

Trust and Risk: Evidence from Rural Banks in Emerging Markets

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JEL Classification:

G21

G28

G32

Received: 05 November 2023

Revised: 11 June 2024

Accepted: 02 July 2024

Available online: September 2024

Published regularly: September 2024

Abstract

Research Originality: This research is the first to discuss how rural bank risk-taking behaviour is affected by trust in particular when the poverty rate is high.

Research Objectives: This research aims to investigate how risk in rural banks is shaped by the two dimensions of trust by taking into account different poverty levels across the region.

Research Methods: To thoroughly conduct our research, we use quarterly dataset of rural banks obtained from the financial service authority (OJK) for the period of 2010Q2 to 2016Q3 when the bail-out regime was still in effect. We employ a random effect model to account for individual heterogeneity.

Empirical Results: Our evidence suggests that in-group trust is detrimental to rural banks' risk. Conversely, out-group trust positively affects rural banks' stability only if the region has a lower poverty level.

Implications: To reduce risk, the rural bank has to use social capital and penetrate informally to the market where in-group trust is high to be able to compete with informal lending and to contribute better to society.

Keywords:

rural banks; trust; bank stability; poverty; risk banking management

How to Cite:

Trinugroho, I., Achsanta, A. F., Arifin, T., & Saputro, N. (2024). Trust and Risk Evidence from Rural Banks in Emerging Markets. *Etikonomi*, 23(2), 287 – 298. <https://doi.org/10.15408/etk.v23i2.35775>.

INTRODUCTION

Trust has been widely discussed as a crucial part of fostering economic growth (Bjørnskov, 2012; Bohnet & Zeckhauser, 2004; El-Attar & Poschke, 2011; Gennaioli et al., 2015) notably, many empirical research has linked trust with banks' risk (Duarte et al., 2012; Koomson et al., 2023; Quang Trinh et al., 2023). The link between trust and bank risk lies in how the trust will affect the lending decision, as the element of trust is present in every commercial transaction in the banking industry (Nicolas et al., 2023). Bankers often face information asymmetry, which involves adverse selection and moral hazards. Hence, trust contributes to the decision-making process by influencing the outcome of lending decisions (Thakor & Merton, 2018). The decisions will be more likely to depend on the trustworthiness of the borrowers during the screening process. As such, the trustworthiness then may differ whether the client is someone who has been known before or a completely new person (Bohnet & Zeckhauser, 2004; Courbage & Nicolas, 2021; Thakor & Merton, 2018).

The dimensions of trust are normally divided into two main characteristics. The first type of trust is widely known as in-group trust. In-group trust reflects how a person's trustworthiness is affected by the established relationship between parties, which implies that both parties know each other (Lei & Vesely, 2010). The second dimension of trust is out-group trust, which indicates a person's trust in strangers, persons they do not know, or another person they meet for the first time. These two subcomponents of trust can affect how lending decisions are made, which, in turn, will impact banks' stability due to the potential losses of bad debt.

Previous empirical works of literature have focused on analyzing trust as a channel in determining bank risk (Jin et al., 2020; Kanagaretnam et al., 2019; Nicolas et al., 2023), personal and business risk-taking behavior (Courbage & Nicolas, 2021; Dowling et al., 2019) firms' cost of debt (Wang & Gu, 2024), there is little attention being paid into the link of trust and risk for smaller rural banks. Thus, it leaves an open question on how trust may determine rural bank risk-taking behavior, as the studies on trust still focus on countries or big financial institutions that operate in nationwide areas. Unlike big financial institutions, rural banks typically serve in the areas where bigger financial institutions are deemed risky and have fewer incentives to enter (Amanda, 2023). Rural banks also normally deal with limited region or area coverage, and a specific level of trust is embedded into their established culture.

However, a high level of trust may result in a bad situation in rural banking management. As stated, rural banks often operate where those clients are less likely to access commercial banks for many reasons (e.g., less worthiness, lack of financial reporting capability, and being considered high-risk clients). These clients are characterized by higher asymmetry information and potentially increase rural banks' credit risk. This situation can further be exacerbated if the rural banks operate in regions where the poverty level is high, reducing repayment capability. We, therefore, bridge the gap by providing evidence of the link between trust and rural bank risk and further dig deeper

by taking into account poverty as a channel that could play an essential role in rural bank risk management.

To conduct our empirical investigation, we employ unique hand-collected data on quarterly financial reports of 1854 rural banks from 2010Q2 to 2016Q3. We did not consider 2017 and above due to the bail-in regulation enacted by the Indonesian Financial Services Authority in 2017. This condition is to avoid a change in risk profile trend after the bail-in regime becomes active.

Our findings suggest that rural banks are more likely to have lower risk in the regions where out-group trust is high and tend to be risky in the regions where in-group trust is high. This finding supports the argument that with the increase of in-group trust, people are less likely to trust people they do not know, thus reducing trust in financial institutions and fostering the development of informal lending. Moreover, our results show that poverty can be a game changer in keeping trust and can positively impact rural bank risk stability.

The high poverty rate combined with high in-group trust forms more growth for informal lending, reducing potential bad debt to rural banks, as those who are underbanked or unbanked tend to borrow from their acquaintances rather than formal institutions. Conversely, rural banks tend to have higher risk and less stability in the regions where the level of out-group trust and poverty is high. In these regions, even though the high out-group trust is bolstering the growth of lending through formal financial institutions, the high rate of poverty, in fact, also increases the probability of bad debt, which can be translated into more risk of loan failure in repayment and, in turn, the risk of default for rural banks

Our paper, therefore, has several contributions. First, we contribute to the literature on rural banks by showing that trust can be a key determining factor of rural banks' risk profile (Amanda, 2023; Wasiaturrahma et al., 2020). Secondly, we contribute to the literature on trust by showing that poverty can be a key factor in changing both subcomponents (in-group trust and out-group trust) of trust effect towards risk (Bohnet & Zeckhauser, 2004; Lei & Vesely, 2010; Sangnier, 2013; Thakor & Merton, 2018; Zak & Knack, 2001).

METHODS

Our research is based on a thorough examination of a quarterly dataset on Indonesian Rural Banks for the period of 2010-2016, collected from the Indonesian Financial Services Authorities (OJK). We stopped our sample until 2016 to isolate the effect of the enactment of the bail-in regime which takes effect in 2017 where banks no longer expect any sort of external financial aid as this will impact their risk-taking behaviour. This dataset, combined with the World Value Survey dataset on general trust (Haerpfer et al., 2020), forms the foundation of our study. Our final sample comprised 37191 observations from 1866 rural banks, ensuring the reliability and robustness of our findings.

We use Z-Score as a proxy for rural bank risk stability or risk-taking. This measurement is commonly used in the literature on bank risk as it provides straightforward interpretation and uses only accounting data (Achsanta et al., 2021; Beck et al., 2013; Fu et al., 2014). The z-score is calculated as follow.

$$Z = \frac{(ROA + EQTA)}{SDROA} \quad (1)$$

Where ROA is return on assets, EQTA is equity to total asset, and SDROA is the standard deviation of bank's ROA. The z-score therefore is a calculation of the standard deviation by which the bank return has to diminish to deplete bank's equity (Schaeck & Cihák, 2014). We also follow Fu et al. (2014) by calculating the logarithm value of the z-score.

Our primary variable of interest is general trust extracted from Waves 7, which Indonesia presents in the sample. We break down the survey based on region to develop a regional trust index. Although trust value does not vary across time, there is a considerable heterogeneity of trust value between regions in Indonesia. We follow Nicolas et al. (2023) by distinguishing trust into two groups: in-group and out-group. In-group trust is defined as a specific trust in which the individuals trust only people they know (*InTrust*). Hence, in-group trust is measured as percentages of respondents who answer entirely trust in the family, the neighborhood, and the people they know. On the other hand, Out-group trust (*OutTrust*) is defined as an individual's trust in people they do not know, commonly known as general trust. Thus, *OutTrust* is calculated based on the percentages of respondents who answer thoroughly trust on whether they trust the people they meet for the first time.

We consider several control variables at the bank and the regional level that may affect bank risk. We employ the natural logarithm of rural banks' total assets to control for the size (*lnTA*) and expect a positive effect on banks' stability. We also use the ratio of equity to total assets to reflect bank financial risk (*EQTA*) and the capital adequacy ratio (*CAR*) and expect a positive effect on bank risk. We also employ the ratio of non-performing loans to total loans (*NPL*) and expect a negative effect on the bank's risk. We also control the intermediation function by employing the ratio of loan to deposit (*LDR*) and expect a positive impact on bank risk. We employ the natural logarithm of regional GDP (*GDRP*) and poverty rate (*Poverty*) for the macro-regional level to account for regional economic characteristics. We use bank density (*Bank_Density*) by calculating the number of all types of bank branches to control competition. Rural banks have limited area coverage compared to their commercial counterpart; thus, commercial banks' presence increases regional competition.

In order to empirically examine the effect of trust on rural bank risk in Indonesia, we developed the following equation:

$$ZScore_{it} = \beta_0 + \beta_1 Trust_{it} + \sum_m \theta_m Control_i + \varepsilon_i \quad (2)$$

where i and t refer to a bank and time index. To estimate eq. (2) using static panel regression technique, we first run both random and fixed estimators and run the Hausman test to choose which estimation technique is more appropriate. As the Hausman test suggests random effect model is the more appropriate we then employ it as our main estimation technique. The standard errors in the estimation were adjusted at the bank level to eliminate heteroscedasticity and autocorrelation issues.

We tested the correlation coefficient between independent variables to ensure that our model did not have any multicollinearity issues. As shown by Table 1, there are no multicollinearity issues due to correlation coefficients between independent variables being less than 0.5. Although InTrust and OutTrust exhibit low correlation we still separately run the two trust categories following Nicolas et al. (2023) to distinguish between the two trust dimensions.

RESULTS AND DISCUSSION

In this sub-section, we provide the result of our empirical estimation regarding trust and bank risk. Our primary research question is to analyze whether or not trust will affect rural bank risk-taking behavior. Table 2 implies that trust indeed determines rural bank risk. Furthermore, we discover a different effect of the trust dimension on bank rural stability. We observe a robust negative impact of in-group trust on rural bank stability. The increase of in-group trust will most likely reduce trust toward formal financing and develop more into informal financing, reducing rural bank stability as a formal lender. Conversely, our evidence suggests that out-group trust is positively associated with bank stability. The increase in general trust will also increase bank lending and require less formal enforcement mechanisms, translating into more profit and stability for rural banks as formal lenders.

Table 1. Correlation Matrix

	InTrust	OutTrust	InTA	EQTA	NPL	CAR	LDR	GDRP	Poverty	Bank_Density
InTrust	1.000									
OutTrust	0.097	1.000								
InTA	-0.025	-0.010	1.000							
eqta	0.001	0.001	-0.025	1.000						
npl	-0.005	0.004	-0.060	0.002	1.000					
car	-0.002	0.001	-0.003	-0.001	0.002	1.000				
ldr	-0.007	0.002	-0.012	-0.001	0.093	0.001	1.000			
GDRP	-0.132	-0.009	0.014	-0.001	0.002	0.002	0.004	1.000		
Poverty	-0.321	0.130	0.017	-0.001	0.003	0.004	0.004	-0.067	1.000	
Bank_Density	0.127	-0.022	-0.091	0.005	0.009	0.001	-0.002	-0.081	0.070	10.000

This evidence on two dimensions of trust is in line with the previous empirical literature (Nicolas et al., 2023; Saiedi et al., 2020). The high level of *InTrust* implies

that society is less likely to open to formal financial institutions, forming the growth of informal lenders and keeping them away from formal institutions (Saiedi et al., 2020). This condition could be exacerbated further if there is a presence of high distrust towards formal banking institutions (Ziegler et al., 2019). Conversely, the high level of *OutTrust* implies society's openness toward outside institutions, including formal financial institutions. Thus, *OutTrust* will increase the likelihood of formal financial institution growth, lowering rural banks' risk (Nicolas et al., 2023).

Table 2. The Effect of Trust on Rural Bank Risk

	(1) ZROA	(2) LnZROA	(3) ZROA	(4) LnZROA
InTrust	-3.885** (-2.31)	-5.830*** (-3.37)		
OutTrust			18.45*** (5.80)	21.97*** (5.50)
InTA	0.0529*** (2.90)	-0.0321** (-1.99)	0.0531*** (2.91)	-0.0318** (-1.98)
EQTA	0.323*** (5329.67)	0.000287** (2.21)	0.323*** (5321.36)	0.000291** (2.23)
NPL	-0.000471 (-1.55)	-0.000306*** (-4.30)	-0.000472 (-1.55)	-0.000308*** (-4.26)
CAR	2.15e-09*** (16.66)	1.26e-09*** (12.85)	2.14e-09*** (16.66)	1.25e-09*** (12.81)
LDR	0.0000261*** (3.00)	0.0000205* (1.72)	0.0000262*** (3.00)	0.0000206* (1.71)
GDRP	-0.0161*** (-4.31)	-0.0131*** (-3.29)	-0.0159*** (-4.26)	-0.0126*** (-3.17)
Poverty	0.107*** (7.60)	0.0992*** (7.69)	0.109*** (8.23)	0.105*** (8.43)
Bank_Density	0.0127*** (7.93)	0.00720*** (5.45)	0.0125*** (7.95)	0.00686*** (5.30)
_cons	0.364 (0.56)	1.433** (2.28)	-1.222*** (-3.76)	-0.859*** (-2.90)
N	37191	32838	37191	32838
N_g	1866	1834	1866	1834
r2_w	0.986	0.00458	0.986	0.00454
r2_o	0.984	0.0230	0.985	0.0303

t statistics in parentheses

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

Table 3. The Effect of Trust on Rural Bank Risk Based on Regional Poverty

	(1)	(2)	(3)	(4)
	ZROA	LnZROA	ZROA	LnZROA
InTrust	-2.655 (-1.55)	-4.484** (-2.56)		
OutTrust			16.15*** (5.24)	19.68*** (5.22)
HPoverty*InTrust	17.36*** (8.32)	21.76*** (10.77)		
HPoverty*OutTrust			-45.53*** (-12.35)	-54.14*** (-13.01)
InTA	0.0521*** (2.85)	-0.0332** (-2.05)	0.0523*** (2.86)	-0.0329** (-2.04)
EQTA	0.323*** (5245.01)	0.000297** (2.27)	0.323*** (5230.43)	0.000299** (2.28)
NPL	-0.000470 (-1.55)	-0.000306*** (-4.34)	-0.000471 (-1.55)	-0.000308*** (-4.31)
CAR	2.14e-09*** (16.66)	1.25e-09*** (12.75)	2.14e-09*** (16.66)	1.25e-09*** (12.72)
LDR	0.0000261*** (3.00)	0.0000205* (1.71)	0.0000261*** (3.00)	0.0000205* (1.71)
GDRP	-0.0165*** (-4.42)	-0.0135*** (-3.40)	-0.0164*** (-4.39)	-0.0131*** (-3.31)
Bank_Density	0.0138*** (8.72)	0.00821*** (6.27)	0.0137*** (8.74)	0.00800*** (6.19)
HPoverty	-5.089*** (-7.68)	-6.470*** (-10.11)	1.210*** (15.79)	1.379*** (16.29)
_cons	0.576 (0.91)	1.563** (2.54)	-0.563* (-1.77)	-0.225 (-0.78)
N	37191	32838	37191	32838
N_g	1866	1834	1866	1834
r2_w	0.986	0.00459	0.986	0.00457
r2_o	0.984	0.0247	0.985	0.0311

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

We find that size does not consistently predict bank stability as the result is inconsistent with different stability measurements. Furthermore, the leverage represented by the ratio of equity to the total asset (*EQTA*), capital adequacy ratio (*CAR*), and the ratio of total loan to total deposit significantly (*LDR*) and positively impacts stability.

In line with theory, lower financial risk, liability risk, and intermediation efficiency will translate into higher profitability and stability. A higher regional economy (*GDRP*) leads to lower stability. A plausible explanation for this is that in the wealthier region, people are more likely to obtain financing from bigger banks as their access to financing is substantially improved alongside the development of the economy, which decreases rural banks' stability.

Poverty (*Poverty*) consistently impacts stability, as shown by a positive significant coefficient across different rural bank risk-stability measurements. Poorer regions typically have lower access to conventional banks or national-wide syariah banks, which gives rural banks more opportunity to serve to fill the financing gaps. Thus, rural banks have more opportunities than others. Rural banks also create profitability in the area, translating into a lower risk of default and more stability. Bank density (*Bank_Density*) positively correlates with rural banks' stability, implying that high-density banks in the area are more likely to increase stability due to regions' growth opportunities that attract more banks to serve financing in the area. Our results on control variables are in line with previous empirical works of literature (Achsanta et al., 2021; Moudud-Ul-Huq, 2019).

To investigate further how trust shapes risk-taking behaviour in rural banks, we interact our trust variables with regional poverty by creating dummy *HPoverty* which takes value one if the regional poverty is above median and zero otherwise. Our result as shown by Table 3 indicates that trust in two different regions classified by poverty in fact has contradictive impact. We find that in-group trust in lower poverty region has negative impacts toward rural banks stability, while in high poverty region in-group trust has positive impact on rural banks stability. This further clarify that indeed higher in-group trust will encourage the development of informal lending in the society thus reduces rural banks stability due to the lack of demand.

Furthermore, we find also that out-group trust has a positive impact on stability only in low poverty regions compared to high poverty regions, in which out-group trust has a negative impact on stability. In lower-poverty areas, high out-group trust generally translates into more lending creations, including higher trust in formal financing institutions. However, in the higher poverty regions, this higher lending creations may lead to financing potentially bad debtors, which more likely to increase rural banks' risk. This underscores the urgent need to address the potential negative impact of out-group trust in high-poverty regions.

These empirical findings, therefore, are in line with previous empirical literature. First, rural banks are dealing with a market where commercial banks are reluctant to enter due to clientele factors (e.g., lack of financial report, mostly underbanked clients, high information asymmetry, creditworthiness), which increases the credit risk (Wasiaturrahma et al., 2020). Secondly, such risk will reduce rural banks' profitability and, in turn, translate into higher overall risk for the rural banks (Banna et al., 2022; Blanco-Oliver et al., 2021; Zamore et al., 2019). Therefore, higher *OutTrust* will not be beneficial

in an area with high poverty. Conversely, a higher level of *InTrust* in the high poverty region will shift the credit risk from rural banks to their informal lending institution counterpart.

CONCLUSION

Trust has been one of the important components in finance that helps develop the economy by fostering better resource allocation through intermediaries. However, understanding key dimensions of trust is essential as there is indeed a different view on how people regard acquaintances and strangers in developing their trust. This condition will affect the behavior of borrowing and lending, which can be translated into the bank's risk profile. Rather than big banks that operate nationally, rural banks tend to deal with a specific level of trust given to the culture adopted in the region where the banks operate. Therefore, our evidence is important to understand why rural banks in specific regions are prone to failure compared to other regions. Using unique hand-collected data on rural banks' quarterly financial reports from 2010Q2 to 2016Q3 with around 1846 rural banks in Indonesia, we conduct empirical estimation to study how regional characteristics shape rural banks' risk.

Our evidence suggests that rural banks tend to be stable in the regions where out-group trust is high and tend to be risky in the regions where in-group trust is high. Furthermore, our analysis shows that poverty is important in determining rural banks' risk profile, given the in-group and out-group trust levels. Rural banks tend to have lower risk and more stability in the region with high in-group trust and poverty levels. The high poverty rate combined with high in-group trust forms more growth for informal lending, reducing potential bad debt to rural banks, as those who are underbanked or unbanked tend to borrow from their acquaintances rather than formal institutions. In contrast, rural banks tend to have higher risk and less stability in the regions where the level of out-group trust and poverty is high. In these regions, even though the high out-group trust is bolstering the growth of lending through formal financial institutions, the high rate of poverty, in fact, increases also the probability of bad debt, which can be translated into more risk of loan failure in repayment and, in turn, the risk of default for rural banks.

Our research offers crucial policy recommendations for both regulators and industries. Firstly, rural banks in regions with high out-group trust and poverty levels must exercise prudence in their loan enforcement and screening processes. This is a key strategy to mitigate the higher risk associated with these regions. Secondly, poverty alleviation emerges as the primary solution to transform rural banks' risk profiles to a lower level, underscoring the urgency of addressing poverty in these regions.

ACKNOWLEDGEMENT

This research was funded by Universitas Sebelas Maret through Research Group Grant (HGR) in 2023 with the contract number: 228/UN27.22/PT.01.03/2023

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