Different Inflation Regimes and Their Impact on Bank Risk-Taking: Evidence from Brazil and South Korea*

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This study analyzes the impact of inflation on bank risk-taking behavior in two distinct economies, Brazil and South Korea. Since the effects of inflation on banks can vary according to the prevailing inflation regime, and given the countries' contrasting histories of high and low inflation, Brazil and South Korea offer particularly compelling cases for comparative analysis. We conducted a panel data analysis using samples of banks from both countries spanning from March 2014 to March 2021. The results reveal that inflation tends to stimulate risk appetite in both countries. However, the comparative influence of inflation and monetary policy rates on banks' risk-taking behavior varies between the two economies. In the South Korean case, monetary policy measures can attenuate the effects of inflation on financial stability, whereas, in Brazil, their efficacy seems to be less pronounced.

Keywords: Inflation; Risk-taking; Banking; Brazil and South Korea

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I. Introduction

Rising inflation levels have hit the entire globe since 2021. Demand-side strong rebounds from pandemic-induced fiscal stimulus and supply shock from the war in Ukraine are bringing the global economy under the highest inflationary pressure since the 1970s (Cevik and Miryugin, 2023; Binici et al., 2022). Inflation is expected to be entrenched for quite a long time through the process of price spillovers and higher expectations for prices (Carstens, 2022; D'Acunto and Weber, 2022; Gharehgozli and Lee, 2022). Inflation itself is already a major challenge for policymakers, but there are also side effects that must be taken into account. Building on the seminal work of Borio and Zhu (2012), the literature on the risk-taking channel has highlighted to policymakers that, beyond the well-known effects of inflation, there is also the possibility of increased risks to financial stability through its effect on banks' risk behavior. However, there is still no consensus in the literature on how banks react to distinct inflation regimes and through which channels these effects operate. In this sense, the analysis of countries with different inflation regimes offers a valuable laboratory for policymakers seeking deeper insights into how inflation shapes banks' risk-taking behavior under varying macroeconomic conditions.

Recent literature has further advanced the understanding of how inflation interacts with banks' risk-taking through monetary policy channels. Studies such as Borio, Gambacorta and Hofmann (2017) and Bikker and Vervliet (2018) show that persistently low interest rates compress margins and profitability, encouraging banks to search for yield and adjust portfolios toward riskier assets. Recent evidence, including De Moraes and De Mendonça (2019), Dell'Ariccia, Laeven and Suárez (2017), and Tobal and Menna (2020), highlights that banks' and policymakers' responses to monetary conditions in emerging markets depend not only on leverage and size but also on the broader institutional and supervisory framework that shapes capital flows and financial stability. Empirical findings by Cecchetti and Kohler (2012) and Nier and Kang (2016) also confirm that the transmission of monetary policy to financial stability depends on the institutional design of banking systems and the degree of policy coordination. Together, these contributions reinforce that the relationship between inflation, monetary policy, and bank risk-taking is not uniform across countries, underscoring the relevance of comparing Brazil and South Korea

Considering the ambiguous results of the literature regarding bank reactions to inflation, it is plausible that banks respond differently across economic environments. Following this perspective, Boyd and Champ (2006) argue that when inflation exceeds a critical level of around five percent, banks react by rationing credit, leading to a reduction in lending. Similar results are suggested by Azariadis and Smith (1996) and Choi et al. (1996). Therefore, the impact of inflation on banks may vary depending on the level of inflation in different countries, and one way to address this issue and help fill this gap in the literature is through the analysis of countries operating under different inflation regimes.

This study contributes to the literature by filling a gap in the analysis of how inflation affects banks' risk-taking behavior, particularly in economies with different inflationary histories. There is no work in the literature that seeks to make a comparative analysis of the financial systems of Brazil and Korea, even though both countries follow the Basel Accord recommendation for banks. By jointly examining these two distinct contexts, the paper bridges evidence from emerging and advanced economies, providing new empirical insights into the inflation–risk-taking nexus.

Considering that Brazil recorded an average annual inflation rate of 6.2% over the last decade, significantly higher than Korea's 1.6%, this comparison allows assessing how different inflationary regimes shape banks' risk tolerance. The study uses two original databases from the Central Bank of Brazil (CBB) and the Financial Supervisory Service of Korea (FSS), covering quarterly data from March 2014 to March 2021, corresponding to the period of full Basel III implementation in both countries. These databases make it possible to evaluate the effects of inflation on solvency risk (BUF and LEV) and credit risk (PROV), providing consistent and comparable evidence for both economies.

The growing interest in comparative analyses between Brazil and South Korea stems from their similar development model based on export-led growth during the late 60s and 70s (Vieira, 2014). However, today, the two countries have more differences than similarities. Brazil remains an emerging market, while South Korea is a developed country. For this reason, Hoffmaister and Roldos (2001) analyzed the diachronic macroeconomic fluctuations of these countries. Goodhart and Spicer (2003) and Painceira (2010) studied their monetary policies, and Canuto (2020) evaluated the industrial development processes.

Our findings suggest that Brazil and South Korean banks are willing to take on more risk by reducing their bank risk measures as inflation increases. Such patterns indicate an impact of inflation on financial stability in both countries. When we analyze the impact of the monetary policy rate compared to inflation, the results show that the reaction to an elevation of banks' monetary policy interest rate amplifies the bank risk measures, which is the opposite of inflation. Moreover, the impact of inflation is more significant than the monetary policy rate in Brazil's case, while the opposite is true in Korea. These findings suggest that in the Korean context, monetary policy can mitigate the impact of inflation on financial stability, whereas in Brazil, it appears to be less effective.

Besides this introduction, this paper is organized as follows: Section 2 provides an overview of the economies of the two countries. Section 3 describes the data and variables along with the models and methods used in this study. Section 4 provides evidence regarding inflationary effects on bank risk-taking for the two countries. Section 5 presents the robustness test, and section 6 presents the conclusion.

II. Economy overview of Brazil and Korea

Brazil and South Korea, known as miracles of export-led growth, have adopted different economic policies since the 1980s. In the late 1990s, both countries experienced a financial crisis due to public sector debt in Brazil and private sector debt in Korea, leading to painful monetary tightening measures (Goodhart and Spicer, 2003). From an industrial perspective, Korea expanded on global value chains through free trade and technological advancement. In contrast, Brazil focused on the periphery of the global production network due to its decades of obsession with its local supply chains (Canuto, 2020). Since the mid-2000s, the financial sector in Korea, including banks, has been more rapidly integrated into the global market, opposite to Brazil (Painceira, 2010).

Concerning inflation, in response to the oil shocks in the 1970s, Brazil fell into a severe trap due to its indexation of inflation. In contrast, the Korean economy succeeded in opening up and benefited from a

TABLE 1. Economy overview 2014-2021 (Brazil and Korea, average of the period)

	Brazil	**Korea**
Inflation rates	5.4% (std. dev. 2.6%)	1.0% (std. dev. 0.6%)
Expenditure per GDP	Gross national expenditure (102.7%)	Gross national expenditure (97.2%)
Policy interest rates	8.5% (std. dev. 4.8%)	1.4% (std. dev. 0.5%)
Total Market (based on GDP)	Investment (20.5%) > Savings (16.1%)	Investment (32.3%) < Savings (37.0%)
Government (based on GDP)	Government borrowing (79.5%)	Government borrowing (41.4%)
Banks	**Conservative**	**Aggressive**
Lending (based on GDP)	Loans to Government (41.6%) Credit to Private sector (64.7%)	Loans to Government (−1.4%) Credit to Private sector (147.8%)
Capital, Spread	Capital to Asset ratio (9.3%) Interest Rate Spread (30.8%)	Capital to Asset ratio (7.6%) Interest Rate Spread (1.7%)

Note: The data were calculated from The World Bank DataBank (https://databank.worldbank.org/home.aspx)

TABLE 2. Financial Development Index 2014–2020

Country	2014	2015	2016	2017	2018	2019	2020
Korea	0.84	0.84	0.85	0.84	0.81	0.83	0.84
Germany	0.72	0.74	0.69	0.68	0.70	0.67	0.71
Brazil	0.63	0.62	0.62	0.62	0.64	0.66	0.67
Russia	0.48	0.46	0.51	0.47	0.47	0.48	0.53
Mexico	0.38	0.38	0.40	0.39	0.39	0.39	0.41
Uruguay	0.22	0.22	0.24	0.26	0.30	0.31	0.32

Note: The data are from Prosperity Data360 in World Bank Group (https://prosperitydata360.worldbank.org)

favorable external environment to control Inflation (Hoffmaister and Roldos, 2001). Therefore, the two countries' economies have evolved on divergent paths for nearly half a century, so each economy embodies different outcomes. Table 1 summarizes the performance of these countries in the period studied.

The annual average inflation rates for the two countries differ greatly with 5.4% for Brazil and 1% for Korea for the period 2014-2020. Brazil's gross national expenditure exceeded its aggregate supply by indicating 102.7% of its GDP, while Korea expended less than its GDP by recording 97.2% of its GDP. Interest rates, often expected to move along with inflation rates, show a substantial gap between the two economies with the average policy rates being 8.5% for Brazil and 1.3% for Korea. Particularly, the Brazilian government, despite a shortage of savings within its economy, was borrowing (79.5% of GDP) much more than the Korean government did (41.4% of GDP).

Despite the significant disparities in inflation and interest rate levels, both countries exhibit robust performance in terms of financial development. According to the International Monetary Fund's (IMF) Financial Development Index—an annual gauge assessing the sophistication of financial institutions and markets based on depth, accessibility, and efficiency—Korea ranks among the top globally. Concurrently, Brazil surpasses other emerging economies in financial development and approaches the levels observed in Germany, a leading advanced economy. This comparison underscores the progress and resilience of financial systems in diverse economic contexts.

However, there are significant disparities between the two countries regarding bank performance and the funding environment. Brazilian

TABLE 3. Banks & Stock Market 2014–2020 (Brazil and Korea, average of the period)

	Brazil	Korea
Banks	**Conservative**	**Aggressive**
Credit to Private sector (% of GDP)	63.7%	141.7%
Loans to Government (% of GDP)	41.6%	−1.4%
Non-performing loans (% of total loans)	2.6%	0.4%
Capital to Asset ratio	9.3%	7.6%
Liquid reserves to assets ratio	28.3%	6.1%
Interest Rate Spread	30.8%	1.7%
Stock Market	**Lower Access to Funding**	**Easy Access to Funding**
Market capitalization (% of GDP)	46.9%	94.7%
Stocks traded, total value (% of GDP)	42.9%	145.4%
Stocks traded, turnover ratio (%)	87.6%	148.0%

Note: The data are from Prosperity Data360 in World Bank Group (https://prosperitydata360.worldbank.org).

banks, less than half the size of their Korean counterparts in terms of credit extended to the private sector, rely heavily on government support for lending. This situation is further underscored by the differences in the ratio of non-performing loans, indicating distinct credit risk profiles within the financial markets of each country. Reflective of these conditions, Brazilian banks exhibit much greater conservatism than Korean banks, as evidenced by higher capital-to-asset ratios, liquid reserves-to-assets ratios, and interest spreads. Additionally, the notable disparities in the size and trading volumes of the stock markets between the two countries suggest significant differences in the banks' funding activities.

III. Data and methodology

To analyze the inflationary effect on bank risk-taking in Brazil and Korea, we considered two distinct samples, each composed of all banks under the jurisdiction of the respective regulatory authorities. The Brazilian sample consists of 3,770 observations taken from the balance sheets of 142 banks from March 2014 to March 2021 (29 quarters). This information is available in the IF.data system (Selected Information on Supervised Institutions) of the Central Bank of Brazil. The sample of Korea is 2,871 observations from 99 bank balance sheets for the same period are available in the FISIS (Financial Statistics Information System) of the Financial Supervisory Service of Korea. Such as De Moraes, Grapiuna, and Antunes (2023), we considered three measures for bank risk as dependent variables: capital buffer, bank leverage, and credit provisions.

The capital buffer (BUF) refers to a bank's additional capital beyond the regulatory minimum requirement. A larger BUF indicates a reduced risk of bankruptcy for banks. Bank leverage (LEV), which represents the bank's capital-to-assets ratio, is determined by dividing its capital by its total assets. A higher LEV signifies lower solvency risk for the bank. Credit provisions (PROV), which account for a bank's expectation of credit default, are determined by the ratio of credit loss coverage to the total credit volume of the bank, represents credit risk. Inflation rate (INF), the main explanatory variable, is indicated as the quarterly increase rate of CPI index not seasonally adjusted, which is available from TSMS (Time Series Management System) of the Central Bank of

Brazil and ECOS (Economic Statistics System) of the Bank of Korea.

In order to have less bias from omitted variables in our model, we consider well-accepted variables in related literature. For the baseline model, we include return on equity (ROE) and credit growth rate (CRED), which are individual bank's performance measures perceived to be directly related to their risk-taking, as well as the policy interest rate (IR), a macroeconomic variable that has been shown to affect the risk-taking behavior of banks clearly (Abbas et al., 2021; Dell39;Ariccia, Laeven, and Suarez, 2017). Moreover, in the extended models, another bank's individual characteristics are bank liquidity (LIQ), which is calculated as liquid assets to total assets ratio, and bank size (SIZE), which is measured by the log of total bank assets. Considering the possible effect of the business cycle, the output gap (GAP), the difference between the GDP series and its long-term trend as measured using the Hodrick-Prescott filter, was included as well (Stolz and Wedow, 2011; Gambacorta and Mistrulli, 2004; Tabak, Laiz, and Cajueiro, 2013). Finally, we follow the banking literature that considers the risk measures as persistent behavior in a dynamic panel model (de Moraes and de Mendonça). Hence, our general specification is as follows:

$$BRM_{i,t} = \beta_0 + \beta_1 BRM_{i,t-1} + \beta_2 INF_{i,t-1} + \beta_3 Z_{i,t-1} + \epsilon_{i,t} \quad (1)$$

Where $BRM_{i,t}$ is the banks' risk measure represented by BUF, LEV, and $PROV$ for bank i in time period t. INF is the inflation rate and Z represents the control variables which are ROE, $CRED$, IR, LIQ, $SIZE$, and GAP. $\epsilon_{i,t}$ is the error term.

Estimating a dynamic panel with fixed effects may lead to biased coefficients due to the correlation between the fixed effects and the lagged dependent variable (Nickell,1981). This bias is inversely proportional to the panel length ('T'), so Nickell's bias becomes significant when T is less than 30 (Judson and Owen, 1999). In our case, with a panel length of T = 29, we do not have enough observations to reduce this bias to a negligible level. Moreover, as commonly observed in dynamic models, the correlation between the residuals and the lagged variables can cause endogeneity or simultaneity among explanatory variables, such as the probable interaction between capital buffer and bank liquidity.

In order to address the above-mentioned problems, it is worth considering the Difference Generalized Method of Moments (D-GMM) as suggested by Arellano and Bond (1991). This method where models are estimated in first differences bears less biased estimation by removing the fixed effect from individual bank characteristics. It also estimates parameters in a more consistent way because the lagged dependent variable can be instrumented with its past levels. However, as pointed out by Arellano and Bover (1995) and Blundell and Bond (1998), however, the D-GMM has a bias for both large and small samples and the use of lags can generate weak instruments.

Considering the limitation concerning D-GMM, we follow Guidara, Soumaré, and Tchana (2013) and Stolz and Wedow (2011) by employing the System Generalized Method of Moments (S-GMM) in our estimations. The System Generalized Method of Moments (S-GMM), where regressions in both differences and levels are combined into one system, thus assuring more reliable estimation. Moreover, to avoid over-fitting of regressions often caused by excessive instruments, we keep the instrument to a cross-section ratio below one across all the models (de Mendonça and Barcelos, 2015). The test of over-identifying restrictions (J-test) is also performed as suggested by Arellano (2003), and tests of first-order (AR1) and second-order (AR2) serial correlation are performed as well.

IV. Estimation Results

To address the research question of the current study, the results presented in Tables 4,5 and 6 correspond respectively to the effects of inflation on bank risk measures, capital buffer, leverage, and credit provisions for Brazil and South Korea. the estimated models aim to enhance the robustness of the analyses. The baseline model in the first column includes inflation, the monetary policy interest rate, and the most commonly used banking variables. We introduce additional variables in models 2 through 4 to further strengthen the analysis. Overidentification restrictions are valid in all regressions as the null hypothesis cannot be rejected in the J-test, and the serial autocorrelation tests (AR(1) and AR(2)) do not indicate the presence of serial autocorrelation at a 10% significance level. The lagged term in all the models with static significance and positive signs indicates the persistence effect in risk measures, such as De Moraes, Grapiuna, and Antunes (2023).

Across all models, inflation (INF) exhibits a stable negative relationship with the main risk indicators (BUF, LEV, and PROV) implying that higher inflation tends to erode banks' capital buffers and increase their exposure to risk. This pattern remains consistent across specifications (Tables 4–6).

The policy interest rate (IR) moves in the opposite direction to inflation. The response of buffers, leverage, and credit provisions to monetary policy can be attributed to the forward-looking behavior of banks (De Moraes and De Mendonça, 2019). As monetary policy interest rates rise, banks foresee a weakening economy characterized by reduced economic growth and increased unemployment rates. At the same time, higher interest rates enhance the attractiveness of risk-free assets for banks, leading to a decreased risk appetite and prompting banks to adopt a more conservative stance through enhanced risk measures (Bikker and Vervliet, 2018; Borio, Gambacorta and Hofmann, 2017; Alessandri and Nelson, 2015). On the other hand, lower policy interest rates and expansionary monetary policy bring down banks' capital levels and risk-taking capacity. Conversely, lower policy interest rates and expansionary monetary policy reduce banks' capital levels and risk-taking capacity (Cecchetti and Kohler, 2012; Nier and Kang, 2016).

The relative impact of inflation and monetary policy differs markedly across the two economies. In Brazil, inflation (INF) exerts a stronger influence on banks' risk-taking behavior, while in South Korea the policy rate (IR) plays the leading role. This divergence reflects structural and institutional differences between the two financial systems and the credibility of their monetary frameworks. Wald tests confirm that the estimated coefficients for BUF, LEV, and PROV are statistically different between the countries (Appendix Tables A.5–A.7). These findings expand previous evidence from Borio and Zhu (2012) and De Moraes and De Mendonça (2019) by showing that the strength and direction of the inflation–risk-taking channel depend on the institutional credibility of the monetary regime. In this sense, our results confirm that macroeconomic context and regulatory structure are decisive in shaping banks' behavioral response to inflation

Considering the central bank's reaction to inflation in Brazil and Korea, the intensity of the impact of inflation and monetary policy interest rate may mean that the Brazilian financial system is more fragile in terms of financial stability than South Korea. One possible explanation for this difference is related to the credit supply that exists between the two countries. In particular, the high proportion of earmarked loans in the Brazilian credit market in private banks is noteworthy. Earmarked loans

TABLE 4. Effects of Inflation on Bank Capital Buffer (BUF)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
BUF(−1)	0.6178***	0.4475***	0.4791***	0.5139***	0.2271***	0.1461***	0.1992***	0.1738***
	(0.0161)	(0.0292)	(0.0306)	(0.0301)	(0.0451)	(0.0258)	(0.0403)	(0.0294)
INF(−1)	−1.0104***	−0.6190***	−0.5386***	−0.6481***	−0.6322***	−0.4954***	−0.4950***	−0.6002***
	(0.1282)	(0.1463)	(0.1586)	(0.1477)	(0.0743)	(0.0660)	(0.0886)	(0.0362)
ROE(−1)	−0.0471***	−0.0516***	−0.0522***	−0.0506***	−0.3137***	−0.2636***	−0.3191***	−0.4055***
	(0.0024)	(0.0033)	(0.0032)	(0.0030)	(0.0551)	(0.0310)	(0.0439)	(0.0295)
CRED	−0.0025***	−0.0023***	−0.0024***	−0.0023***	0.1904***	0.2721***	0.2510***	0.2773***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0405)	(0.0445)	(0.0329)	(0.0240)
IR(−1)	0.1174***	0.1732***	0.2413***	0.2977***	0.9750***	1.4517***	1.1662***	1.1108***
	(0.0261)	(0.0452)	(0.0481)	(0.0530)	(0.1370)	(0.0969)	(0.1528)	(0.1030)
LIQ(−1)	–	0.4717***	0.4928***	0.4998***	–	−0.2148***	−0.1536***	−0.1513***
		(0.0418)	(0.0463)	(0.0430)		(0.0309)	(0.0419)	(0.0448)
GAP(−1)	–	–	−0.2539***	−0.2976***	–	–	0.4036***	0.5436***
			(0.0529)	(0.0515)			(0.1526)	(0.0715)

(Continued)

TABLE 4. Effects of Inflation on Bank Capital Buffer (BUF)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
SIZE(−1)	–	–	–	0.0332***	–	–	–	−0.0134***
				(0.0112)				(0.0032)
Obs.	2163	2204	2204	2204	725	690	694	686
Instr/cross sec.	41/121	33/121	37/121	43/121	27/98	30/97	29/97	35/97
J-statistic	41.88	28.86	32.37	41.78	23.98	22.42	22.63	31.15
P-value	0.23	0.36	0.35	0.19	0.34	0.55	0.42	0.26
AR(1)	−0.44	−0.43	−0.44	−0.44	−0.22	−0.36	−0.35	−0.40
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2)	0.01	−0.01	−0.01	0.00	0.05	0.03	0.03	0.00
P-value	0.71	0.74	0.84	0.92	0.26	0.61	0.63	0.96

Note: i) Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. ii) White's heteroskedasticity consistent covariance matrix was applied in regressions. iii) Standard errors between parentheses. iv) S-GMM uses two step of Arellano and Bover without time period effects. v) Test for AR(1) and AR(2) check for the presence of first order and second order serial correlation in the first-difference residuals. vi) The sample is an unbalanced panel of 142 banks for Brazil and 99 banks for Korea from 2014q1 to 2021q1. vii) Dependent variable: BUF (capital buffer ratio, equity capital over total assets); viii) Key explanatory variables: INF (inflation rate), IR (monetary policy interest rate), ROE (return on equity), CRED (credit growth rate), LIQ (liquidity ratio), GAP (asset–liability maturity gap), and SIZE (log of total assets). ix) Interpretation: Inflation coefficients are negative and significant for both countries, indicating that higher inflation weakens banks' capital positions. In contrast, higher policy rates strengthen capital buffers, consistent with a tightening effect on bank risk-taking.

TABLE 5. Effects of Inflation on Bank Leverage (LEV)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
LEV(−1)	0.4998***	0.5014***	0.5014***	0.4549***	0.4232***	0.4760***	0.4437***	0.3993***
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0283)	(0.0108)	(0.0067)	(0.0071)
INF(−1)	−0.4472***	−0.1173***	−0.1561***	−0.9471***	−0.2198***	−0.5088***	−0.1239***	−0.3682***
	(0.0166)	(0.0125)	(0.0105)	(0.0364)	(0.0491)	(0.0250)	(0.0227)	(0.0373)
ROE(−1)	0.3764***	0.3533***	0.3541***	0.3444***	−0.2976***	−0.1511***	−0.1707***	−0.3208***
	(0.0003)	(0.0001)	(0.0000)	(0.0002)	(0.0107)	(0.0056)	(0.0072)	(0.0097)
CRED	−0.0292***	−0.0595***	−0.0611***	−0.0617***	0.3123***	0.2247***	0.3073***	0.5458***
	(0.0004)	(0.0004)	(0.0003)	(0.0008)	(0.0212)	(0.0081)	(0.0123)	(0.0144)
IR(−1)	0.0141***	0.0914***	0.0698***	0.7396***	1.3352***	1.1766***	1.4066***	3.4417***
	(0.0039)	(0.0077)	(0.0058)	(0.0153)	(0.1160)	(0.0591)	(0.0923)	(0.1448)
LIQ(−1)	–	0.3023***	0.2789***	0.5615***	–	−0.1874***	−0.2446***	−0.5024***
		(0.0022)	(0.0016)	(0.0044)		(0.0057)	(0.0062)	(0.0141)
GAP(−1)	–	–	−0.0261***	0.1916**	–	–	0.5146***	0.4722***
			(0.0140)	(0.0056)			(0.0398)	(0.0633)
SIZE(−1)	–	–	–	0.2358***	–	–	–	0.0552***
				(0.0006)				(0.0023)

(Continued)

TABLE 5. Effects of Inflation on Bank Leverage (LEV)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Obs.	2472	2466	2466	2466	728	690	690	690
Instr/cross sec.	92/125	92/122	101/122	101/122	37/98	42/97	46/97	44/97
J-statistic	103.82	95.21	100.25	103.82	27.86	36.33	45.24	43.25
P-value	0.10	0.23	0.31	0.20	0.67	0.45	0.22	0.19
AR(1)	−0.23	−0.23	−0.23	−0.23	−0.39	−0.39	−0.30	−0.58
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2)	0.02	0.02	0.02	0.02	−0.01	0.05	−0.05	0.08
P-value	0.23	0.32	0.31	0.21	0.83	0.33	0.42	0.20

Note: i) Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. ii) White's heteroskedasticity consistent covariance matrix was applied in regressions. iii) Standard errors between parentheses. iv) S-GMM uses two step of Arellano and Bover without time period effects. v) Test for AR(1) and AR(2) check for the presence of first order and second order serial correlation in the first-difference residuals. vi) The sample is an unbalanced panel of 142 banks for Brazil and 99 banks for Korea from 2014q1 to 2021q1. vii) The dependent variable is LEV (bank leverage, defined as the ratio of total assets to equity capital). viii) Key explanatory variables: INF (inflation rate), IR (monetary policy interest rate), ROE (return on equity), CRED (credit growth rate), LIQ (liquidity ratio), GAP (asset–liability maturity gap), and SIZE (log of total assets). ix) Interpretation: Inflation coefficients are negative and significant for both countries, suggesting that higher inflation reduces banks' leverage, indicating deleveraging behavior amid rising price levels. In contrast, higher policy rates are associated with greater leverage, consistent with a tightening environment in which banks rely more on debt funding to preserve profitability.

TABLE 6. Effects of Inflation on Credit Provisions (PROV)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
PROV(−1)	0.6144***	0.6156***	0.6289***	0.6192***	0.9627***	0.9482***	0.9480***	0.7611***
	(0.0002)	(0.0004)	(0.0004)	(0.0002)	(0.0048)	(0.0075)	(0.0078)	(0.0020)
INF(−1)	−0.2612***	−0.2230***	−0.2762***	−0.3216***	−0.1040***	−0.0990***	−0.0975***	−0.1021***
	(0.0109)	(0.0120)	(0.0136)	(0.0095)	(0.0071)	(0.0111)	(0.0122)	(0.0031)
ROE(−1)	−0.0113***	−0.0085***	−0.0083***	−0.0088***	−0.0328***	−0.0279***	−0.0276***	−0.0228***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0040)	(0.0052)	(0.0052)	(0.0006)
CRED	−0.0080***	−0.0084***	−0.0073***	−0.0075***	−0.0270***	−0.0234***	−0.0231***	−0.0088***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0010)	(0.0012)	(0.0013)	(0.0009)
IR(−1)	0.0592***	0.0656***	0.0587***	0.0430***	0.1256***	0.1022***	0.0967***	0.1316***
	(0.0029)	(0.0030)	(0.0036)	(0.0019)	(0.0072)	(0.0165)	(0.0179)	(0.0075)
LIQ(−1)	–	0.0179***	0.0093***	0.0060***	–	0.0396***	0.0401***	0.0160***
		(0.0006)	(0.0006)	(0.0006)		(0.0037)	(0.0040)	(0.0008)
GAP(−1)	–	–	0.0072***	0.0025***	–	–	−0.0483***	−0.0269***
			(0.0011)	(0.0007)			(0.0115)	(0.0082)
SIZE(−1)	–	–	–	−0.0106***	–	–	–	−0.0010***
				(0.0003)				(0.0003)

(Continued)

TABLE 6. Effects of Inflation on Credit Provisions (PROV)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Obs.	2207	2227	2207	2240	736	702	702	662
Instr/cross sec.	93/116	90/122	90/116	100/117	29/98	27/97	28/97	44/97
J-statistic	100.46	95.21	91.01	105.9	32.19	27.51	27.48	45.45
P-value	0.17	0.18	0.26	0.15	0.12	0.15	0.12	0.13
AR(1)	−0.47	−0.47	−0.46	−0.46	−0.46	−0.40	−0.40	−0.45
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2)	0.01	−0.00	−0.01	−0.01	−0.04	−0.06	−0.07	−0.08
P-value	0.54	0.89	0.56	0.64	0.38	0.19	0.15	0.14

Note: i) Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. ii) White's heteroskedasticity consistent covariance matrix was applied in regressions. iii) Standard errors between parentheses. iv) D-GMM uses two-step of Blundell and Bond (1998) without time period effects. S-GMM uses two step of Arellano and Bover without time period effects. v) Test for AR(1) and AR(2) check for the presence of first order and second order serial correlation in the first-difference residuals. vi) The sample is an unbalanced panel of 142 banks for Brazil and 99 banks for Korea from 2014q1 to 2021q1. vii) The dependent variable is PROV (loan-loss provisions, a proxy for credit risk). viii) Key explanatory variables: INF (inflation rate), IR (monetary policy interest rate), ROE (return on equity), CRED (credit growth rate), LIQ (liquidity ratio), GAP (asset–liability maturity gap), and SIZE (log of total assets). ix) Interpretation: Inflation coefficients are negative and statistically significant in all models, indicating that higher inflation reduces provisioning needs — possibly reflecting improved nominal performance or delayed recognition of credit losses. Conversely, higher policy rates are associated with increased provisions, suggesting that tighter monetary conditions raise borrowers' repayment risk and weaken credit quality.

are funded and allocated through Brazilian government programs and thus have constraints on interest rates and allocation beyond the control of banks (Castro, 2019; Joaquim and Ornelas, 2019). Consequently, the volume of earmarked loans is less responsive to changes in market interest rates, which may lead Brazilian banks to react less to monetary policy interest than inflation, which can represent a financial stability threat in situations of high inflation.

The baseline results reveal differences between capital measures (BUF and LEV) and credit provision (PROV). ROE and CRED display consistent signs for both countries, in line with De Moraes and De Mendonça (2019). The negative ROE coefficients indicate that higher profitability increases banks' risk exposure, reducing capital buffers. The opposite signs of CRED—negative for Brazilian banks and positive for Korean—suggest structural differences in credit dynamics. As shown by Song and Ryu (2016) and Seo (2023), Korean banks tend to strengthen capital positions during credit expansions, supported by low funding costs and easy market access. Among control variables, LIQ shows divergent effects between countries, reflecting distinct liquidity management strategies (Stolz and Wedow, 2011). Banks with greater liquidity may either build reserves or take on more risk (Khan et al., 2017; Acharya and Naqvi, 2012; Wagner, 2007). Finally, SIZE and GDP behave consistently with established evidence (De Moraes and De Mendonça, 2019).

V. Robustness analysis

Inspired by the works of Beaudry et al. (2001) and Caglayan et al. (2016), which explain that bank managers cannot allocate funds to their best use when faced with high variation of inflation, we choose inflation volatility (VOL) as a replacement for the inflation rate (INF) for robustness test. We defined VOL as the standard deviation of the inflation rate over the past four quarters. The inflation volatility of the two countries during the analysis period is shown in the two figures below. For both countries, it represents a generally synchronous relationship with the inflation rate (INF), indicating coherent behavior.

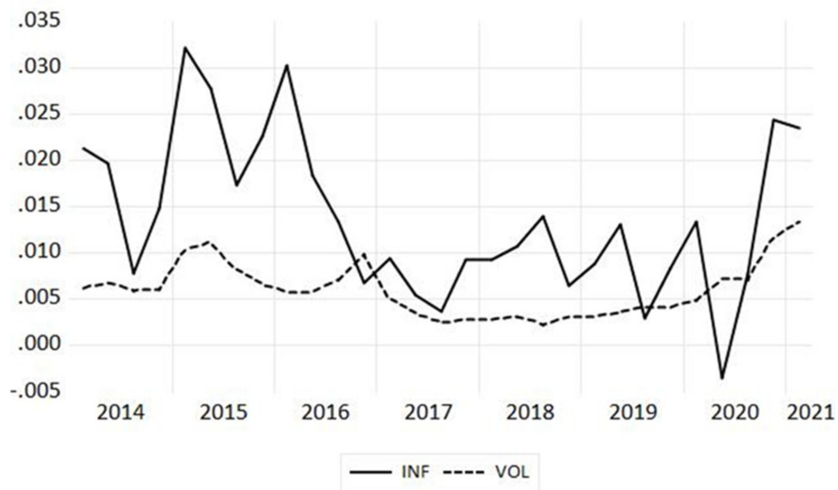

FIGURE 1.— Inflation Rate and Inflation Volatility - Brazil.

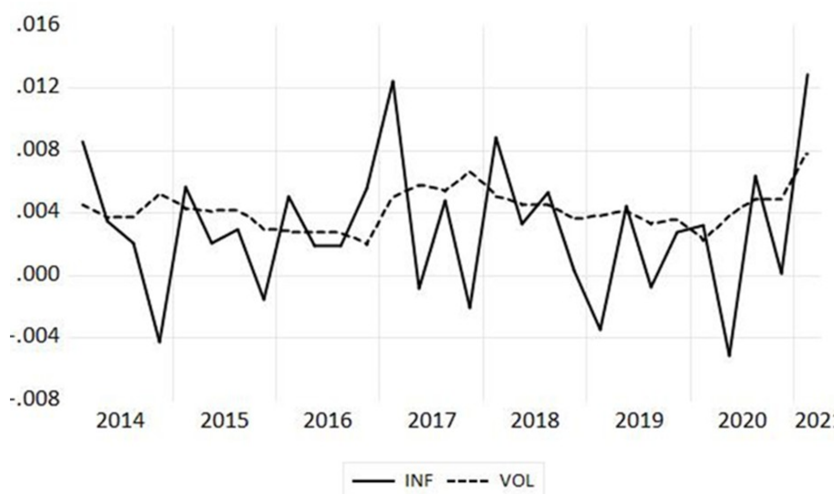

FIGURE 2.— Inflation Rate and Inflation Volatility - Korea.

TABLE 7. BUF (Capital Buffer)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
BUF(−1)	0.4269***	0.3582***	0.4076***	0.4749***	0.2619***	0.4137***	0.5130***	0.3250***
	(0.0357)	(0.0297)	(0.0399)	(0.0403)	(0.0265)	(0.0268)	(0.0300)	(0.0193)
VOL	−4.9079***	−3.0489***	−3.4176***	−4.3041***	−0.7047***	−2.1943***	−1.8657***	−2.3202***
	(0.8217)	(0.8643)	(1.2060)	(1.1841)	(0.1900)	(0.1628)	(0.1047)	(0.0863)
ROE(−1)	−0.0456***	−0.0498***	−0.0461***	−0.0424***	−0.6539***	−0.2228***	−0.2201***	−0.1645***
	(0.0034)	(0.0043)	(0.0046)	(0.0030)	(0.0697)	(0.0542)	(0.0383)	(0.0197)
CRED	−0.0022***	−0.0022***	−0.0023***	−0.0022***	0.1071***	0.1531***	0.0926***	0.2181***
	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0378)	(0.0563)	(0.0249)	(0.0117)
IR(−1)	0.1358***	0.1718***	0.2104***	0.3670***	0.9548***	0.4085***	0.1877**	0.2846***
	(0.0472)	(0.0610)	(0.0472)	(0.0982)	(0.0903)	(0.1477)	(0.0657)	(0.0251)
LIQ(−1)	–	0.3549***	0.3516***	0.3703***	–	−0.5015***	−0.2783***	−0.3736***
		(0.0496)	(0.0523)	(0.0555)		(0.0626)	(0.0289)	(0.0133)
GAP(−1)	–	–	−0.1675**	−0.1355*	–	–	0.4884**	0.3591***
			(0.0689)	(0.0682)			(0.1550)	(0.0813)
SIZE(−1)	–	–	–	0.0452**	–	–	–	−0.0051*
				(0.0215)				(0.0024)

(Continued)

TABLE 7. BUF (Capital Buffer)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Obs.	2240	2240	2240	2240	728	680	666	644
Instr/cross sec.	29/122	29/122	34/122	38/122	32/98	34/97	35/97	42/97
J-statistic	25.06	20.97	35.34	36.65	35.01	32.11	34.17	40.01
P-value	0.40	0.58	0.13	0.19	0.14	0.27	0.20	0.22
AR(1)	−0.42	−0.42	−0.42	−0.43	−0.39	−0.36	−0.50	−0.38
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2)	−0.01	−0.02	−0.01	0.00	−0.06	−0.10	−0.09	−0.07
P-value	0.59	0.37	0.64	0.86	0.28	0.11	0.23	0.26

Note: i) Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. ii) White's heteroskedasticity consistent covariance matrix was applied in regressions. iii) Standard errors between parentheses. iv) D-GMM uses two-step of Blundell and Bond (1998) without time period effects. S-GMM uses two step of Arellano and Bover without time period effects. v) Test for AR(1) and AR(2) check for the presence of first order and second order serial correlation in the first-difference residuals. vi) The sample is an unbalanced panel of 99 banks from 2014q1 to 2021q1. vii) The dependent variable is BUF (capital buffer ratio, defined as equity capital over total assets). viii) Key explanatory variables include VOL (volatility of inflation, proxy for macroeconomic uncertainty), IR (monetary policy interest rate), ROE (return on equity), CRED (credit growth rate), LIQ (liquidity ratio), GAP (asset–liability maturity gap), and SIZE (log of total assets). ix) Interpretation: Inflation volatility exhibits a strong negative relationship with capital buffers in both countries, suggesting that macroeconomic instability erodes banks' capital positions by increasing uncertainty and credit risk. In contrast, higher policy rates are associated with stronger capital ratios, consistent with a conservative response to tighter monetary conditions.

TABLE 8. LEV (Bank Leverage)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
LEV(−1)	0.5583***	0.5593***	0.5878***	0.5637***	0.4169***	0.3777***	0.4514***	0.3141***
	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0192)	(0.0666)	(0.0182)	(0.0314)
VOL	−1.4467***	−1.7210***	−1.2189***	−4.0144***	−0.5964***	−0.8328**	−1.2201***	−1.2588***
	(0.1089)	(0.1507)	(0.0918)	(0.0502)	(0.0595)	(0.4148)	(0.0581)	(0.1604)
ROE(−1)	0.0000***	0.0000***	0.0000***	0.0000***	−0.2997***	−0.5342***	−0.3041***	−0.6863***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0098)	(0.1080)	(0.0108)	(0.0501)
CRED	−0.0005***	−0.0033***	−0.0007***	−0.0008***	0.3116***	0.4677***	0.3233***	0.6103***
	(0.0001)	(0.0003)	(0.0000)	(0.0002)	(0.0167)	(0.0646)	(0.0034)	(0.0292)
IR(−1)	0.0301***	0.0452***	0.0552***	0.5513***	1.2258***	1.7978***	1.3783***	3.7789***
	(0.0114)	(0.0141)	(0.0104)	(0.0074)	(0.0597)	(0.3816)	(0.0361)	(0.2302)
LIQ(−1)	–	0.0352***	0.0305***	0.0954***	–	−0.1795***	−0.1724***	−0.3145***
		(0.0076)	(0.0032)	(0.0023)		(0.0473)	(0.0083)	(0.0253)
GAP(−1)	–	–	0.0107***	0.0195***	–	–	0.2255***	0.1137***
			(0.0030)	(0.0011)			(0.0270)	(0.0090)
SIZE(−1)	–	–	–	0.1525***	–	–	–	0.0563***
				(0.0004)				(0.0049)

(Continued)

TABLE 8. LEV (Bank Leverage)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Obs.	2624	2624	2624	2587	728	694	690	690
Instr/cross sec.	62/129	57/129	81/129	110/127	37/98	34/97	42/97	40/97
J-statistic	64.86	63.92	89.53	120.39	27.45	24.04	44.13	36.60
P-value	0.22	0.11	0.11	0.10	0.70	0.68	0.14	0.26
AR(1)	−0.25	−0.25	−0.26	−0.26	−0.38	−0.36	−0.34	−0.38
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2)	0.03	0.03	−0.01	−0.02	−0.04	−0.07	−0.05	−0.05
P-value	0.11	0.11	0.45	0.39	0.52	0.34	0.40	0.55

Note: i) Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. ii) White's heteroskedasticity consistent covariance matrix was applied in regressions. iii) Standard errors between parentheses. iv) D-GMM uses two-step of Blundell and Bond (1998) without time period effects. S-GMM uses two step of Arellano and Bover without time period effects. v) Test for AR(1) and AR(2) check for the presence of first order and second order serial correlation in the first-difference residuals. vi) The sample is an unbalanced panel of 99 banks from 2014q1 to 2021q1. vii) The dependent variable is LEV (bank leverage, defined as total assets divided by equity capital). viii) Key explanatory variables include VOL (volatility of inflation, proxy for macroeconomic uncertainty), INF (inflation rate), IR (monetary policy interest rate), ROE (return on equity), CRED (credit growth rate), LIQ (liquidity ratio), GAP (asset–liability maturity gap), and SIZE (log of total assets). ix) Interpretation: Inflation volatility is negatively associated with bank leverage, suggesting that higher macroeconomic uncertainty leads banks to adopt more cautious funding strategies. Conversely, higher policy rates tend to increase leverage, indicating a tendency for banks to rely more on debt financing to sustain profitability under tighter monetary conditions.

TABLE 9. PROV (Credit Provisions)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
PROV(−1)	0.6074***	0.6000***	0.5638***	0.5906***	0.6865***	0.6579***	0.6475***	0.6419***
	(0.0002)	(0.0003)	(0.0008)	(0.0009)	(0.0030)	(0.0098)	(0.0018)	(0.0017)
VOL	−1.5191***	−1.4344***	−1.5130***	−1.4842***	−0.0316***	−0.0592***	−0.0622***	−0.0053***
	(0.0255)	(0.0248)	(0.0652)	(0.0681)	(0.0115)	(0.0106)	(0.0039)	(0.0012)
ROE(−1)	−0.0118***	−0.0125***	−0.0113***	−0.0096***	−0.0282***	−0.0252***	−0.0245***	−0.0211***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0009)	(0.0010)	(0.0003)	(0.0004)
CRED	−0.0082***	−0.0084***	−0.0061***	−0.0089***	−0.0016***	−0.0030***	−0.0025***	−0.0022***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0005)	(0.0006)	(0.0007)	(0.0004)
IR(−1)	0.0660***	0.0667***	0.0704***	0.0531***	0.1855***	0.1409***	0.1481***	0.1928***
	(0.0020)	(0.0019)	(0.0040)	(0.0035)	(0.0041)	(0.0055)	(0.0044)	(0.0037)
LIQ(−1)	–	0.0147***	0.0115***	0.0129***	–	0.0070***	0.0050***	0.0007**
		(0.0006)	(0.0010)	(0.0011)		(0.0016)	(0.0006)	(0.0003)
GAP(−1)	–	–	0.0022*	0.0055***	–	–	0.0078**	0.0263***
			(0.0011)	(0.0013)			(0.0033)	(0.0012)
SIZE(−1)	–	–	–	−0.0097***	–	–	–	0.0022***
				(0.0005)				(0.0001)

(Continued)

TABLE 9. PROV (Credit Provisions)

	Brazil				Korea			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Obs.	2207	2207	2230	2227	736	666	662	644
Instr/cross sec.	93/116	93/116	90/121	91/122	32/98	37/97	39/97	50/97
J-statistic	104.44	103.77	98.05	99.59	36.06	41.28	42.35	53.20
P-value	0.11	0.11	0.12	0.10	0.11	0.10	0.10	0.12
AR(1)	−0.48	−0.48	−0.45	−0.47	−0.47	−0.45	−0.45	−0.44
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2)	0.02	0.03	−0.00	0.01	0.02	−0.00	−0.00	−0.00
P-value	0.42	0.28	0.90	0.83	0.68	0.93	0.94	0.97

Note: i) Marginal significance levels: (***) denotes 0.01, (**) denotes 0.05, and (*) denotes 0.1. ii) White's heteroskedasticity consistent covariance matrix was applied in regressions. iii) Standard errors between parentheses. iv) D-GMM uses two-step of Blundell and Bond (1998) without time period effects. S-GMM uses two step of Arellano and Bover without time period effects. v) Test for AR(1) and AR(2) check for the presence of first order and second order serial correlation in the first-difference residuals. vi) The sample is an unbalanced panel of 99 banks from 2014q1 to 2021q1. vii) The dependent variable is PROV (loan-loss provisions, proxy for credit risk). viii) Key explanatory variables include VOL (volatility of inflation, proxy for macroeconomic uncertainty), INF (inflation rate), IR (monetary policy interest rate), ROE (return on equity), CRED (credit growth rate), LIQ (liquidity ratio), GAP (asset–liability maturity gap), and SIZE (log of total assets). ix) Interpretation: Inflation volatility displays a negative and statistically significant relationship with credit provisions in both countries, suggesting that higher macroeconomic uncertainty leads banks to adopt more conservative lending standards and reduce new credit exposures. In contrast, higher policy rates are associated with increased provisioning, reflecting tighter monetary conditions and a potential rise in borrower default risk.

The results presented in Table 5, 6, and 7 are consistent with the analysis using INF, representing negative signs and statistical significance in all estimations. The coefficients of the control variables do not present any significant changes, but follow previous results, so we can conclude that for both countries inflation volatility is negatively associated with bank risk-taking measures and thus encourage risk behaviors in banks.

VI. Conclusion

To understand the effect of inflation on bank risk-taking behaviors, we analyze two financial systems where countries had different inflation histories, Brazil and South Korea. We conducted several regression analyses using dynamic panel models on quarterly data from 142 Brazilian banks and 99 Korean Banks from March 2014 to March 2021. Despite the varying inflation rates of the countries, banks in both financial systems exhibited a similar response to inflation. They reduced their risk coverage, a measure of the bank's ability to absorb potential losses, affecting financial stability.

Beyond the diagnosis of the threat of financial stability led by inflations, this study contributes to the investigation of the relative reaction of the banks to monetary policy interest rates and inflation. The difference between Brazil and South Korea sheds light on the power of monetary policy to dampen or even nullify the risk to financial stability arising from inflation. De Moraes and De Mendonça (2019) highlighted that the primary aim of monetary policy is not to ensure financial stability. However, this study corroborates the positive side effect of monetary policy in combing inflation. When facing inflation with higher interest rates, central banks avoid the issues that come with inflation and can even protect the economy from the risk to financial stability. On the other hand, policymakers that operate behind the curve in terms of inflation may amplify the financial stability issues.

While this study focuses on Brazil and South Korea, the findings may have broader implications for economies facing similar inflationary pressures or institutional structures. Nonetheless, the extent of generalization should be interpreted with caution, as differences in regulatory frameworks, credit composition, and monetary policy credibility can lead to heterogeneous risk-taking behaviors across banking systems. From a policy perspective, the results highlight the importance of credible and proactive monetary frameworks to safeguard financial stability in inflationary contexts. In emerging markets, reinforcing communication strategies and macroprudential coordination may reduce vulnerabilities arising from persistent inflation, while in more advanced systems, credible policy regimes can sustain the effectiveness of monetary responses. These insights invite future research into how institutional credibility and prudential design jointly shape the link between inflation and bank risk-taking.

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Appendix

TABLE A.1. Summary Statistics (Brazil)

Variable	Description	Source	Mean	Std. Dev.	Min	Max	Obs.
BUF	Difference between the actual capital and the minimum capital requirement	IF. Data / Central Bank of Brazil – devised by authors	0.2301	0.4862	−1.64	7.55	3,269
LEV	Capital to assets ratio	IF. Data / Central Bank of Brazil – devised by authors	0.2090	0.9174	−32.54	1.00	3,764
PROV	Coverage for credit losses provided / Total credit volume	IF. Data / Central Bank of Brazil – devised by authors	0.0716	0.1326	0.00	1.00	3,204
INF	The quarterly growth rate of the CPI index	TSMS / Central Bank of Brazil – devised by authors	0.0138	0.0085	0.00	0.03	3,770
ROE	Net income / Shareholder's equity	IF. Data / Central Bank of Brazil – devised by authors	0.1271	0.9882	−1.00	38.33	3,748
CRED	Credit growth rate	IF. Data / Central Bank of Brazil – devised by authors	0.1296	3.0822	−1.00	163.58	3,262
IR	Policy interest rate (SELIC)	Central Bank of Brazil	0.0881	0.0414	0.019	0.1415	29
LIQ	Liquid assets / Total assets	IF. Data / Central Bank of Brazil – devised by authors	0.3485	0.2659	0.00	1.00	3,764
GAP	Difference between GDP and potential output (10^{10} R$)	TSMS / Central Bank of Brazil – devised by authors	−12,092	57,053	−242,403	70,983	29
SIZE	Log of total bank's assets	IF. Data / Central Bank of Brazil – devised by authors	21.63	2.41	14.77	28.17	3,764

TABLE A.2. Summary Statistics (Korea)

Variable	Description	Source	Mean	Std. Dev.	Min	Max	Obs.
BUF	Difference between the actual capital and the minimum capital requirement	FISIS / Financial Supervisory Service – devised by authors	0.0902	0.1482	−1.17	2.39	2,482
LEV	Capital to assets ratio	FISIS – devised by authors	0.1185	0.1250	−1.60	0.65	2,482
PROV	Coverage for credit losses provided / Total credit volume	FISIS – devised by authors	0.0466	0.0394	0.00	0.46	2,482
INF	The quarterly growth rate of the CPI index	ECOS / Bank of Korea – devised by authors	0.0030	0.0043	−0.01	0.01	2,871
ROE	Net income / Shareholder's equity	FISIS – devised by authors	0.0685	0.1759	−1.65	1.95	1,060
CRED	Credit growth rate	FISIS – devised by authors	0.0437	0.2852	−0.74	7.46	2,478
IR	Policy interest rate (Bank of Korea Base Rate)	Bank of Korea	0.0142	0.0052	0.01	0.03	2,871
LIQ	Liquid assets / Total assets	FISIS – devised by authors	0.2745	0.1167	0.01	0.95	2,397
GAP	Difference between GDP and potential output (10^{10} ₩)	ECOS / Bank of Korea	−1,153,041	13,253,254	−32,577,492	19,495,531	2,871
SIZE	Log of total bank's assets	FISIS – devised by authors	13.86	2.28	9.24	19.88	2,798

TABLE A.3. Correlation Matrix (BRAZIL)

	BUF	**LEV**	**PROV**	**INF**	**ROE**	**CRED**	**IR**	**LIQ**	**GAP**	**SIZE**
BUF	1.0000									
LEV	0.7206	1.0000								
PROV	0.2064	0.1835	1.0000							
INF	-0.0350	-0.0372	0.0032	1.0000						
ROE	-0.0801	-0.0595	0.0382	-0.0033	1.0000					
CRED	0.0157	0.0217	-0.0358	-0.0173	0.0020	1.0000				
IR	-0.0093	-0.0268	0.0427	0.6287	0.0128	-0.0435	1.0000			
LIQ	0.4118	0.3059	0.0561	-0.0612	-0.0329	0.0393	-0.0468	1.0000		
GAP	0.0211	0.0088	0.0310	0.2977	0.0171	-0.0405	0.4319	-0.0206	1.0000	
SIZE	-0.4660	-0.6498	-0.2021	-0.0215	0.0065	-0.0061	-0.0426	-0.2421	-0.0314	1.0000

TABLE A.4. Correlation Matrix (KOREA)

	BUF	LEV	PROV	INF	ROE	CRED	IR	LIQB	GCYCLE	SIZE
BUF	1.0000									
LEV	0.7946	1.0000								
PROV	0.2411	0.0803	1.0000							
INF	-0.0004	-0.0421	-0.0394	1.0000						
ROE	-0.0057	0.0018	-0.0618	-0.0704	1.0000					
CRED	0.0688	0.0577	-0.1334	0.0065	0.1103	1.0000				
IR	0.0701	-0.0049	0.3208	-0.0122	-0.0858	-0.0692	1.0000			
LIQB	0.2673	0.0973	0.5969	-0.1033	0.1415	0.1129	0.1977	1.0000		
GCYCLE	0.0573	0.0861	0.0906	-0.2874	0.2285	0.0426	0.1558	0.2102	1.0000	
SIZE	-0.1844	-0.1214	-0.5424	0.1530	-0.2279	-0.0357	-0.2172	-0.7177	-0.3429	1.0000

TABLE A.5. Wald Test (BUF)

	Brazil				Korea			
Dependent variable: BUF	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Test 1: $H_0 : \beta_2 + \beta_5 = 0$								
Value	−0.8929	−0.4458	−0.2972	−0.3503	0.3428	0.9563	0.6711	0.5105
(Std. Err.)	(0.1225)	(0.1299)	(0.1474)	(0.1390)	(0.1019)	(0.1100)	(0.1221)	(0.0789)
F-statistic	53.08	11.77	4.06	6.34	11.31	75.45	30.17	41.80
p-value	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00
Test 2: $H_0 : \beta_2 + \beta_3 + \beta_4 + \beta_5 = 0$								
Value	−0.9426	−0.4998	−0.3519	−0.4033	0.2195	0.9648	0.6030	0.3824
(Std. Err.)	(0.1227)	(0.1296)	(0.1475)	(0.1388)	(0.0933)	(0.1173)	(0.1109)	(0.0759)
F-statistic	58.94	14.86	5.68	8.43	5.52	67.61	29.56	25.36
p-value	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00

TABLE A.6. Wald Test (LEV)

	Brazil				Korea			
Dependent variable: LEV	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Test 1: $H_0 : \beta_2 + \beta_5 = 0$								
Value	−0.4330	−0.0259	−0.0863	−0.2075	1.1154	0.6677	1.2826	3.0735
(Std. Err.)	(0.0176)	(0.0122)	(0.0096)	(0.0352)	(0.0713)	(0.0411)	(0.0742)	(0.1153)
F-statistic	602.23	4.49	79.65	34.71	244.37	263.18	298.76	709.82
p-value	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Test 2: $H_0 : \beta_2 + \beta_3 + \beta_4 + \beta_5 = 0$								
Value	−0.5255	−0.0855	−0.1475	−0.2693	1.1301	0.7413	1.4192	3.2984
(Std. Err.)	(0.0176)	(0.0122)	(0.0096)	(0.0350)	(0.0880)	(0.0456)	(0.0795)	(0.1235)
F-statistic	887.99	48.83	232.71	58.97	164.69	263.22	318.01	712.44
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE A.7. Wald Test (PROV)

	Brazil				Korea			
Dependent variable: PROV	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Test 1: $H_0 : \beta_2 + \beta_5 = 0$								
Value	−0.4330	−0.0259	−0.0863	−0.2075	1.1154	0.6677	1.2826	3.0735
(Std. Err.)	(0.0176)	(0.0122)	(0.0096)	(0.0352)	(0.0713)	(0.0411)	(0.0742)	(0.1153)
F-statistic	602.23	4.49	79.65	34.71	244.37	263.18	298.76	709.82
p-value	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Test 2: $H_0 : \beta_2 + \beta_3 + \beta_4 + \beta_5 = 0$								
Value	−0.5255	−0.0855	−0.1475	−0.2693	1.1301	0.7413	1.4192	3.2984
(Std. Err.)	(0.0176)	(0.0122)	(0.0096)	(0.0350)	(0.0880)	(0.0456)	(0.0795)	(0.1235)
F-statistic	887.99	48.83	232.71	58.97	164.69	263.22	318.01	712.44
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00