</td>
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<tr>
<td>Institutional Quality Dummy</td>
<td>(-1.86)</td>
<td>(-1.58)</td>
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<tr>
<td>Non-Performing Loans*Low Financial Depth</td>
<td>1.017*</td>
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<tr>
<td>Financial Depth</td>
<td>(1.90)</td>
<td>(-0.41)</td>
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<tr>
<td>Non-Performing Loans*Medium Financial Depth</td>
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<td>-0.026</td>
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<td>Financial Depth</td>
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<td>(-0.13)</td>
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<td>Non-Performing Loans*CCA Dummy</td>
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<td>1.292</td>
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<td>(0.13)</td>
<td>(1.76)</td>
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<td>(1.02)</td>
<td>(0.62)</td>
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<td>Non-Performing Loans*MENAPOX Dummy</td>
<td>1.486</td>
<td>3.054</td>
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<tr>
<td>(0.66)</td>
<td>(0.91)</td>
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</tr>
</tbody>
</table>

Observations: 397 397 389 378 382 297 410 410 403 391 395 410
Number of clusters: 90.000 90.000 90.000 84.000 90.000 90.000 90.000 95.000 95.000 95.000 95.000 95.000
Number of instruments: 44.000 52.000 52.000 52.000 52.000 52.000 52.000 52.000 52.000 52.000 52.000 52.000
Hansen test p-value: 0.121 0.252 0.082 0.203 0.255 0.386 0.355 0.593 0.401 0.196 0.583 0.622
A-B (AR(1) test p-value: 0.136 0.147 0.092 0.153 0.084 0.232 0.069 0.040 0.070 0.004 0.951 0.032
A-B (AR(2) test p-value: 0.133 0.174 0.105 0.100 0.082 0.073 0.675 0.553 0.229 0.313 0.536 0.698
Lowest number of observations included: 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000
Highest number of observations included: 5.000 5.000 5.000 5.000 5.000 5.000 5.000 5.000 5.000 5.000 5.000 5.000

* t-statistics in parentheses based on cluster-robust standard errors
** p < 0.1  *** p < 0.05  **** p < 0.01

Note: Dummies variables for time periods were also included in each model. Results for these are not reported here.
### Table 12: Stock Price Volatility

<table>
<thead>
<tr>
<th>Stock Price Volatility</th>
<th>TFP</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
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<tr>
<td>Stock Price Volatility</td>
<td>1.735</td>
<td>-0.442</td>
<td>2.391</td>
<td>0.088</td>
<td>-1.524</td>
<td>2.088</td>
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<tr>
<td></td>
<td>(0.604)</td>
<td>(-0.17)</td>
<td>(0.65)</td>
<td>(0.04)</td>
<td>(-0.47)</td>
<td>(0.104)</td>
</tr>
<tr>
<td>Initial GDP per Capita</td>
<td>-1.656</td>
<td>-2.366*</td>
<td>-2.831*</td>
<td>0.128</td>
<td>-2.040</td>
<td>-2.361</td>
</tr>
<tr>
<td></td>
<td>(-1.41)</td>
<td>(-2.24)</td>
<td>(-1.78)</td>
<td>(0.07)</td>
<td>(-1.06)</td>
<td>(-1.37)</td>
</tr>
<tr>
<td>Trade to GDP</td>
<td>1.339</td>
<td>0.040</td>
<td>1.478</td>
<td>2.987*</td>
<td>1.603</td>
<td>2.036</td>
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<tr>
<td></td>
<td>(0.73)</td>
<td>(0.04)</td>
<td>(0.74)</td>
<td>(1.67)</td>
<td>(0.79)</td>
<td>(0.85)</td>
</tr>
<tr>
<td>Government Consumption to GDP</td>
<td>2.944</td>
<td>2.170</td>
<td>1.876</td>
<td>1.880</td>
<td>0.198</td>
<td>2.378</td>
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<tr>
<td></td>
<td>(0.84)</td>
<td>(0.48)</td>
<td>(0.59)</td>
<td>(0.46)</td>
<td>(0.06)</td>
<td>(0.70)</td>
</tr>
<tr>
<td>Years of Schooling</td>
<td>5.131*</td>
<td>5.775</td>
<td>7.359*</td>
<td>-0.762</td>
<td>7.071</td>
<td>6.793*</td>
</tr>
<tr>
<td></td>
<td>(1.48)</td>
<td>(1.85)</td>
<td>(1.90)</td>
<td>(0.21)</td>
<td>(1.52)</td>
<td>(1.76)</td>
</tr>
<tr>
<td>Lag 1 of TFP Growth</td>
<td>0.039</td>
<td>0.034</td>
<td>0.069</td>
<td>0.069</td>
<td>0.028</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>(0.29)</td>
<td>(0.14)</td>
<td>(0.64)</td>
<td>(0.99)</td>
<td>(0.18)</td>
<td>(0.15)</td>
</tr>
</tbody>
</table>

| Lag 1 of Capital Stock Growth |  |  |  |  |  |  |
| Stock Price Volatility*Low Income Dummy | 1.313 |  |  |  |  |  |
|                        | (0.97) |  |  |  |  |  |
| Stock Price Volatility*Middle Income Dummy | 0.022 |  |  |  |  |  |
|                        | (0.03) |  |  |  |  |  |
| Stock Price Volatility*High Inflation Dummy | -0.008 |  |  |  |  |  |
|                        | (-0.01) |  |  |  |  |  |
| Stock Price Volatility*Middle Inflation Dummy | -0.936** |  |  |  |  |  |
|                        | (-2.12) |  |  |  |  |  |

| Stock Price Volatility*Low Institutional Quality Dummy | 2.294*** |  |  |  |  |  |
| Quality Dummy | 2.84 |  |  |  |  |  |
| Stock Price Volatility*Medium Institutional Quality Dummy | 0.789 |  |  |  |  |  |
| Quality Dummy | 1.20 |  |  |  |  |  |

| Stock Price Volatility*Low Financial Depth Lag 1 of Capital Stock Growth | 1.423 |  |  |  |  |  |
| Stock Price Volatility*Medium Financial Depth Depth | 0.672 |  |  |  |  |  |
| Stock Price Volatility*CC A Dummy | -2.311 |  |  |  |  |  |
| Stock Price Volatility*MENAPOI Dummy | -0.272 |  |  |  |  |  |
| Stock Price Volatility*MENAPOX Dummy | -0.356 |  |  |  |  |  |

| Observations | 415 | 415 | 422 | 420 | 421 | 435 |
| Number of clusters | 73,000 | 73,000 | 73,000 | 72,000 | 73,000 | 73,000 |
| Number of instruments | 40,000 | 48,000 | 48,000 | 41,000 | 48,000 | 51,000 |
| Hansen test p-value | 0.198 | 0.169 | 0.456 | 0.099 | 0.193 | 0.573 |
| A-B (AR(1)) test p-value | 0.075 | 0.011 | 0.082 | 0.039 | 0.054 | 0.079 |
| A-B (AR(2)) test p-value | 0.770 | 0.993 | 0.717 | 0.524 | 0.922 | 0.624 |
| Least number of observations included | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Highest number of observations included | 16,000 | 16,000 | 16,000 | 9,000 | 16,000 | 16,000 |
| Average number of observations included | 5.916 | 5.959 | 5.781 | 5.694 | 5.767 | 5.959 |

* p<0.1  ** p<0.05  *** p<0.01

Notes: t-statistics in parentheses based on cluster-robust standard errors

Highest number of observations included

Lowest number of observations included

A-B AR(2) test p-value

A-B AR(1) test p-value

Hansen test p-value

Number of clusters

Number of instruments

Dummy variables for time periods were also included in each model. Results for these are not reported here.
Table 13: Bank Z-Score

<table>
<thead>
<tr>
<th></th>
<th>TFP</th>
<th>Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Bank Z-Score</td>
<td>1.176</td>
<td>0.489</td>
</tr>
<tr>
<td></td>
<td>(1.08)</td>
<td>(0.43)</td>
</tr>
<tr>
<td>Initial GDP per Capita</td>
<td>-3.862***</td>
<td>-2.757**</td>
</tr>
<tr>
<td></td>
<td>(-2.94)</td>
<td>(-1.43)</td>
</tr>
<tr>
<td>Trade to GDP</td>
<td>7.460***</td>
<td>7.728***</td>
</tr>
<tr>
<td></td>
<td>(3.01)</td>
<td>(2.87)</td>
</tr>
<tr>
<td>Government Consumption to GDP</td>
<td>-1.213</td>
<td>-1.957**</td>
</tr>
<tr>
<td></td>
<td>(-0.46)</td>
<td>(-0.70)</td>
</tr>
<tr>
<td>Years of Schooling</td>
<td>2.235</td>
<td>1.195</td>
</tr>
<tr>
<td></td>
<td>(0.40)</td>
<td>(0.56)</td>
</tr>
<tr>
<td>Lag 1 of TFP Growth</td>
<td>0.117**</td>
<td>0.164**</td>
</tr>
<tr>
<td></td>
<td>(0.21)</td>
<td>(0.24)</td>
</tr>
<tr>
<td>Lag 1 of Capital Stock Growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lag 2 of Capital Stock Growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Z-Score*Low Income Dummy</td>
<td>0.769</td>
<td>-0.057</td>
</tr>
<tr>
<td></td>
<td>(0.80)</td>
<td>(-0.09)</td>
</tr>
<tr>
<td>*Middle Income Dummy</td>
<td>-0.219</td>
<td>0.020</td>
</tr>
<tr>
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<td>(-4.27)</td>
<td>(0.18)</td>
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<td>Bank Z-Score</td>
<td>0.877</td>
<td>0.163</td>
</tr>
<tr>
<td></td>
<td>(1.54)</td>
<td>(0.48)</td>
</tr>
<tr>
<td>*Low Financial Depth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Z-Score</td>
<td>-5.201</td>
<td>-1.071</td>
</tr>
<tr>
<td></td>
<td>(-1.49)</td>
<td>(-0.33)</td>
</tr>
<tr>
<td>*CCA Dummy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Z-Score</td>
<td>-0.728</td>
<td>0.666</td>
</tr>
<tr>
<td></td>
<td>(-0.94)</td>
<td>(1.55)</td>
</tr>
<tr>
<td>*MENAPOI Dummy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Observations 419 419 410 374 399 419 489 489 477 433 468 489
Number of clusters 107 100 107 100 107 100 106 100 107 125 125 125
Number of instruments 90 000 96 000 96 000 96 000 46 000 91 000 97 000 97 000 97 000 97 000 49 000
Hansen test p-value 0.365 0.254 0.425 0.576 0.301 0.834 0.167 0.331 0.229 0.250 0.582 0.172
A-B AR(1) test p-value 0.004 0.006 0.006 0.006 0.006 0.033 0.077 0.079 0.088 0.144 0.082 0.073
A-B AR(2) test p-value 0.079 0.111 0.093 0.168 0.077 0.106 0.484 0.524 0.614 0.101 1.000 0.600
Lowest number of observations included 1.00 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000
Highest number of observations included 4.000 4.0000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000 4.000

Dummy variables for time periods were also included in each model. Results for these are not reported here.

*p<0.1  **p<0.05  ***p<0.01

T-statistics in parentheses based on cluster-robust standard errors.
### Table 14: Loan-to-Deposit Ratio

<table>
<thead>
<tr>
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<th>TFP</th>
<th>Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Loan-to-Deposit Ratio</td>
<td>-0.544</td>
<td>-1.167*</td>
</tr>
<tr>
<td></td>
<td>(-0.76)</td>
<td>(-1.73)</td>
</tr>
<tr>
<td>Initial GDP per Capita</td>
<td>-1.820**</td>
<td>-0.392</td>
</tr>
<tr>
<td></td>
<td>(-3.37)</td>
<td>(-0.52)</td>
</tr>
<tr>
<td>Trade to GDP</td>
<td>0.103</td>
<td>1.162</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(1.44)</td>
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<tr>
<td>Government Consumption to GDP</td>
<td>0.398</td>
<td>-0.073</td>
</tr>
<tr>
<td></td>
<td>(0.82)</td>
<td>(0.15)</td>
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<tr>
<td>Years of Schooling</td>
<td>3.825**</td>
<td>3.244***</td>
</tr>
<tr>
<td></td>
<td>(2.41)</td>
<td>(2.25)</td>
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<tr>
<td>Lag 1 of TFP Growth</td>
<td>0.030</td>
<td>0.049</td>
</tr>
<tr>
<td></td>
<td>(0.56)</td>
<td>(0.75)</td>
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<tr>
<td>Lag 2 of Capital Stock Growth</td>
<td>-0.067</td>
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<td>(-1.15)</td>
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<td>Loan-to-Deposit Ratio*Low Income Dummy</td>
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<td>Loan-to-Deposit Ratio*Middle Income Dummy</td>
<td>0.142</td>
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<td>(0.82)</td>
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<td>Loan-to-Deposit Ratio*High Inflation Dummy</td>
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<td>-0.093</td>
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<td></td>
<td>(-0.41)</td>
</tr>
<tr>
<td>Loan-to-Deposit Ratio*Middle Inflation Dummy</td>
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<td>-0.070</td>
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<td>(-0.39)</td>
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<td>Loan-to-Deposit Ratio*Low Institutional Quality Dummy</td>
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<td>(-0.74)</td>
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<tr>
<td>Loan-to-Deposit Ratio*Medium Quality Dummy</td>
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<td>-0.027</td>
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<td></td>
<td>(-1.01)</td>
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<tr>
<td>Loan-to-Deposit Ratio*Low Financial Depth</td>
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<td>(0.49)</td>
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<tr>
<td>Loan-to-Deposit Ratio*Medium Financial Depth</td>
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<td>0.014</td>
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<td>Loan-to-Deposit Ratio*CC Dummy</td>
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<td>-0.112</td>
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<td>(-0.10)</td>
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<td>Loan-to-Deposit Ratio*MENAPOX Dummy</td>
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<td>-0.876</td>
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<tr>
<td></td>
<td></td>
<td>1.124**</td>
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<td>Loan-to-Deposit Ratio*MENAPOX Dummy</td>
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<td>-0.340</td>
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<td>(-0.73)</td>
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<td>Observations</td>
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<td>755</td>
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<td>Number of clusters</td>
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<td>108,000</td>
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<tr>
<td>Number of instruments</td>
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<td>93,000</td>
</tr>
<tr>
<td>Hansen test p-value</td>
<td>0.062</td>
<td>0.204</td>
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<tr>
<td>A-B (AR1) test p-value</td>
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<td>0.000</td>
</tr>
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<td>Lowest number of observations included</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Highest number of observations included</td>
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<td>10,000</td>
</tr>
<tr>
<td>Average number of observations included</td>
<td>6,991</td>
<td>6,991</td>
</tr>
</tbody>
</table>

Dummy variables for time periods were also included in each model. Results for these are not reported here.

t-statistics in parentheses based on cluster-robust standard errors

*p < 0.1 ** p < 0.05 *** p < 0.01
## Table 15: Capital Adequacy Ratio

<table>
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<tr>
<th></th>
<th>TFP</th>
<th>Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital Adequacy Ratio</strong></td>
<td><strong>6.712</strong>**</td>
<td><strong>0.138</strong></td>
</tr>
<tr>
<td></td>
<td><strong>2.496</strong></td>
<td><strong>0.800</strong></td>
</tr>
<tr>
<td></td>
<td><strong>7.199</strong>**</td>
<td><strong>-0.248</strong></td>
</tr>
<tr>
<td></td>
<td><strong>5.295</strong>*</td>
<td><strong>0.466</strong></td>
</tr>
<tr>
<td></td>
<td><strong>2.074</strong></td>
<td><strong>-0.363</strong></td>
</tr>
<tr>
<td></td>
<td><strong>3.879</strong></td>
<td><strong>-0.066</strong></td>
</tr>
<tr>
<td><strong>Initial GDP per Capita</strong></td>
<td><strong>(2.20)</strong>(2)</td>
<td><strong>(0.019)</strong>(5)</td>
</tr>
<tr>
<td></td>
<td><strong>(0.55)</strong></td>
<td><strong>(0.83)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>(2.53)</strong></td>
<td><strong>(-0.15)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>(1.78)</strong></td>
<td><strong>(0.49)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>(0.43)</strong></td>
<td><strong>(-0.24)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>(1.42)</strong></td>
<td><strong>(-0.06)</strong></td>
</tr>
<tr>
<td><strong>Trade to GDP</strong></td>
<td><strong>(-0.07)</strong></td>
<td><strong>(0.98)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>(-0.77)</strong></td>
<td><strong>(0.569)</strong></td>
</tr>
<tr>
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<td><strong>(-0.19)</strong></td>
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**Observations:**
- **Number of clusters:**
- **Number of instruments:**
- **Hansen test p-value:**
- **A-B (AR(1)) test p-value:**
- **A-B (AR(2)) test p-value:**
- **Lowest number of observations included:**
- **Highest number of observations included:**
- **Average number of observations included:**

**Notes:**
- Dummy variables for time periods were also included in each model.
- Results are reported here.
- *p<0.1  **p<0.05  ***p<0.01

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Table 16: Foreign Claims to GDP

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Observations: 589
Number of clusters: 107,000
Number of instruments: 66,000
Hansen test p-value: 0.135
A-B (AR(1)) test p-value: 0.879
A-B (AR(2)) test p-value: 0.879
Lowest number of observations included: 2,000
Highest number of observations included: 7,000
Average number of observations included: 5,505

I-statistics in parentheses based on cluster-robust standard errors
* p<0.1 ** p<0.05 *** p<0.01
Table 17: Chinn Ito Index

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<td><strong>Medium Financial Depth</strong></td>
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<td><strong>Chinn Ito Index</strong></td>
<td>-5.769</td>
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<td><strong>MENAPOX Dummy</strong></td>
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<td>(-1.17)</td>
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**Observations:**
- Number of clusters: 743
- Number of observations: 887
- Hansen test p-value: 0.033
- A-B test p-value: 0.092
- Number of instruments: 107,000
- Highest number of observations included: 107,000
- Average number of observations included: 6.944

**Notes:**
- Dummy variables for time periods were also included in each model.
- *p<0.1  **p<0.05  ***p<0.01
- t-statistics in parentheses based on cluster-robust standard errors
Table 18: Assets and Liabilities to GDP

<table>
<thead>
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<th></th>
<th>TFP</th>
<th>Capital</th>
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<tr>
<td></td>
<td>(1) (2) (3) (4) (5) (6)</td>
<td>(1) (2) (3) (4) (5) (6)</td>
</tr>
<tr>
<td>Assets and Liabilities to GDP</td>
<td>-0.179 (-0.19) -0.404 (0.32) 0.164 (0.76) 0.469 (-0.47) -0.215 (0.34) 0.249</td>
<td>-0.911 (-2.00) -0.826 (-1.59) -0.856 (-1.59) -1.414 (-2.22) -1.009 (-2.22) -0.879 (-2.00)</td>
</tr>
<tr>
<td>Initial GDP per Capita</td>
<td>-1.619 (-2.53) -0.463 (-2.45) -2.006 (-1.39) -2.919 (-2.22) -1.116 (-2.22) -2.262 (-2.22)</td>
<td>-0.198 (-0.27) -0.391 (-0.40) -0.354 (-0.40) -0.339 (-0.40) -0.169 (-0.40) -0.011 (-0.40)</td>
</tr>
<tr>
<td>Trade to GDP</td>
<td>0.797 (0.94) 1.486 (1.72) 0.113 (-2.03) -0.353 (-2.28) 0.943 (1.26) 0.415 (0.38)</td>
<td>3.002 (0.46) 3.281 (0.46) 3.024 (1.33) 3.144 (1.33) 3.111 (1.33) 2.827 (1.33)</td>
</tr>
<tr>
<td>Government Consumption to GDP</td>
<td>0.727 (0.91) 0.214 (0.28) 0.270 (0.30) 1.132 (0.83) 0.805 (0.70) -0.295 (-0.30)</td>
<td>-2.156 (-2.97) -1.966 (-2.87) -1.951 (-2.84) -2.408 (-2.84) -1.845 (-2.84) -2.077 (-2.84)</td>
</tr>
<tr>
<td>Years of Schooling</td>
<td>3.597 (2.24) 3.068 (2.25) 4.840 (2.58) 5.859 (0.94) 3.571 (0.39) 5.019 (0.24)</td>
<td>-0.097 (-0.05) -0.598 (-0.40) 0.052 (0.38) -0.703 (-0.38) -0.960 (-0.38) -0.847 (-0.38)</td>
</tr>
<tr>
<td>Lag 1 of TFP Growth</td>
<td>0.022 (0.44) 0.073 (1.10) 0.018 (0.35) 0.021 (0.12) 0.057 (0.12) -0.002 (0.81)</td>
<td>0.604 (8.13) 0.597 (8.13) 0.610 (9.02) 0.661 (9.73) 0.598 (8.53) 0.534 (7.50)</td>
</tr>
<tr>
<td>Lag 1 of Capital Stock Growth</td>
<td>-0.063 (-1.05) -0.051 (-1.09) -0.058 (-1.09) -0.105 (-1.83) -0.109 (-1.83) -0.079 (-1.83)</td>
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</tr>
<tr>
<td>Lag 2 of Capital Stock Growth</td>
<td>-0.063 (-1.05) -0.051 (-1.09) -0.058 (-1.09) -0.105 (-1.83) -0.109 (-1.83) -0.079 (-1.83)</td>
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</tr>
</tbody>
</table>

Assets and Liabilities to GDP*Low Income Dummy |
Assets and Liabilities to GDP*Middle Income Dummy |
Assets and Liabilities to GDP*High Inflation Dummy |
Inflation Dummy |
Assets and Liabilities to GDP*Low Dummy | -0.170 (-0.60) |
Institutional Quality Dummy |
Assets and Liabilities to GDP*Medium Dummy | -0.034 (-0.14) |
Institutional Quality Dummy |
Assets and Liabilities to GDP*Low Financial Depth | 0.071 (0.27) |
Assets and Liabilities to GDP*Middle Financial Depth | 0.043 (0.24) |
Assets and Liabilities to GDP*CCA Dummy | -0.222 (-0.53) |
Assets and Liabilities to GDP*MENAPOI Dummy | -1.472 (0.81) |
Assets and Liabilities to GDP*MENAPOX Dummy | -0.100 (-0.27) |

Observations: 751 751 732 584 692 751 900 900 878 668 816 900
Number of clusters: 108,000 108,000 108,000 97,000 108,000 108,000 128,000 128,000 128,000 128,000 128,000 128,000
Average number of observations included: 6,954 6,954 6,718 6,021 6,407 6,954 7,031 7,031 6,859 5,912 6,775 7,031

* p<0.1 ** p<0.05 *** p<0.01
### Table 19: Bank Branches

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<tr>
<td>Bank Branches</td>
<td>-0.781</td>
<td>0.091</td>
<td>-1.615</td>
<td>0.237</td>
<td>1.582</td>
<td>1.083</td>
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<tr>
<td>Initial GDP per Capita</td>
<td>-0.440</td>
<td>-1.079</td>
<td>-0.740</td>
<td>-2.561</td>
<td>0.169</td>
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<tr>
<td>Trade to GDP</td>
<td>5.767</td>
<td>2.353</td>
<td>7.263**</td>
<td>4.285</td>
<td>0.983</td>
<td>6.465</td>
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<tr>
<td>Government Consumption to GDP</td>
<td>0.711</td>
<td>-1.749</td>
<td>-1.082</td>
<td>-2.950</td>
<td>-3.096</td>
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<tr>
<td>Years of Schooling</td>
<td>-4.204</td>
<td>2.144</td>
<td>6.743</td>
<td>2.116</td>
<td>1.454</td>
<td>-2.622</td>
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<tr>
<td>Lag 1 of TFP Growth</td>
<td>0.245***</td>
<td>0.213***</td>
<td>0.230**</td>
<td>0.243**</td>
<td>0.186***</td>
<td>0.193***</td>
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<td>Bank Branches*Middle Income Dummy</td>
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<td>Bank Branches*Middle Inflation Dummy</td>
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<td>Dummy</td>
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<tr>
<td>Bank Branches*Medium Institutional Quality</td>
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<td>Dummy</td>
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<td>Bank Branches*Low Financial Depth</td>
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<td>Bank Branches*Medium Financial Depth</td>
<td>0.821**</td>
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<td>Bank Branches*MENAPOI Dummy</td>
<td>-2.173</td>
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Observations: 689 689 685 613 637 689 796 796 792 694 741 796

- Number of clusters: 100,000 100,000 100,000 89,000 99,000 100,000 117,000 117,000 117,000 102,000 116,000 117,000
- Number of instruments: 52,000 66,000 65,000 66,000 63,000 71,000 55,000 69,000 66,000 69,000 68,000 74,000
- Hansen test p-value: 0.390 0.290 0.515 0.454 0.729 0.722 0.429 0.290 0.067 0.627 0.714 0.256
- A-B (AR(1)) test p-value: 0.000 0.000 0.000 0.000 0.000 0.000 0.946 0.044 0.001 0.131 0.009 0.047
- A-B (AR(2)) test p-value: 0.506 0.600 0.698 0.451 0.646 0.720 0.949 0.922 0.148 0.884 0.067 0.828
- Highest number of observations included: 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000 10,000
- Average number of observations included: 6,890 6,890 6,830 6,888 6,634 6,890 6,801 6,801 6,769 6,804 6,405 6,803

* p<0.1  ** p<0.05  *** p<0.01