Interest Rate, Risk Taking Behavior, and Banking Stability in Emerging Markets

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Abstract

This paper investigates whether policy interest rates affect bank risk-taking behavior and banking stability for 14 emerging countries over the period 2000-2014. The empirical findings do not show that lower interest rates increase bank risk taking behavior with presence of risk-taking channel for those emerging countries. Whereas, interest rates do have significant and positive relation with the bank risk-taking behavior because the repayment for borrowers is difficult with higher interest rates. Even though there is no significant relation between interest rates and banking stability, convincing evidence indicates the important roles played by the extent of bank's involvement in non-interest income activities and bank capitalization.

1   Introduction

Policy makers often use a relatively easy monetary policy as a tool to stimulate the stagnant economy growth. Hit by the financial crisis in 2008, the global economic situation tends to be unstable and a loose monetary policy causes the interest rates to fall. In order to encourage domestic economic development, the U.S. and major countries in Europe conduct rounds of successive easing monetary policy and result in low interest rates. How low interest rates, and even negative interest rates, will affect the financial and economic situation of those advanced countries is an ongoing debate issue. Many hold the view that the continued low interest rates may lead to another wave of financial chaos.
The low interest rate, caused by the unconventional loose monetary policy adopted by the advanced countries, may not only affect the economic condition of these countries, but also influence the one of developing countries as well. Although interest rates of

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emerging countries seem not as low as observed in major advanced countries, they show obvious significant downward trend after the global financial crisis in 2008. This raises an interesting question: whether decreasing interest rates will encourage banks to take more relatively higher risk investment and default loans. It might consequently change the risk behavior of the banking, and thereby affect the stability of the banking in the emerging market with delayed recovery.

This paper aims to investigate whether interest rates have an impact on the bank's risk behavior and thus on the stability of the banking for 14 emerging countries, covering the period 200-2014. The empirical results show that interest rates have a significant positive relation with the ratio of non-performing loans to total loans, while having a negative relation with provisions rates. We do not find policy interest rates will significant influence on banking stability for those emerging countries. Instead, factors such as bank capital, the level of financial deepening, and the degree of the non-interest income to total income, will matter significantly.

The remainder of this paper proceeds as follows. Section 2 is the literature review. Section 3 depicts panel regression models. Section 4 presents empirical results. Section 5 gives conclusions.

2　The Literature

It is no doubt that the banking plays an important role in the financial system. Stein (2012, 2014) depicts the importance to incorporate financial stability into monetary policymaking. There are numerous discussions in the banking stability literature with different perspectives. For example, one noteworthy area of potential impact of debate is whether the deepening of financial markets will affect the stability of banks. Some argue that financial deepening can provide more diversified services, offer more liquidity, and stabilize the operation of the banking. Whereas, others argue that financial deepening will cause risks as well, 2008 subprime crisis is an example. What lies ahead is whether the banking industry structure ultimately affect the stability of the banking system. Previous studies have found mixed empirical results. Some argue that the more competitive market structure can increase efficiency and enhance the stability of the banking. Others argue that if the banking industry is increasingly competitive, banks carry out riskier investment, and thereby increasing the fragility of the banking. (see e.g., Berger et al., 2009; Uhde and Heimeshoff, 2009). There are few studies focusig on whether the interest rate policy will have an impact on the stability of the bank in the related literature.

Recently, a growing literature analyzes the role of monetary policy in bank risk taking, known as risk-taking channel, depicting that interest rate policy affects the quality of the bank credit. Comparing to the empirical articles, quiet few theoretical analysis contributions to the bank risk taking behavior of monetary police transmission mechanism. These theoretical models predict that banks may have the incentive to conduct much riskier investment when interest rates are low (see e.g., Tirole, 2011; Diamond and Rajan, 2012; Brunnermeier and Sannikov, 2014). While a few empirical studies focus on the interrelationships between monetary policy, risk taking behavior with presence of risk-taking channel. Delis and Kouretas (2011) conduct a large bank-level data on euro area banks over the period 2001-2008, before the 2008 financial crisis, and revel a significant negative relationship between interest rates and bank risk-taking. They also find that the negative effect is more pronounced for banks with high levels of

non-tradition banking activities, and less noticeable for banks with relatively high capital. Dell'Ariccia et al. (2016) use the US bank-level data from 1997 to 2011, and demonstrate the presence of the risk-taking channel of interest rate policy for the banking system in the US. Ramayandi et al. (2014) examine the impact of low interest rates in ten Asian economies over the period 2000-2011. They find some evidence of a bank risk-taking channel in selected Asian economies. Figueiraa et al. (2016) investigate cooperative and savings banks from 17 Western European countries over the period 1999-2011. They find that the different form of organization influences the monetary transmission via the risk-taking channel, and the effects of lower interest rates on the risk in the economy are dampened by the stakeholders' banks. However, most of the related literature focus on the euro area and the US, less on the emerging countries.

3   Empirical Models

The ratio of non-performing loans to total loans (NPL) and provisions to non-performing loans are used as measures of bank risk. The variable Z-score (ZS) is measure of the probability of default of a country's commercial banking system and calculated as the sum of ROA and equity-assets ratio divided by the standard deviation of ROA. A higher level of ZS indicates lower probability of default and therefore greater bank stability. The ratio of bank capital to total asset proposes to be influenced by the interest rate is a proxy for the bank portfolio allocation. The higher capitalized banks might be less interactive to the changes of the interest rate. Note that bank capital consists of tier 1 capital (retained earnings and common stock), and total regulatory capital (tier 2 and tier 3 capital). Total assets include all nonfinancial and financial assets. Non-interest income includes activities such as income from net gains on trading, securitization, derivative, advisory fee, and brokerage commissions. I posit low interest rate policy could induce bank engaging in more non-interest income activity, which are competing with other capital intermediaries such as insurance companies and mutual funds, thus result in higher bank banking fragility. In addition, three indexes are assigned as financial deepening variable such as liquid liabilities to GDP (LL), stock market total value traded to GDP (STV), stock market capitalization to GDP (STC). Note that liquid liabilities are the money aggregates, M3, or known as broad money. Based on the work of Levine (1997), the ratio of liquid liabilities to GDP is used to present the level of financial development or liberalization of a country.

In the first empirical model, the unbalanced panel regression approach is used to investigate the relationship between the policy interest rate and risk taking behavior of banking in fourteen emerging markets. The panel regression model is as follows:

$$Y_{it} = \alpha_i + \beta IR_{it-1} + \delta BC_{it} + \theta NIR_{it} + \gamma LL_{it} + \phi STV_{it} + \tau STC_{it} + \varepsilon_{it}$$

where dependent variable Y presents NPL_{it} and $PNPL_{it}$ respectively. NPL_{it} is the ratio of bank non-performing loans to gross loans of country i during year time t. $PNPL_{it}$ is the ratio of provisions to non-performing loans of country i during year time t. IR_{it} is the policy interest rate of country i in the lagged year t-1. BC_{it} is the ratio of bank capital to total assets of country i during year time t. NIR_{it} is the ratio of bank noninterest income to total income of country i during year time t. LL_{it} is the ratio of liquid liabilities to GDP of country i during year time t. STV_{it} is the ratio of stock market total value traded to GDP of

country i during year time t. STC_{it} is the ratio of stock market capitalization to GDP of country i during year time t. ε_{it} is the error term.

The second empirical model investigates the effect of interest rates, bank capital and non-interest income activity, financial deepening factors on bank stability. The panel regression model is as follows:

$$ZS_{it} = \alpha_i + \beta IR_{it-1} + \delta BC_{it} + \theta NIR_{it} + \gamma LL_{it} + \phi STV_{it} + \tau STC_{it} + \lambda NPL_{it} + \psi PNPL_{it} + \varepsilon_{it}$$

The dependent variable ZS_{it}, an index for the degree of bank stability, is the bank Z-score of country i during year time t. Variables employed in the paper are from World Bank's Financial Development and Structure Database, and the Global Financial Development Database.

4   Empirical Results

4.1 Descriptive Statistics

Table 1 reports descriptive statistics on main regression variables. The average policy interest rate is 7.24, but the dispersion is quiet large, with a standard deviation of 5.06 percent. The average non-performing loan ratio is 6.16 with a standard deviation of 5.97, displaying substantial variation over the sample. The average provision to nonperforming loan ratio in the sample is 88.15, with a standard deviation of 50.59. The average Z-score is 9.20, with a standard deviation of 6.06. The ratio of bank capital to total asset is 9.09 on average, with a standard deviation of 2.27 percent in the sample. The average ratio of bank non-interest income to total income is 36.10, with a standard deviation of 10.99 percent. Ratio of liquid liabilities to GDP is 54.18 on average, with a standard deviation of 29.13 percent. The ratio of stock market total value traded to GDP and ratio of stock market capitalization to GDP display a quiet large variation over the sample period, averaging 21.32 (60.04) but with a standard deviation of 19.74 (53.58) percent, respectively.

Table 2 shows the correlation between variables. There is no high correlation of most variables but variables STV and STC. The correlation between variables STV and STC is quite high, up to 0.7. High correlation could cause the collinearity problem. The descriptive statistics for the 14 emerging countries are shown in Table 3. The 14 emerging countries are South Africa, Argentina, Brazil, Chile, Colombia, Mexico, India, Indonesia, Malaysia, Philippines, Thailand, Czech Rep., Hungary, and Poland.

Table 1: Descriptive Statistics for All Countries, 2000-2014

Variable	Mean	Max	Min	Std. Dev.	No. of Obs.
IR	7.24	41.35	0.05	5.06	210
NPL	6.16	34.40	0.70	5.97	208
PNPL	88.15	242.20	28.40	50.59	205
ZS	9.20	38.47	0.46	6.06	210
BC	9.09	14.90	5.20	2.27	202
NIR	36.10	73.79	15.20	10.99	210
LL	54.18	135.09	14.21	29.13	210
STV	21.32	79.95	0.28	19.74	210
STC	60.04	256.50	6.10	53.58	208

Notes: IR is the policy interest rate. NPL is the ratio of bank non-performing loans to gross loans. PNPL is the ratio of provisions to non-performing loans. ZS is Z-score, the sum of ROA and equity-assets ratio divided by the standard deviation of ROA. BC is the ratio of bank capital to total assets. NIR is the ratio of bank non-interest income to total income. LL is the ratio of liquid liabilities to GDP. STV is the ratio of stock market total value traded to GDP. STC is the ratio of stock market capitalization to GDP.

Table 2: Correlation Matrix

	IR	NPL	PNPL	ZS	BC	NIR	LL	STV	STC
IR	1.00								
NPL	0.14	1.00							
PNPL	0.22	-0.35	1.00						
ZS	0.11	-0.07	0.16	1.00					
BC	0.23	-0.06	0.39	0.22	1.00				
NIR	0.14	0.09	0.06	-0.04	0.22	1.00			
LL	-0.35	0.23	-0.51	-0.03	-0.39	-0.45	1.00		
STV	-0.20	-0.11	-0.40	0.02	-0.42	-0.21	0.57	1.00	
STC	-0.21	-0.20	-0.26	0.27	-0.27	-0.12	0.29	0.70	1.00

Notes: IR is the policy interest rate. NPL is the ratio of bank non-performing loans to gross loans. PNPL is the ratio of provisions to non-performing loans. ZS is Z-score, the sum of ROA and equity-assets ratio divided by the standard deviation of ROA. BC is the ratio of bank capital to total assets. NIR is the ratio of bank non-interest income to total income. LL is the ratio of liquid liabilities to GDP. STV is the ratio of stock market total value traded to GDP. STC is the ratio of stock market capitalization to GDP

Table 3: Descriptive Statistics by Country, 2000-2014

Country	Variable	Mean	Max	Min	Std. Dev.	Country	Variable	Mean	Max	Min	Std. Dev.
South Africa	IR	8.36	13.50	5.00	2.80	Indonesia	IR	9.34	17.62	5.75	3.43
	NPL	3.26	5.90	1.10	1.52		NPL	7.44	34.40	1.70	9.63
	PNPL	44.99	61.30	29.60	10.26		PNPL	68.25	137.40	36.10	32.93
	ZS	15.17	38.48	10.90	7.19		ZS	2.97	3.70	1.65	0.57
	BC	7.73	9.30	5.70	0.90		BC	10.20	12.80	6.00	1.73
	NIR	43.95	50.41	27.96	7.60		NIR	23.67	40.19	19.06	5.05
	LL	42.61	48.31	40.08	2.48		LL	37.74	49.58	29.05	6.50
	STV	53.72	75.47	31.01	16.14		STV	10.57	16.55	5.56	3.47
	STC	201.96	256.50	129.67	43.16		STC	31.82	43.27	14.17	9.48
Argentina	IR	10.77	41.35	1.96	10.16	Malaysia	IR	2.90	3.50	2.12	0.39
	NPL	4.60	17.70	1.40	4.84		NPL	7.93	17.80	1.60	5.73
	PNPL	125.06	171.20	79.20	24.60		PNPL	39.72	63.20	28.40	10.45
	ZS	5.36	6.90	2.70	1.13		ZS	14.12	18.07	12.22	1.82
	BC	12.18	13.50	11.20	0.73		BC	8.62	10.00	7.40	0.77
	NIR	56.15	73.79	47.27	7.49		NIR	24.65	30.44	16.17	4.34
	LL	22.64	26.68	20.28	1.97		LL	123.09	135.09	109.52	8.35
	STV	1.03	2.23	0.28	0.70		STV	40.77	58.68	23.23	8.57
	STC	13.57	20.78	6.10	5.43		STC	132.72	148.54	115.31	10.33
Brazil	IR	14.47	25.00	7.25	4.81	Philippines	IR	6.60	10.18	3.52	2.25
	NPL	3.90	8.30	2.90	1.43		NPL	9.39	27.70	2.00	8.27
	PNPL	160.56	214.50	81.40	29.86		PNPL	63.23	81.50	28.60	16.75
	ZS	11.51	12.71	9.62	0.99		ZS	18.12	30.08	12.56	4.92
	BC	10.21	12.10	8.90	0.93		BC	11.49	13.60	8.90	1.57
	NIR	32.42	43.74	23.34	5.55		NIR	36.57	50.00	27.17	5.78
	LL	57.74	76.82	43.30	12.27		LL	55.65	68.06	49.00	5.14
	STV	24.90	38.83	8.93	10.72		STV	8.94	15.25	2.67	4.54
	STC	47.94	77.06	26.98	14.63		STC	50.04	82.87	24.31	21.69
Chile	IR	4.44	8.25	0.50	1.92	Thailand	IR	3.55	6.50	1.75	1.17
	NPL	1.71	2.90	0.70	0.69		NPL	8.06	17.70	2.30	5.19
	PNPL	138.57	209.80	81.10	40.15		PNPL	63.97	97.90	44.80	18.07
	ZS	7.77	8.44	5.80	0.70		ZS	2.80	3.76	1.35	0.69
	BC	7.37	8.30	6.40	0.56		BC	8.21	10.10	5.90	1.20
	NIR	27.64	44.82	19.20	6.85		NIR	28.74	35.61	22.93	3.99
	LL	36.59	48.59	29.13	5.90		LL	103.96	113.69	90.40	7.61
	STV	14.70	22.71	4.52	6.45		STV	48.37	79.96	20.30	17.35
	STC	102.56	137.16	71.65	20.23		STC	61.47	95.36	26.09	20.64
Colombia	IR	6.48	12.00	3.00	2.71	Czech Rep.	IR	2.69	5.25	0.75	1.54
	NPL	4.21	9.70	2.50	2.38		NPL	7.16	29.30	2.40	7.25
	PNPL	140.09	182.00	77.50	32.54		PNPL	58.74	77.50	46.80	10.90
	ZS	6.97	7.87	5.38	0.82		ZS	3.92	4.85	2.86	0.54
	BC	13.14	14.90	9.40	1.64		BC	5.79	6.90	5.20	0.56
	NIR	45.77	65.33	29.63	12.05		NIR	37.98	47.63	27.37	6.34
	LL	18.07	23.64	14.21	2.90		LL	65.54	72.62	59.69	4.14
	STV	5.33	8.54	0.90	3.09		STV	12.48	21.25	6.13	5.08
	STC	38.79	64.44	11.28	19.91		STC	20.41	31.34	12.18	5.91
Mexico	IR	8.92	24.10	4.28	5.37	Hungary	IR	9.30	14.50	5.75	2.68
	NPL	2.96	5.80	1.50	1.18		NPL	6.10	16.00	1.80	5.06
	PNPL	170.51	242.20	115.30	35.37		PNPL	51.88	83.50	32.00	13.91
	ZS	19.82	26.36	14.83	3.40		ZS	4.78	6.04	3.96	0.62
	BC	10.07	11.40	8.80	0.77		BC	8.40	9.30	7.10	0.66
	NIR	36.20	56.31	15.21	12.41		NIR	36.76	43.11	24.46	5.31
	LL	25.35	28.02	22.81	1.73		LL	51.26	61.86	42.77	8.44
	STV	7.64	11.36	3.21	2.43		STV	16.47	26.07	9.74	5.95
	STC	28.74	42.36	15.05	9.58		STC	21.03	27.75	14.97	4.09
India	IR	6.50	9.00	6.00	1.11	Poland	IR	5.95	16.50	2.50	3.72
	NPL	4.07	8.80	2.20	2.07		NPL	9.14	21.20	2.80	6.43
	PNPL	51.57	60.30	35.80	6.88		PNPL	63.49	72.50	40.50	8.71
	ZS	8.98	9.81	7.39	0.79		ZS	7.24	8.71	1.52	1.85
	BC	6.68	7.30	5.70	0.50		BC	8.15	9.10	7.10	0.55
	NIR	32.16	39.78	26.62	4.64		NIR	40.74	48.74	33.03	4.32
	LL	67.50	74.28	58.84	6.24		LL	48.43	59.27	38.95	7.21
	STV	51.70	79.65	29.73	18.26		STV	10.53	17.43	2.56	4.42
	STC	69.64	109.89	44.55	19.17		STC	28.85	44.09	13.77	9.06

Notes: IR is the policy interest rate. NPL is the ratio of bank non-performing loans to gross loans. PNPL is the ratio of provisions to non-performing loans. ZS is Z-score, the sum of ROA and equity-assets ratio divided by the standard deviation of ROA. BC is the ratio of bank capital to total assets. NIR is the ratio of bank non-interest income to total

income. LL is the ratio of liquid liabilities to GDP. STV is the ratio of stock market total value traded to GDP. STC is the ratio of stock market capitalization to GDP.

4.2 Main Results

Table 4 presents the results from the risk behavior model with two measures of risk, nonperforming loan (NPL_{it}) and provision to nonperforming loan ($PNPL_{it}$) on the policy interest rate and related variables from 2000 to 2014. Using the Hausman test for choosing whether the fixed or random effects is suitable method, the fixed effect specification is preferred for the sample.

We find that policy interest rates have a significant and positive relation with the ratio of non-performing loans to total loans. It indicates that higher (lower) interest rates make borrowers repay the loans harder (easier), and this increases (decreases) the loan default rates. We do not find evidence on lower interest rates may increase bank risk taking (higher non-performing loans ratio) for our sample. On the other hand, the results exhibit that policy interest rates have a significantly negative relation with the ratio of provisions to non-performing loans. Countries with higher policy interest rates depict lower ratio of provisions to non-performing loans and vice versa.

As a risk control tool, the higher provision rate presents that banks are willing to adopt better provisioning policy to reduce the impact from loan default risks. From a theoretical point of view, it supposes the higher bank non-performing loans, provision rate should be higher at the same time, but the empirical result shows it is not the case. The higher the non-performing rate, indicating that the management efficiency may be relatively low, so relatively reluctant to provide more adequate provisions for default loans. While for more efficient banks, with the lower ratio of non-performing loans, are willing to provide adequate provisions to bad loans. This may reflect that the bank regulations should pay more attention to the provisions to non-performing.

Table 4: Panel Regressions with Risk Taking Behavior

	NPL		PNPL	
	(1)	(2)	(3)	(4)
IR	0.483	0.440	-1.529	-1.434
	(0.093)***	(0.094)***	(0.450)***	(0.462)***
BC	-0.582	-0.483	-1.864	-1.787
	(0.328)*	(0.332)	(1.639)	(1.664)
NIR	0.234	0.232	-1.088	-1.109
	(0.051)***	(0.051)***	(0.244)***	(0.245)***
LL	0.156	0.145	-0.705	-0.693
	(0.053)***	(0.053)***	(0.262)***	(0.265)***
STV	-0.135		-0.089	
	(0.034)***		(0.179)	
STC		-0.082		0.046
		(0.019)***		(0.094)
C	-6.083	-3.942	196.392	190.760
R-squared	0.438	0.446	0.829	0.828
F-statistic	7.830	8.003	48.066	47.276
Prob(F-tatistic)	0	0	0	0

Notes: The dependent variable in models (1) and (2) is the ratio of bank non-performing loans to gross loans (NPL). The dependent variable in models (3) and (4) is the ratio of provisions to non-performing loans (PNPL). IR is the policy interest rate. ZS is Z-score, the sum of ROA and equity-assets ratio divided by the standard deviation of ROA. BC is the ratio of bank capital to total assets. NIR is the ratio of bank non-interest income to total income. LL is the ratio of liquid liabilities to GDP. STV is the ratio of stock market total value traded to GDP. STC is the ratio of stock market capitalization to GDP. Standard deviations are in parentheses. ***, **,* Denote significance at the 1%, 5%, and 10% level respectively

There is some evidence that bank capital has a negative impact on non-performing loans. The more adequate the bank capital, the lower the ratio of non-performing loans, and vice versa. Regarding the income side of banks, empirical results strongly show that the higher the proportion of non-interest income, the higher the ratio of non-performing loans; and the higher the proportion of non-interest income, the less provisions to non-performing loans. Banks with higher investment in non-interest income activities, it is not likely to put enough attentions on the provisions to non-performing loans.

As for the effect of financial depth on non-performing loans, we find that ratio of liquid liabilities to GDP has a significant positive relation with non-performing loans ratio, but has a negative relation with provisions ratio. As for the ratio of stock market total value traded to GDP (STV) and the ratio of stock market capitalization to GDP (STC), two indicators for financial market depth, have a significant and negative relation with

non-performing loans.

Table 5 shows the empirical results on bank stability. There is no sign of significant relation between interest rates and bank stability. However, the ratio of non-interest income of banks has a significant negative relation with bank stability. The higher the proportion of non-interest income, the bank's stability is relatively low. Not surprising, it indicates that bank capital has a significant positive impact on bank stability. In addition, some evidence shows that higher financial market depth may cause some degree of bank fragility.

The finding of Table 5 shows that the higher the degree of financial market depth, on one hand bringing more active capital market, providing more service options for banks, increasing bank efficiency, and reducing the ratio of on-performing loans. Nevertheless, on the other, with more involvement in high-risk investments and depending on more investment in non-interest income activities, it causes bank fragility as well.

To sum up, the empirical results reveal some interesting facts. First, the average interest rate of emerging countries is higher than that of developed countries. The interest rate of emerging countries, although affected by advanced country's loose monetary policy, the general interest rate shows a downward trend, but not as low as developed countries have. For the sample of 14 emerging countries in this study, the average interest rate is 7.11% over the period 2000-2014, compared with 2.267% in the euro area, 2.189% in the US, and 0.297% in Japan. The impact of low interest rates on bank risk-taking behavior in developed countries may be more direct and widespread than that in emerging countries.

Table 5: Panel Regressions with Banking Stability

	(1)	(2)	(3)	(4)
IR	0.036	0.047	0.056	0.018
	(0.055)	(0.053)	(0.052)	(0.052)
BC	0.894	0.912	0.916	
	$(0.184)^{***}$	$(0.177)^{***}$	$(0.177)^{***}$	
NIR	-0.071	-0.070	-0.072	
	$(0.030)^{**}$	$(0.029)^{**}$	$(0.027)^{***}$	
LL	-0.019	-0.007		
	(0.030)	(0.029)		
STV	-0.040	-0.027		
	$(0.021)^{*}$	(0.019)		
NPL	0.020	0.021	0.034	-0.037
	(0.042)	(0.040)	(0.038)	(0.036)
PNPL	-0.001			
	(0.008)			
C	5.390	4.050	2.994	9.266
R-squared	0.853	0.852	0.850	0.818
F-statistic	50.576	54.405	60.560	57.623
Prob(F-statistic)	0	0	0	0

Notes: The dependent variable in models (1)-(4) is Z-score (ZS). IR is the policy interest rate. BC is the ratio of bank capital to total assets. NIR is the ratio of bank non-interest income to total income. LL is the ratio of liquid liabilities to GDP. STV is the ratio of stock market total value traded to GDP. NPL is the ratio of bank non-performing loans to gross loans. PNPL is the ratio of provisions to non-performing loans. Standard deviations are in parentheses. $^{***}, ^{**}, ^{*}$ Denote significance at the 1%, 5%, and 10% level respectively.

Second, the deepening of financial markets in emerging countries may lead to more

adequate liquidity and more various investment instruments to choose, and thus to improve the stability of the bank. However, the deepening of the financial market reflects that the bank might involve extensive speculation in the financial market, which raises the risk of the bank as well. The proportion of other non-interest income, such as banks from investing derivative financial commodities, has a significant negative impact on bank stability.

For emerging market countries, financial deepening may improve liquidity, and thus stabilize the operation of the bank. On contrary, financial deepening can also increase the risk of banks, because banks can increase their revenue by operating in service of non-interest income. When interest rates are getting lower and lower, banks are likely to invest more in non-interest-earning projects in order to maintain profitability, and bank risk is increasing.

5   Conclusions

In this paper, we use unbalanced panel regression approaches to study the relations between the policy interest rate and risk taking behavior of banking, and the determinant factors on the banking stability in 14 emerging countries over the period 2000-2014. For those emerging countries, there is no evidence to support the view of lower interest rates increasing bank risk taking via risk-taking channel. However, results point out interest rates have a significant and positive relation with the ratio of non-performing loans to total loans, while having a negative relation with provisions rates. The positive impact of interest rate on non-performing loans reflects that higher interest rates make borrowers repay the loans harder, leading to the higher loan default rates, and vice versa. The negative relation between interest rate and provisions rate depicts that the bank with higher non-performing rate, presenting a relatively low efficiency, might be reluctant to provide adequate provisions for non-performing loans.

Regarding the banking stability, the empirical results show that policy interest rates do not have a direct and significant impact on the stability of the banking. But other factors, such as the extent of bank's involvement in non-interest income, the degree of financial deepening of the country, and the level of bank capital, will directly affect bank stability. The higher ratio of non-interest income of banks and higher financial market depth cause some degree of bank fragility, while the higher bank capitalization leads to the higher bank stability.

Financial depth is like a double-edged knife. On one hand, it can bring more adequate capital flows with more financial services options, leading to higher efficient financial markets and banking industry. On the other, the bank's activity in non-interest income is getting deeper and wider, and then increase banks' operating risk at the same time. In this paper, empirical research shows that for emerging markets, how to regulate the bank's bad loans, bank capitalization and high-risk financial instruments becomes the primary task.

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