“Relationship between banking sector development and inclusive growth”

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RELATIONSHIP BETWEEN BANKING SECTOR DEVELOPMENT AND INCLUSIVE GROWTH

Abstract

According to an inclusive growth framework, the top objectives of the economic policy shift from increasing incomes themselves to well-being. While banking sector development has conventionally been considered a growth factor, there is no clear understanding of its impact on inclusive growth. This article explores how the banking sector's qualitative development, measured in dimensions of the services availability, lending supply, stability, and reliability of banking activity, relates to inclusive growth. To define the relations between banking system development and inclusive growth, the panel regression was employed for a sample of 46 economies selected based on the prescribed principles of sources reputability, methodology consistency, limits in data blanks, and differentiated into groups according to the World Bank's classification.

The regressions' assessment and involved tests show evidence of the quality of constructed models and present the following results. The banking availability, approximated with the number of automated teller machines, fosters inclusive growth regarding all groups of countries. In contrast, the increase in the number of commercial banking branches has inverse relations between high-income and upper-middle-income countries, and direct for lower-middle-income countries. The bank credit expansion negatively influences the inclusive growth for high income and lower-middle-income countries. The banking sector stability approximated with bank capital to assets ratio matters in terms of inclusive growth for high-income countries only, while this indicator for upper middle and lower middle economies is statistically insignificant.

Keywords inclusive growth, welfare, banking, impact, panel data

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INTRODUCTION

Many countries are revising their growth strategies because the need for the implementation of inclusive growth has arisen. Although the inclusive growth issues have long been the focus of policymaking, many aspects remain unresolved, and the role of the banking sector in inclusive growth fostering stays among the insufficiently considered. Although many studies confirm the importance of the banking sector for economic growth, inclusive growth perspective forces shifting economic policy to involve inequality in the meaning of inequalities of outcomes and inequalities of opportunities. Today, "in the OECD countries the richest 10 percent of the population earn 9.5 times the income of the poorest 10 percent. In the 1980s this ratio stood at 7:1 and has been rising continuously ever since" (Cingano, 2014, p. 6). Such trends show that relative (or even absolute) income inequality is expanding, and it is growing faster than private capital on a global scale, which is assumed as one of the economic instability reasons.

Contemporary studies do not offer a common answer on how banking system qualitative development fosters both economic development and social well-being. In this context, the banking sector's conventional issues in ensuring growth are replaced by whether the banking

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sector promotes inclusive growth. This research explores the impact of the banking sector development on inclusive growth and particularly on economic growth, taking into account the income distribution in groups of countries differentiated according to the levels of per capita income. This issue is complicated enough. It roots from a bunch of theoretical and empirical problems of relations between the financial sector and growth. It correlates with fostering a more efficient financial system and tackling growing inequality. Recent studies have examined a relationship between banking sector development and growth, but fewer explorations have focused on the relationship between banking and inclusive growth. This study is heading to expand the issues of financial inclusion, avoiding the concentration on a specific country, but revealing common and distinctive relations between banking sector development and inclusive growth.

1. LITERATURE REVIEW

The issue of inclusive growth is relatively new in the scholarly literature and policymaking. It has been actively discussed and researched over the last decade. Measures, determinants of inclusive growth, and country-specific constraints are explored by Rodríguez-Pose and Tselios (2015), Anand, Mishra, and Peiris (2013), Boarini, Murtin, and Schreyer (2015), Benner and Pastor (2017), Pacetti-Garr (2016), OECD (2014a, 2014b, 2016, 2018), WEF (2017, 2018). The effects of the 2008–2009 financial crisis highlighted further problems caused by inequality, and their impact on the economy's capacity to overcome the crisis and citizens achieve the appropriate level of well-being. Standard indicators based on increasing incomes and consumption are not representative to reflect well-being growth in its broadest sense. So a successful growth strategy considers not only an increase in GDP per capita but also inequality decline– inequality of income and opportunity (health and educational status, employment conditions, etc.). Thus, inclusive growth is a multidimensional strategy that includes non-income dimensions of policies.

According to OECD (2014), a policy framework for inclusive growth contains well-being, income distribution, and pro-growth structural reforms, focusing on sectors where pro-growth and pro-inclusiveness policies can reinforce each other. The Asian Development Bank (ADB, 2018) has defined inclusive growth as a concept that goes beyond growth in its traditional sense and is based on a broad framework. Inclusive growth creates new economic opportunities and provides equal access to opportunities for all segments of society. In this context, the following research question arises on how the banking sector should be implemented into the new architecture of a successful growth strategy?

Most of the literature explains the impact of the banking sector on inclusive growth based on the following relationships: 1) the banking sector – growth; 2) banking sector, financial development – income inequality.

The analysis of the theoretical and empirical papers on researches, conducted before 2008 (Blum, Federmair, Fink, & Haiss, 2002; Levine, 2005; Wachtel, 2001; Eschenbach, 2004) on the issue of the banking sector impact on the growth confirms that the development of the banking sector contributes to economic growth. Recent studies also show empirical evidence of the positive impact of the banking sector on growth, addressing some of the "narrow" issues of the relationship between the banking sector and growth: development of transition economies or developing countries, changes in the structure of the economy, development of Islamic banking, etc.

Petkovski and Kjosevski (2014) explored the mechanism of how the banking sector (bank credit to the private sector, interest rates, and ratio of quasi money) influences economic growth for 16 transition economies from Central and South-Eastern Europe. The results show that the only ratio of quasi money is positively related to economic growth, but credit to the private sector and interest margin are negatively related to economic growth. Tonguraia and Vithessonthi (2018) investigate the impact of banking sector development on economic structure and growth changes and test whether economic structure and growth foster banking sector development. The results

show that banking sector development has different effects on the industrial and agricultural sectors' development. Ananzeh and Othman (2019) analyze the impact of the financial market development and banking system development on the economic growth in Jordan. They found that the development of the banking system affects economic growth almost equally to the impact of financial market development.

The 2008–2009 financial crisis intensified the studies on the relationship between growth and the banking sector, especially for different banking systems.

Islamic finance has actively been developing as a separate research area because the Islamic banking system demonstrated stability during financial crises. Furqani and Mulyany (2009) investigated the relations between the Islamic banking system and economic development in Malaysia, focusing on the mutual relationship between Islamic banking and fixed investment in the long run. Abdoh and Omar (2012) examine the impact of Islamic banking on growth in Indonesia. The results show a significant relationship between the development of Islamic finance and growth in the short and long run. Tabash and Dhankar (2014) and Tabash and Anagreh (2017) examined similar questions for the UAE. The obtained results correlate with similar studies in other countries and show a two-way association between Islamic banks' investments and FDI as FDI supports Islamic banking and Islamic banking brings FDI. Tabash and Anagreh (2017) also empirically confirmed that in the long run, the financing of Islamic banks is significantly and directly correlated with the growth in Qatar.

The second area of analysis covers the financial development impact, including the development of the banking sector, on income inequality and poverty. This area of research revealed quite contradictory conclusions. As one block of research shows that financial development reduces income inequality or poverty, the second block confirms the opposite conclusions. Many studies do not give an unambiguous answer regarding the impact of financial development on inequality or poverty.

Some investigations approve that the financial sector reduces inequality. Zhuang et al. (2009), Rewilak (2017), Clarke and Zou (2006) reject the hypothesis that financial development influences only the rich. They suggest that inequality is reducing as the financial sector develops in the long run. But the results also showed that inequality might rise as financial sector development advances at the initial stages. Thus, their finding aligns with Galor and Zeira (1993) who also conclude that the initial level of financial sector development matters. Honohan (2004) measured finance-intensive growth by banking depth and found that banking depth is associated with lower poverty ratios.

Recent research on the relations between the banking sector and inclusive growth concerns the developing countries. Sarker, Ghosh, and Palit (2015) show a positive impact of banking sectors' financing on Bangladesh's agriculture output. They prove credits are significantly facilitating financial inclusion in Bangladesh. Uddina, Shahbaz, Arouric, and Teulon (2014) found that financial development contributes to reducing poverty, but its effect is not linear.

However, several studies have contrary findings. In particular, de Haan and Sturm (2016) explore the impact of financial development, financial liberalization, and banking crises on income inequality. They suggest that all finance variables increase income inequality. However, as de Haan and Sturm (2016) noticed, "…our results do not imply that financial development is necessarily bad for the poor." So, the relationships between financial development and income inequality are not sufficiently explained.

Park and Shin (2017) made an interesting conclusion about the ambiguous direction of the relationships between finance and income inequality, and financial development per se does not automatically reduce income inequality. Donou-Adonsoua and Sylwesterba (2016) used credit to GDP ratio as the main financial development indicator and found that banks reduce poverty while poverty is measured using the headcount ratio and poverty gap. However, there is no significant effect of banks on the squared poverty gap.

Berg and Ostry (2011) investigated the relationship between growth and inequality and concluded that a longer growth period is related to better

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equality in income distribution. Some countries improved income distribution during a growth period. Moreover, inequality still matters, even when other determinants of growth duration are considered.

Agnello and Sousa (2011) explored banking crises and income distribution and found that inequality increases before the banking crisis happen and decline later. One more important finding is that inequality reduction does not depend on the government expenditures per se, while financial depth increase contributes to an equal distribution of income.

Thus, the literature review leads to the following issues for the research: 1) the relationship between the banking sector and growth is primarily positive and direct; 2) the relationships between finance development and income inequality are ambiguous and dissimilar.

2. METHODS

The research method involves constructing a panel data regression model to define the relations and the impact of the banking sector qualitative parameters on the level of inclusive growth.

The employed methodology considers the following qualitative aspects of the banking system development: the ability to supply loans to the private sector, availability of banking services, stability, and reliability of banking activities.

The impact of the mentioned parameters of the banking system and their relations were formalized as follows:

$$INCLRW_{it} = f\left(CRED_{it}; ACCBLT_{it}; STBLT_{it}\right), \quad (1)$$

where $INCLRW_{it}$ – is an indicator that characterizes the level of inclusive growth in the country and year t, $CRED_{it}$ – represents the ability of the banking system to meet the need for credits and reproduction of the lending process, $ACCBLT_{it}$ – is the ability of the banking system to meet the needs in banking services, $STBLT_{it}$ – stands for the ability of the banking system to ensure uninterrupted banking in the long run.

According to Berg and Ostry (2011, p. 3), "It is difficult to separate analyses of growth and income distribution". Because of the complex nature of inclusive growth, there appears the issue with choosing the proper indicators to properly approximate the inclusive growth. Social Welfare (SW) index is involved in the research as an indicator of inclusive growth, presented by Rodríguez-Pose and Tselios (2015) with reference to Sen (1973):

$$SW_{it} = \mu \cdot \left(1 - GINI_{it}\right), \quad (2)$$

where μ - determines the average income in the country and year t, $GINI_{it}$ - is Gini coefficient in year t.

The following advantages of this indicator such as the simplicity of its construction, the presence of observations of all components, and, most importantly, its ability to combine both the level of income generated in the country and the equity of their distribution allow to put it to the research as a dependent variable. National per capita income dynamic indicates the supply-side impact of the banking sector, but being adjusted to the Gini index is a measure for the impact of demand (assuming equality in income distribution creates more demand). Equality in income distribution can result in a higher level of savings. Also, being distributed through the banking sector, resources from the low-growth sectors to the new high-growth sectors stimulate a competitive and entrepreneurship environment. The mentioned indicator is considered to supply the need for inclusive growth measurement sufficiently. The approach of inclusive growth unified measure is supported by IMF, arguing that it could determine the peculiarities and priorities in inclusive growth building for different countries (Anand, Mishra, & Peiris, 2013). Indicators that approximate the parameters of the banking system are presented in Table 1.

While selecting the indicators, several requirements were put for them to meet. The data source's reputability ensures that data is internally valid; publicity provides transparency and validation, methodology consistency, which allows exploring the changes over time without significant data adjustment and preferably comprehensive geographical coverage to fulfill the ability in comparing the results.

Table 1. List of independent variables

Qualitative characteristic	Indicator	Symbol
Ability to supply credits	Domestic credit to private sector (% of GDP)	CREDPRVT
	Bank non-performing loans to total gross loans (%)	NPERIOANS
Availability of banking services	Automated teller machines (ATMs) (per 100,000 adults)	ATMS
	Commercial bank branches (per 100,000 adults)	BANKBRCH
Stability and reliability of banking activities	Bank capital to assets ratio (%)	BNKCAP

The countries' set was determined by the maximum coverage of all analyzed indicators, with a limit on missing data of no more than two. Countries that have more than two observations missed were excluded from the list. Lost values were calculated using a linear approximation for the country within a particular indicator.

As a result, the formed panel includes five indicators that approximate the banking system's qualitative characteristics to ensure lending, the availability of banking services, and the banking system's stability. The sample contains 46 countries divided into three groups according to the World Bank classification (high income, upper middle income, lower middle income). Due to non-compliance with the data requirements for missing data, lower-income countries were excluded from the list. The observation period started in 2008 and was limited to the latest available data for 2018. Table 2 contains descriptive statistics for variables.

Relations' assessment and further analysis of the banking system impact on inclusive growth are based on the following equation:

$$LNINCGROW_{it} = \alpha + \beta_1 \cdot CREDPRVT_{it} + \\ + \beta_2 \cdot NPERIOANS_{it} + \beta_3 \cdot ATMS_{it} + \\ + \beta_4 \cdot BANKBRCH_{it} + \beta_5 \cdot BNKCAP_{it} + \\ + u_{it} = 1 \ldots N,\ t = 1 \ldots T, \quad (3)$$

where N - is the number of countries, T – years.

The calculation algorithm means the consecutive passing of the following stages of estimating the equation of the model (Pooled OLS estimator), which ignores the panel nature of the data, estimating the regression with a random individual effect (Random effects estimator), following the estimation of a model with an individual effect (Fixed effect model).

The most reliable regression model was chosen that describes best the relationship between the quali-

Table 2. Descriptive statistics

Label	Model	Mean	Std. Dev.	Min	Max	Observations
LNINCGROW	Overall	9,3475	0.7412	7,3932	10,76782	*N* = 506
	Between		0.7308	7,5798	10,61393	*n* = 46
	Within		0.1611	8,94	9,797358	*T* = 11
*ATM*S	Overall	4,0674	0.5944	1,5414	5,270952	*N* = 506
	Between		0.5395	2,8249	5,192877	*n* = 46
	Within		0.2606	2,6447	5,021071	*T* = 11
CREDPRVT	Overall	3,9894	0.6326	2,425	5,542022	*N* = 506
	Between		0.6132	2,6148	5,401779	*n* = 46
	Within		0.178	3,2512	4,663766	*T* = 11
BANKBRCH	Overall	2,9492	0.8859	–1,7719	4,642018	*N* = 506
	Between		0.8613	0,0567	4,333243	*n* = 46
	Within		0.2399	0,8532	4,21085	*T* = 11
NPERIOANS	Overall	1,506	0. 8703	–0,7917	3,998958	*N* = 506
	Between		0.7751	–0,2214	3,021792	*n* = 46
	Within		0.4105	–0,3199	2,663718	*T* = 11
BNKCAP	Overall	2,2599	0.3554	1,169	3,135988	*N* = 506
	Between		0.3273	1,585	2,940889	*n* = 46
	Within		0.1461	1,4237	2,801665	*T* = 11

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tative parameters of the banking system and inclusive growth based on the F-test, Breusch and Pagan Lagrange multiplier test for random effects and Sargan-Hansen statistic (Schaffer & Stillman, 2010).

3. RESULTS

Calculations resulted in regression coefficients obtained for each of the three models (Fixed effect, Random effect, and Pooled OLS) for all analyzed groups. Table A2 in Appendix A reveals the results of the Breusch and Pagan Lagrange multiplier tests for random effects and Sargan-Hansen statistics, which allows the choice of the most suitable model. Thus, the high-come and upper-middle-income countries are best estimated by the Fixed effect model. For lower-middle-income countries, the best is the Pooled OLS (POLS) model, which does not consider the panel nature of the data.

The value of the determination coefficient (*R*-squared) for the Fixed effect model for the group of high-income countries is 0.734. The results of *F*-test also evidence the high quality of the model. All independent variables' *t*-statistics indicates a statistically significant relationship and impact on inclusive growth. For high-income countries, inclusive growth changes are directly dependent on ATMs' availability and the resilience of banking institutions. Changes in the number of bank branches, the volume of bank loans granted, and the growth of non-performing debts on previously granted loans show the inverse relation. Direct and inverse relations between dependent variables and regressors and predictive margins (95%) are presented in Figure A1 in Appendix A.

The Fixed effect model for the upper-middle-income countries can also be considered as entirely qualitative, albeit at the marginal level, because regressors can explain only 58% of the dependent variable's variability. Unlike high-income countries, the banking system's resilience cannot be determined by a factor influencing inclusive growth. Direct relations demonstrate the banking system's ability to provide lending to the private sector and the availability of remote means of banking operations. The expansion of the branch network and the growth of debt on loans will negatively impact (inverse relation).

For low-income countries, all indicators perform the statistical significance, except for the level of capitalization of the banking system. The independent variables can explain 84.1% of the variation in inclusive growth.

Diagnostic tests were run to check biases absent in models. Jarque-Bera normality test confirmed the residuals distribution normality (Table A3). The multicollinearity hypothesis can be rejected according to the numbers of VIF (Variance Inflation Factor) obtained (Table A4).

Table 3. Regression estimates

Variables	High-income	Upper-middle-income	Lower-middle-income
ATMS	0.436***	0.244***	0.859***
	(0.031)	(0.030)	(0.068)
CREDPRVT	−0.160***	0.379***	−0.295***
	(0.040)	(0.059)	(0.088)
BANKBRCH	−0.304***	−0.183***	0.149***
	(0.039)	(0.038)	(0.030)
NPERİOANS	−0.105***	−0.096***	0.149***
	(0.012)	(0.027)	(0.045)
BNKCAP	0.265***	0.108	0.090
	(0.043)	(0.080)	(0.117)
Constant	9.396***	6.985***	5.530***
	(0.269)	(0.275)	(0.502)
Observations	242	198	66
R-squared	0.734	0.580	0.841
Number of countries	22	18	6
Model	Fixed effect	Fixed effect	Pooled OLS

Note: Standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4. DISCUSSION

Despite the number of studies confirming the positive impact of the banking sector on growth regarding the concept of inclusive growth, a more complex issue arises: does the banking sector's functioning increase GDP and reduce income inequality? The results obtained in this article are ambiguous in the essence of the impact of certain parameters of the banking sector on growth and by groups of countries. However, they support the debate over the suitability of a traditional economic policy framework for inclusive growth.

"ATMs" as the proxy of banking availability is an aspect of financial inclusion, has a significant direct impact on the inclusive growth indicator. This finding aligns with Park and Shin (2015) conclusions that reducing inequality is more of the financial inclusion outcome than financial development.

The availability of banking services, expressed by the *BANKBRCH* indicator, has an inverse effect on the inclusive growth rate for countries of two groups – high-income, upper-middle-income, and direct for lower-middle-income countries. For the first two groups, these results can be explained by the fact that, along with the IT and fintech development, accessibility is no more determined by the number of branches. There is a tendency to refuse to visit bank branches and provide banking services remotely. Faced with additional threats to the banking business by COVID-19, these trends are expected to intensify. Therefore, further development of the branch network is not economically feasible. Indeed, the reducing transaction costs conclusion is quite logical. However, if one predicts the impact of this trend on the labor market and the level of income of workers in this sector, one can predict an increase in inequality, especially considering the size of the banking sector in the countries of these groups.

The results on the impact of bank credit indicators look quite contradictory. The inverse relationship obtained for high-income and lower-middle-income countries suggests that expanding private sector lending will reduce growth in its inclusive dimension. Explanation refers to the results of research presented by Catherine L. Mann, OECD Chief Economist, which, to some extent, agrees with the authors' findings. She states, "The OECD identifies a number of risks to long-term growth posed by an over-reliance on bank lending, versus other types of market-based finance, such as bonds and equities. At today's financial development level, further expansion of bank credit to the private sector is shown to slow growth in most OECD countries. A rise of bank credit by 10% of GDP translates into a GDP growth rate that is 0.3 percentage points less than would otherwise be the case, according to the OECD" (OECD, 2015).

The explanation for the results for high-income and lower-middle-income countries may suggest the structure of income produced in the economy as lending expansion returns on capital grow faster than personal income. It ultimately increases inequality, and according to the results of the OECD (2015), it does not contribute to sufficient GDP growth. For upper-middle-income countries, it expands opportunities and promotes productivity, particularly through the opening of their own private business, which is an important factor in income equality.

CONCLUSION

This paper empirically examines the impact of banking sector development on inclusive growth. The relationship between the banking sector and growth is one of the fundamental questions of theory, whereas the impact of the banking sector on income inequality refers to empirical research. The estimated models for the three groups of countries, differentiated by income level, revealed the significant relationship between banking system qualitative development in the ability to provide credit, the availability of banking services, and the stability of the activity, and the inclusive growth.

The analysis results show that the banking sector, being focused on inclusive growth, should pay more attention to the availability of banking services focusing on the "broad" client and distant forms of ser-

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vice. Banks should think over their main credit function in the light of inclusive growth. The appeared inverse relationship for high-income and lower-middle-income countries indicates the need to explore the structure of income. This aspect of the banking system functioning should be studied empirically compared to the new banking regulatory requirements.

The impact of the banking system stability on the inclusive growth of countries of different groups needs further research also. Statistically confirmed direct impact only for high-income countries shows that the banking system's level of development is important in studying the mentioned dependence. This parameter should be considered in further research on this issue.

AUTHOR CONTRIBUTIONS

Conceptualization: Iryna Skliar, Svitlana Pokhylko.
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APPENDIX A

Table A1. The list of countries in the panel

Groups of countries	List of countries
High-income (22 countries)	Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, France, Greece, Ireland, Italy, Latvia, Lithuania, the Netherlands, Panama, Poland, Portugal, Romania, Slovak Republic, Spain, Switzerland, Uruguay
Upper-middle-income (18 countries)	Argentina, Armenia, Belarus, Brazil, Bulgaria, Colombia, Costa Rica, Dominican Republic, Ecuador, Georgia, Indonesia, Kazakhstan, North Macedonia, Paraguay, Peru, Russian Federation, Thailand, Turkey
Lower-middle-income (6 countries)	Bolivia, El Salvador, Honduras, Kyrgyz Republic, Moldova, Ukraine

Table A2. Breusch and Pagan Lagrange multiplier test for random effects and Sargan-Hansen statistic

Test	High-income	Upper-middle-income	Lower-middle-income
Breusch and Pagan Lagrange multiplier test for random effects null hypotheses	Rejected	Rejected	Not rejected
Sargan-Hansen statistic (fixed vs random effects) null hypotheses	Rejected	Rejected	Not rejected
Model appropriate	Fixed effect	Fixed effect	Pooled OLS

Table A3. Jarque-Bera normality test

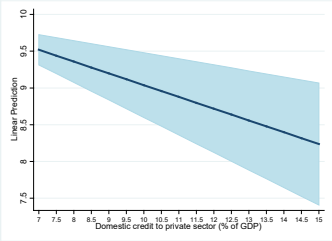
Groups of countries	Test results
High-income	Jarque-Bera normality test: 0.917 Chi^2: 0.6322
Upper-middle-income	Jarque-Bera normality test: 3.412 Chi^2: 0.1816
Lower-middle-income	Jarque-Bera normality test: 0.9672 Chi^2: 0.6166

Note: H_0 normality.

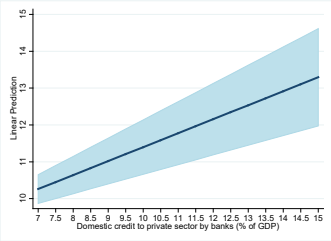
Table A4. Variance Inflation Factor (VIF) test for multicollinearity

Variable	High-income		Upper-middle-income		Lower-middle-income	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
BANKBRCH	1.80	0.555475	2.16	0.463624	2.67	0.374816
CREDPRVT	1.57	0.635665	2.12	0.472350	2.55	0.391483
BNKCAP	1.49	0.671033	1.24	0.809088	2.48	0.402971
ATMS	1.28	0.783844	1.23	0.812379	2.00	0.498838
NPERIOANS	1.18	0.847726	1.14	0.874226	1.88	0.531128
Mean VIF	1.46		1.58		2.32	

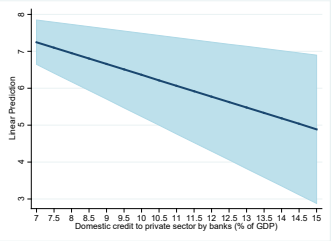
Domestic credit to private sector (% of GDP)



(a) High-income countries

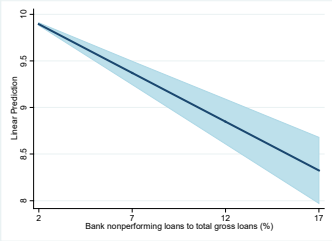


(b) Upper-middle-income countries

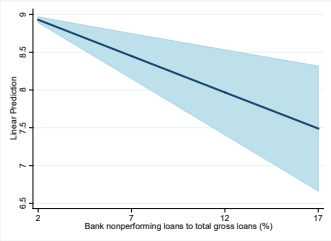


(c) Lower-middle-income countries

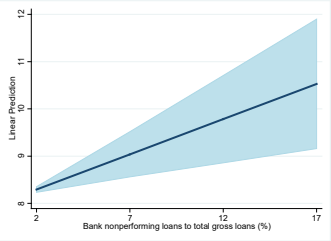
Bank non-performing loans to total gross loans (%)



(d) High-income countries

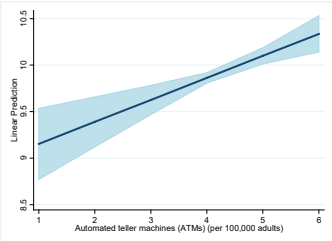


(e) Upper-middle-income countries

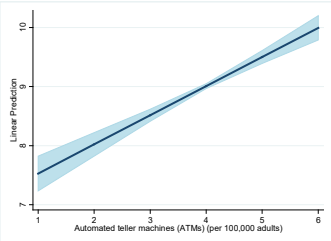


(f) Lower-middle-income countries

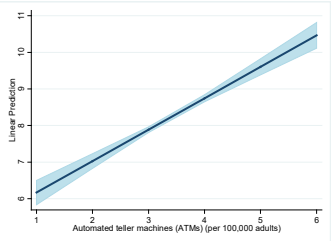
Automated teller machines (ATMs) (per 100,000 adults)



(g) High-income countries

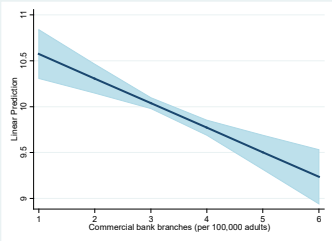


(h) Upper-middle-income countries

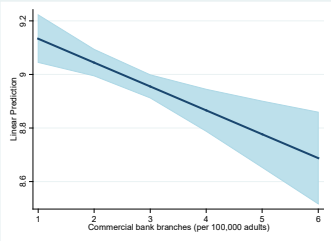


(i) Lower-middle-income countries

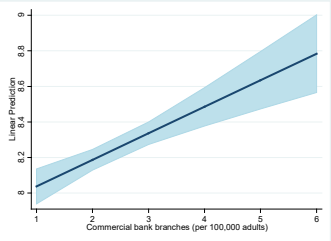
Bank non-performing loans to total gross loans (%)



(j) High-income countries

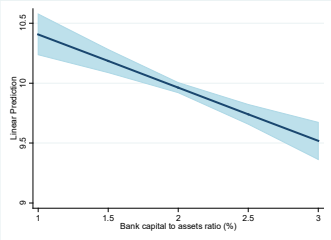


(k) Upper-middle-income countries



(l) Lower-middle-income countries

Bank capital to assets ratio (%)



(m) High-income countries

Figure A1. Predictive margins with 95% for independent variable by groups

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