Authors:
PANAGIOTA PAPADIMITRI
University of Southampton, Southampton, United Kingdom
FOTIOS PASIOURAS
MBS School of Business, Montpellier, France

CLIMATE RELATED FINANCIAL POLICIES AND BANK VALUE: CROSS-COUNTRY EVIDENCE

ABSTRACT

The present study examines the effect of climate-related financial policies on the bank market to book value. In more detail, we consider an index of climate-related financial policies, that reflects the extent of regulatory actions in terms of green prudential regulations, green credit allocation policies, green financial guidelines, other green disclosure requirements, green bonds taxonomy and issuing. Using a cross-country sample, we document a positive association between this regulatory index and bank value. Additionally, we find that this relationship depends on the country's climate risk, its vulnerability to climate disruptions and its readiness to leverage investments for adaptive actions.

Keywords: Bank Value; Climate Finance; Regulations
JEL Classifications: G21; G28; Q54

Politiche finanziarie legate al clima e valore bancario: evidenze cross-country

Il presente articolo esamina l'effetto delle politiche finanziarie legate al clima sul rapporto tra valore di mercato e valore contabile delle banche. Più nel dettaglio, consideriamo un indice delle politiche finanziare legate al clima che include azioni normative in ambito ambientale come regolamenti prudenziali, politiche di stanziamento di crediti legati alla sostenibilità, linee guida finanziarie sostenibili, altri requisiti divulgativi sulla sostenibilità, classificazione ed emissione di green bond.

Attraverso l'applicazione di un campione cross-country, si ha evidenza di una relazione positiva tra questo indice normativo e il valore di mercato della banca. Inoltre, si è riscontrato che questa relazione dipende dal rischio climatico associato al paese, dalla sua vulnerabilità agli eventi climatici e dalla sua capacità di sfruttare gli investimenti per attività di adattamento.

1. Introduction

Over the last decade, there has been a lot of discussion and various initiatives concerning the transition to a green and sustainable economy. Well-known examples at an international level are the United Nations' Sustainable Development Goals, the Paris Agreement, the European Green Deal, and the European Commission's actional plan for financing sustainable growth. Climate finance, that can be seen as subset of sustainable finance, has also attracted substantial attention in recent years[1]. For example, the 29th UN Climate Change Conference (COP29) concluded on the 24th of November 2024 with delegates agreeing to a new climate finance goal for the first time in fifteen years[2]. Recent high-profile risk assessments further underscore these concerns, highlighting climate change as among the most severe long-term risks to the global economy (World Economic Forum, 2026; Institute and Faculty of Actuaries, 2026).

Financial institutions have a critical role to play in these plans (University of Cambridge Institute for Sustainability Leadership, 2020; Park and Kim, 2020; Alvarenga and Sacristán, 2021). Without their help, it will be very difficult, if not impossible, to finance the estimated $1.5 trillion needed to transition from a brown economy to a green one (Alvarenga and Sacristán, 2021). Banks have responded to this with industry-led initiatives, such as the UN Principles for Responsible Banking, and the UN-convened Net-Zero Banking Alliance. However, it seems that banking institutions have, in general, been slow to increase green lending while they continue to finance high-Greenhouse Gas (GHG)-emitting activities (Hermant, Hernandez and Miomandre, 2025), leading to a "green banking gap" (Aguila *et al.*, 2025) and misalignment of banks' financing with policy objectives (European Central Bank, 2024)[3]. A possible reason is that from a bank lending perspective, brown firms may be on average more profitable and less risky than green firms. In the absence of stronger green regulations, this provides incentives to banks to sustain traditional lending practices. For example, a recent report by D'Aprile *et al.* (2020) highlights that only half of the investments needed for a net-zero pathway would turn a profit. Along the same lines, Aguila

[1] According to the International Organization for Standardization (2022): Sustainable finance includes environmental, social, governance and economic aspects; Green finance includes climate finance but excludes social and economic aspects; Climate finance is a subset of environmental (green) finance.

[2] The agreement sets a goal to deliver at least $300 billion per year by 2035 to developing countries, aiming to drastically reduce greenhouse gas emissions and protect lives and livelihoods from climate change. Additionally, the participants agreed to secure efforts of all actors to work together to scale up finance to developing countries, from public and private sources to the amount of USD 1.3 trillion per year by 2035.

[3] For example, Reclaim Finance indicates that the 65 biggest banks in the world provided more than twice as much finance for fossil fuels as for sustainable power supply between 2021-2024 (Hermant, Hernandez and Miomandre, 2025).

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et al. (2025) mention that bank employees and other market practitioners believe there are not many green firms and projects that meet banks' desired risk/return profile, while high-GHG-emitting activities remain bankable. Additionally, they reveal a bias towards high-GHG-emitting over green activities as balance sheets are locked in old loans and banks prioritize long-term relationships with their clients. Furthermore, they find out that many market participants consider green firms and projects as riskier than high-GHG-emitting due to immature technologies or their long-term investment horizons.

Therefore, some argue that voluntary efforts do not seem to work (Hale, Meisenbacher and Nechio, 2024; Aeschlimann, 2025) and call for regulatory intervention (Aeschlimann, 2025)[4]. In response to such calls, central banks have started exercising pressure on banking institutions to finance firms that are environmentally friendly. For example, starting in the second half of 2026, the ECB will introduce a "climate factor" to its collateral framework. Additionally, various central banks have initiated climate-risk stress tests and climate scenario analysis (e.g. ECB, Bank of England, Federal Reserve), and many other central banks have introduced other climate-related financial policies (D'Orazio and Popoyan, 2019, 2022; D'Orazio, 2022).

It is important to acknowledge recent policy changes in the United States, which represent a significant development in the global climate finance landscape specifically following the change of administration in 2025. These developments are directly relevant to the premise of this paper, as they serve as a reminder that climate-related financial policymaking is not a one-directional process and that regulatory changes are possible. On the other hand, it highlights that if regulatory commitment is fragile and heterogeneous across countries, understanding how markets value climate-related financial policies becomes even more important. Therefore, our cross-country design, which captures meaningful variation in policy engagement, is well-suited to shed light on this question.

[4] Hale, Meisenbacher and Nechio, (2024) conclude that all banks reduced their exposure to climate transition risks on average between 2015 and 2022; however, they find no differences in syndicated lending between banks that did and those that did not signal their sustainability goals, with the exception of early signers of Principles of Responsible Investments. Hence, they conclude that voluntary climate commitments did not contribute to syndicated loan reallocation away from highly-emitting sectors. Similarly, upon examining the net-zero target operationalization in Swiss mortgage portfolios, Aeschlimann (2025) concludes that voluntary efforts to pursue net zero in the banks' mortgage portfolios will not be sufficient to meet their climate pledges and emphasizes the need for regulators to establish suitable policy structures that facilitate the actual implementation of sufficiently impactful climate action measures.

The present study examines the effect of climate-related financial policies on bank value, measured with the market-to-book (M/B) ratio. Earlier research has shown that other regulatory initiatives (e.g. openness of banking system, regulatory reforms) may influence bank value (González, 2005; Fang *et al.,* 2014). However, there is no study on the effect of climate-related financial policies, and we aim to close this gap in the literature. To this end, we make use of a climate related financial policy index (D'Orazio and Thole, 2022; D'Orazio, 2023), that reflects the extent of regulatory actions across the following policy areas: green prudential regulations, green credit allocation policies, green financial guidelines, other green disclosure requirements, green bonds taxonomy and issuing[5]. Using a cross-country sample, we find that these policies are positively associated with bank value. Further estimates show that this relationship is moderated by: (i) the country's vulnerability to climate disruptions, and its readiness to leverage private and public sector investment for adaptive actions, and (ii) the country's relationship between the ecological footprint of its population and the biocapacity of the area available to that population. The rest of the manuscript is as follows. Section 2 provides a literature review. Section 3 provides a description of the data and methodology. Section 3 discusses the results. Section 4 concludes.

2. Literature review and hypothesis development

2.1. Literature Review

Our work relates to three strands of the literature, including studies on: (i) the determinants of bank value, (ii) the effects of climate-related financial policies, and (iii) the consequences of climate policy uncertainty. In what follows, we discuss these three groups of studies.

Studies on the determinants of bank value examine both firm-level and country-level drives of bank value, like fiscal constraints (Vasconcelos and Schiozer, 2025), security market and legal reforms (Fang *et al.,* 2014)[6]. Among these studies, the ones that are most closely related to the present one are those of González (2005) and Fang *et al.* (2014). González (2005) concludes that deposit insurance has a positive effect, while stricter regulations in terms of the relative openness of a country's banking and financial system are negatively associated with charter value.

[5] The index was initially developed by D'Orazio and Thole (2022), and subsequently the dataset was made publicly available in D'Orazio (2023).
[6] Studies on bank-level determinants examine, for example, ownership structure (Caprio, Laeven and Levine, 2007), diversification (Guerry and Wallmeier, 2017) and bank opacity (Zheng and Wu, 2023).

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Additionally, Fang *et al.* (2014) finds that the liberalization and regulatory reform of the banking system enhance banks' value. However, none of these indices capture climate-related financial policies. In more detail, the index of regulatory stringency in the study of González (2005) reflects whether foreign banks and financial services firms can operate freely, how difficult it is to open domestic banks and other financial services firms, how heavily regulated the financial system is, and whether banks are free to provide customers with insurance and invest in securities. Fang *et al.* (2014) use a measure of regulatory reforms in banking that covers the following areas: creation of a two-tier banking sector and interest rate liberalization, establishment of regulatory norms for prudential regulation and supervision and full liberalization of credit and interest rates, and progress toward the implementation of the core principles of the Basle Committee. González-Rodríguez (2007) also considers whether the relationship between market concentration and bank charter value depends on a country's regulatory (i.e. entry into banking requirements, restrictions on bank activities) and legal and institutional environment (e.g. property rights protection, law and order, etc.). Finally, Faria *et al.* (2012) examine the effect of FED's monetary policies and tenures of FED's chairmen.

Studies on the effects of climate-related financial policies examine various topics, like carbon emissions (D'Orazio and Dirks, 2022), natural rents (Thanh *et al.*, 2024), energy security (Hà, 2024a), participation in global value chains (Hà, 2024b), decarbonization and renewable energy transition (D'Orazio and Pham, 2025), circularity performance (Yen and Hà, 2025), and ecological sustainability (Hà, 2025). However, only a few focus on issues related to banking, like financial stability (D'Orazio, 2025; Alkatheeri, Mertzanis and Kampouris, 2026) and bank risk (Truc and Thanh, 2025; Andries, Ongena and Sprincean, 2025), and there is no study on bank valuation.

Studies on the consequences of climate policy uncertainty focus mostly on financial markets, while there are also a few studies on the banking sector that examine issues like bank value (Fan *et al.*, 2024), bank stability (Huang *et al.*, 2025), loan loss provisioning (Lian, Li and He, 2025), systemic risk (Liu *et al.*, 2024), and liquidity creation (Xu, Ren and He, 2024)[7]. What is common in most of these studies is that they rely on indices of climate policy uncertainty constructed by

[7] For example, studies on financial markets examine issues like stock market volatility and stock price crash risk (Chen, Zhang and Weng, 2023; Vo, Phan and Trinh, 2025), stock returns (Chiang, 2025), trading behavior (Wanidwaranan, Wongkantarakorn and Padungsaksawasdi, 2025), and opportunistic stock selling (Sun, Cao and Liu, 2025a). Others examine its effect on corporate decisions and outcomes like investment efficiency (Feng *et al.*, 2025), corporate supply chain stability (Sun Xu and Liu, 2025b), green technology innovation (Bian and Luo, (2025), green mergers and acquisitions (Yang *et al.*, 2025).

textual analysis of newspaper articles that combine terms like "*uncertainty*" and "*climate*" and "*regulation*", and focus mainly on the U.S. (Gavriilidis, 2021) and China (Yan and Cheung, 2023)[8]. An important drawback of this method is its reliance on rules and dictionary settings, that may result in subjective selection bias (Ma *et al.*, 2023)[9]. At the same time all these efforts may simply capture attitudes or intensions of policy makers rather than actual adoption of climate-related financial policies. Finally, only one of these studies focuses on bank value (Fan *et al.*, 2024), concentrating on the Chinese market. This does not allow them to examine the moderating role of other country-specific attributes. Our study provides further evidence toward this direction.

2.2. Climate-Related Financial Policies and Bank Value: Hypotheses Development

Climate-related financial policies (CRFPs) could influence bank valuation in various ways. First, they could influence bank risk and profits. Second, they could influence market expectations and bank actions related to ESG. All these could have implications for bank valuations. However, the net effect of CRFPs on bank value is ambiguous.

As a reminder, indicators of bank valuation, like the market-to-book (M/B) ratio and Tobin's Q ratio reflect market values, embed forward-looking information about future profitability and risks not captured in book values (Begenau *et al.*, 2026) and are driven by bank profitability and volatility of stock returns (Markoulis *et al.*, 2025). Hence, to the extent that climate-related changes could give risk to both physical and transition risks, they could influence bank profits and stability[10]. For example, as outlined by the Basel Committee on Banking Supervision (2021) climate risk can affect a bank's credit risk through its counterparties, its market risk through the value of financial assets, its liquidity risk through its deposits, funding costs and drawdowns of credit or liquidity lines and risk to banks' operations. Thus, these risks may negatively impact the banks' asset quality and profitability and subsequently reduce their charter value. Climate-related financial policies may play an important role in this regard. Similarly, the Financial

[8] The work of Berestycki *et al.* (2022) is a notable extension as it concerns the country coverage. Like in the case of Gavriilidis (2021) for the U.S. and Yan and Cheung (2023) for China, Berestycki *et al.* (2022) develop their CPU based on newspaper coverage frequency. However, their work covers 12 OECD member countries over the period 1990-2018.
[9] Noailly, Nowzohour and van den Heuvel (2022) and Ma *et al.* (2023) rely on machine learning approaches; however, again the training of their models is based on a pre-classification of articles by team members as for whether (or not) they contain news related to climate policy uncertainty.
[10] Physical risks arise from changes in weather and climate that impact the economy, while transition risk arises during the transitioning of an economy that is reliant on fossil fuels to a low-carbon one (Basel Committee on Banking Supervision, 2021).

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Stability Board (2025) has identified a range of climate-related vulnerabilities that could affect financial stability across jurisdictions.

On the one hand, CRFPs may mitigate the effect of such risks. For example, D'Orazio (2025) concludes that stronger CRFPs result in lower non-performing loan ratios and improved liquidity conditions in the banking sector; however, in the case of solvency risk (proxied by the Z-score of the banking sector) the effect is statistically significant only in the model that includes acute physical risks. Alkatheeri, Mertzanis and Kampouris (2026) conclude that climate laws play a significant role in enhancing banking sector stability (proxied by the Z-score). Thus, to the extent that these policies are successful in mitigating bank risks, they could enhance bank value. Furthermore, CFRPs relate to disclosure requirements, and existing evidence shows that environmental disclosures are positively associated with bank value (Buallay, 2019), as well as that Tobin's Q increases as the bank reports its environmental expenditure investment (Galletta *et al.*, 2025). Additionally, it is possible that stringent environmental regulations reduce ESG controversies by increasing compliance pressure, discouraging violations, and mitigating stakeholder skepticism (Muhammad and Aman, 2026). In turn, this could give rise to bank value. The above discussion leads to the following hypothesis:

H1a: *Banks located in countries with more climate-related financial policies are associated with higher bank valuations*

However, it is also possible that such policies can increase, rather than decrease bank risk. For instance, Truc and Thanh (2025) conclude that in the case of Asian and developing countries, climate-related financial policies increase risks, possibly because of transitional challenges. Furthermore, Andries, Ongena and Sprincean (2025) find that more stringent CRFPs are harmful for overall financial stability and contribute to increased system-wide distress, and they also highlight a disorderly transition as a potential reason. Additionally, they argue that initiatives that restrict banks' exposure to carbon-intensive counterparties may lead to less lending to the real economy and a higher lending rate, subsequently resulting in credit losses, reduced bank profitability and other spillover effects that could undermine systemic resilience. Therefore, if such policies can lead to an increase in bank risk, they can harm bank value. Furthermore, the interviewees in the study of Aguila *et al.* (2025) claim that capital and liquidity requirements are biased against green assets, constraining and making green lending more expensive, while the

issuance of green products too costly, unnecessarily complex, and burdensome. These could have detrimental effects on bank valuation.

On top of that, climate related financial policies may also impact banks' environmental commitments and environmental results, with implications for bank value. First, banks may face greater challenges and pressures due to increased requirements related to climate related financial policies, and failure to meet such requirements could harm their market values. For example, on 10th November 2025, the ECB announced that it imposed periodic penalty payments amounting to 187,650 euros on the Spanish ABANCA Corporación Bancaria S.A, for failure to comply with ECB decision on climate-related and environmental risks. Additionally, the literature provides mixed findings as for the relationship between environmental commitments and bank value. Di Tommaso and Thornton (2020) find that both the overall ESG scores and its environmental sub-component (resource use, use, emissions, and innovation) decrease the value of European banks, consistent with the "overinvestment" view of ESG. Markoulis *et al.* (2025) also find a negative relationship between environmental partnerships and the market to book ratio, concluding again in favor of the 'over-investment' hypothesis. As they explain, this could mean that the market believes that banks are diverting scare resources (e.g., financial, human) from their income-generating operations that aim at shareholder wealth maximization, towards environmental investments to address environmental issues, and it is therefore penalizing bank valuation. Additionally, as they explain, it is possible that investments related to corporate social responsibility may be perceived by the market as agency costs, with managers aiming to improve their own reputation as good citizens for their private benefit (Barnea and Rubin, 2010). Finally, while environmental regulations aim to reduce harmful practices, they can also provide incentives for symbolic compliance and give a rise to ESG controversies (Muhammad and Aman, 2026). In turn, environmental controversies may have a negative effect on bank value (Galletta *et al.*, 2025). The above discussion leads to an alternative hypothesis, stated below:

H1b: *Banks located in countries with more climate-related financial policies are associated with lower bank valuations*

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3. DATA AND METHODOLOGY

3.1. Data and Sample

To examine the effect of CRFPs on bank market valuation, we focus on a sample of internationally listed financial institutions. Bank level variables are retrieved from LSEG Refinitiv, while information on CRFPs is drawn from D'Orazio (2023). Country-level variables are collected from the World Bank Open Data, Prosperity Institute, Notre Dame Adaptation Initiative, Global Footprint Network and the Heritage Foundation. Our working sample covers 476 listed banks across 46 countries over the years 2002 and 2020. We exclude institutions with missing financial information on total assets, resulting in an unbalanced panel data set of up to 3,320 bank-year observations. Table A1 in the Appendix summarises all variables used in the analysis, including definition and sources. Table A2 in the Appendix provides the list of countries and tabulates the number of banks per country.

3.2. Empirical Model and Variable Description

To assess the relationship between climate-related financial policies and bank market value, we estimate the following fixed-effects panel specification:

$$M/B\ ratio\ _{i,t} = a_i + \beta_1 CRFPI_{i,t-1} + \beta_2\ X_{i,t-1} + \beta_3 C_{i,t-1} + \delta_t + u_{i,t} \quad (1)$$

The dependent variable, $M/B\ ratio\ _{i,t}$ captures bank valuation and is calculated as the ratio of market capitalisation to book value of equity (Bogdanova, Fender and Takáts, 2018; Simoens and Vander Vennet, 2021; Markoulis *et al.*, 2025)[11]. This measure allows to capture a forward-looking measure that reflects investors' expectations of value creation. Ratios below 1 imply that the market prices the bank below its accounting value, whereas ratios above 1 suggest stronger growth prospects or lower perceived risks.

[11] Others use the Tobin's Q ratio that is calculated as: (market value of equity + book value of assets - book value of equity - balance sheet deferred taxes)/book value of assets). Unfortunately, due to missing values about deferred taxes for many banks in the sample it was not possible to estimate this version of Tobin's Q. Bogdanova, Fender and Takáts, (2018) mention that for stable prices, these two measures of bank value are essentially identical.

Our main explanatory variable, $CRFPI_{i,t-1}$, is the Climate-Related Financial Policy Index (CRFPI) in bank i's jurisdiction at time t-1. This index, developed by D'Orazio and Thole (2022), captures the extent of regulatory action across the following core areas: green prudential regulations, green credit policies, green financial guidelines, other green disclosure requirements, green bonds taxonomy and issuing. The authors provide four versions of the CRFPI index reflecting alternative weighting schemes with similar underlying information on a country's engagement with climate-related financial policymaking. Further information about the four versions is available in Table A1 in the Appendix. In our baseline specification we rely on the first version (CRFPI 1), whereas in additional analyses we introduce the alternative versions of the index (CRFPI 2 to 4). In all cases, higher CRFPI values reflect higher engagement in climate-related financial policymaking and vice versa.

The vector $X_{i,t-1}$ includes bank-level controls commonly associated with market valuation, namely size (SIZE), profitability (ROA) and liquidity (LIQUIDITY). The vector $C_{i,t-1}$captures country-level controls including GDP growth (GDPGR) and economic freedom (ECONFREE). All independent variables are lagged by one period to help with mitigating reverse causality concerns, as current market valuations are less likely to influence past policy exposure or bank characteristics.

Equation 1 is estimated with a panel fixed effects specification to control for unobserved time-invariant bank characteristics and common temporal shocks affecting all banks. We introduce alternative specification models with respect to standard error clustering in order to ensure the robustness of our results. We winsorize market to book, the liquidity, profitability and GDP growth at the 1st and 99th percentile to mitigate the influence of extreme values.

3.3. Descriptive Statistics

Table 1 provides a summary of the variables included in our analysis. The M/B ratio has a mean value of 1.27. The values range widely between 0.20 and 4.07 confirming the presence of cross-country and cross-bank heterogeneity. In all versions of the Climate-Related Financial Policy Index (CRFPI) measures, we observe a similar variation, with mean values ranging between 18 and 31, providing indication that climate-related financial policies differ substantially across jurisdictions. In turn, both bank-related variables (size, profitability and liquidity) and country-

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related measures exhibit a similar and expected broad variation. In terms of country representation in our sample, Table A2 reveals that the United States represents the largest single-country component of the sample, accounting for approximately 34% of bank-year observations followed by Japan (9,71%) and China (4,46%).

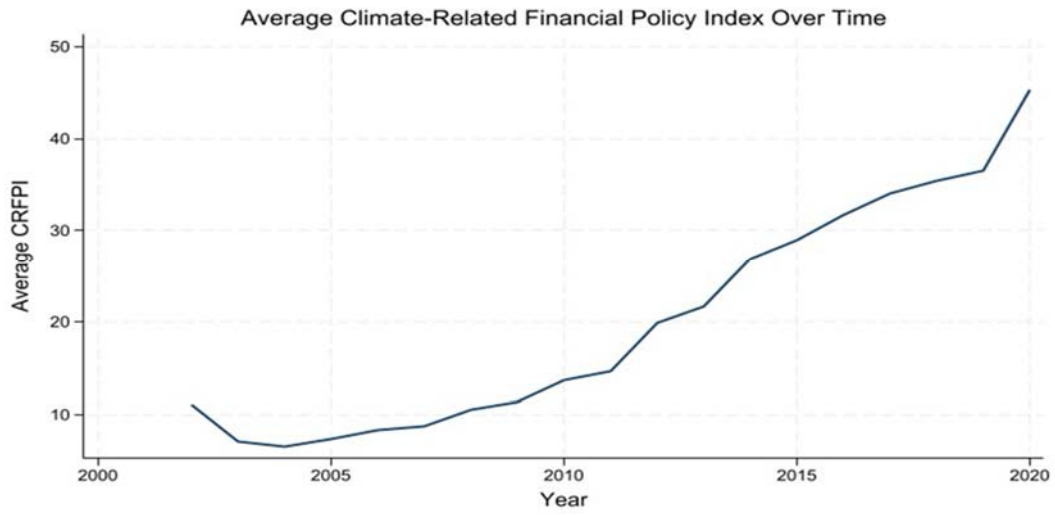
TABLE 1 – *Descriptive Statistics*

Variable	Obs.	Mean	Std. dev.	Min	Max
M/B ratio	3,295	1.2650	0.7131	0.2032	4.0711
CRFPI_1	3,295	25.5351	17.9847	0.0000	87.0000
CRFPI_2	3,295	19.5331	18.3547	0.0000	92.5000
CRFPI_3	3,295	30.8164	21.0365	0.0000	100.0000
CRFPI_4	3,295	17.5878	15.3641	0.0000	73.2600
SIZE	3,295	24.8276	1.9088	19.7611	29.0954
LIQUIDITY	3,295	0.0560	0.0546	0.0013	0.2717
ROA	3,295	0.0127	0.0105	-0.0225	0.0616
ROE	3,295	0.1321	0.0969	-0.2842	0.4322
SECURITIES	3,168	23.0550	44.3184	-118.6210	281.7027
NII	2,913	0.4892	0.4916	-0.15939	2.6913
MARKET DEPOSITS	3,137	88.6682	44.9564	22.8900	228.3800
CONC3	3,274	52.2088	17.6698	28.8000	98.4400
GDP GROWTH	3,295	2.6162	2.5454	-8.8682	9.4613
ECONFREE	3,295	70.3993	8.4646	43.8000	89.400
ND-GAIN	3,295	62.1537	8.7256	37.1736	78.3151
NATURE	3,022	62.7842	8.8803	34.2000	79.1000
CLIMATE RISK	2,982	47.7792	27.4294	2.5000	126.1700
MEMBER ENVIR	3,025	4.2392	3.1532	0.2000	19.5500

Figure 1 presents the average CRFPI values across the sample period. The increase is more pronounced particularly after 2013, emphasising the intensified efforts to promote climate-related financial policymaking on a global scale. While Figure 1 presents the average CRFPI across all countries, there is considerable variability in the index at the country level, as reported in Table A3. Mean CRFPI values range from as low as 1.40 in Bahrain and 4.90 in Ireland and Israel, to as high as 66.45 in Brazil and 61.93 in Indonesia, reflecting substantial heterogeneity in the pace and depth of climate-related financial policymaking across jurisdictions. It is also worth noting that at the beginning of our sample period, climate-related financial policies were largely absent across

most jurisdictions. The landscape at that time was characterised primarily by voluntary initiatives, with very few countries having enacted formal green prudential regulations or climate-related financial policies (D'Orazio and Thole, 2022). The acceleration observed in Figure 1 from approximately 2013 onwards reflects a structural shift driven by landmark international agreements – most notably the Paris Agreement (2015) – and the subsequent implementation of national and supranational regulatory frameworks.

FIGURE 1 – *CRFP Index over Time*



4. EMPIRICAL RESULTS

4.1. Main Results

Table 2 presents the regression results with the use of CRFPI_1[12]. Column 1 presents the results with firm-fixed effects and year-fixed effects but without control variables. Column 2 presents the same specification with the addition of the control variables. The next two columns present the results with standard errors clustered at the firm level (Column 3), and country-level (Column 4), respectively. In all the cases, the CRFPI has a positive and statistically significant coefficient[13]. Therefore, banks in countries with more climate-related financial policies, relevant to green

[12] We start our analysis with CRFPI_1 as this is the one considered as the benchmark (main) indicator in D'Orazio and Thole (2022). Following up from their analysis we use the alternative CRFPI indicators (using different weighting schemes) in further analysis for robustness purposes.
[13] We further estimate our baseline model by excluding countries with high representation (USA, Japan and China) in our sample one at a time. The results remain intact and are presented in Table A4 in the Appendix.

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prudential regulations, green credit allocation policies, green financial guidelines, other green disclosure requirements, green bonds taxonomy and issuing, have higher valuations in terms of the market to book ratio. Given that the market to book value ratio reflects the market's perceptions about the bank's future performance and its capital stability and risk absorption capabilities (Markoulis *et al.*, 2025), it seems that the market views such climate-related financial policies from a positive perspective.

TABLE 2 – *Regression Results*

	(1)	(2)	(3)	(4)
CRFPI_1	0.0033***	0.0047***	0.0047***	0.0048**
	(0.0009)	(0.0009)	(0.0014)	(0.0022)
SIZE		-0.1760***	-0.1760***	-0.1750**
		(0.0301)	(0.0597)	(0.0815)
LIQUIDITY		-0.2020	-0.2020	-0.2280
		(0.2230)	(0.3640)	(0.4340)
ROA		6.7510***	6.7510***	6.6160***
		(0.9990)	(2.1110)	(2.3460)
GDP GROWTH		0.0193***	0.0193***	0.0268
		(0.0045)	(0.0073)	(0.0183)
ECONFREE		-0.0323***	-0.0323***	-0.0356**
		(0.0037)	(0.0076)	(0.0149)
Constant	1.993***	8.2380***	8.2380***	8.4290***
	(0.0908)	(0.7370)	(1.5290)	(2.1920)
Observations	3,320	3,295	3,295	3,295
R-squared	0.408	0.463	0.463	0.436
Number of banks	477	476	476	476
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Standard errors clustering	No	No	Firm	Country

Panel regression results with firm-fixed effects and year-fixed effects. In all the cases the depended variable is the M/B ratio. All the variables are defined in Table A1 in the Appendix. Standard errors in parentheses. ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level.

TABLE 3 – *Regression Results: Robustness Tests*

	(1)	(2)	(3)
CRFPI_1	0.0042***	0.0044***	0.0039***
	(0.0010)	(0.0009)	(0.0010)
SIZE	-0.1910***	-0.1370***	-0.1800***
	(0.0341)	(0.0314)	(0.0347)
LIQUIDITY	-0.0041	-0.1960	-0.1830
	(0.2350)	(0.2480)	(0.2530)
ROA	0.1640	7.1240***	2.0070
	(1.8790)	(1.013)	(1.9260)
ROE	0.7160***		0.5060***
	(0.1790)		(0.1840)
SECURITIES	-0.0004*		-0.0003
	(0.0002)		(0.0002)
NII	0.0342		0.0256
	(0.0301)		(0.0305)
GDP GROWTH	0.0187***	0.0140***	0.0116**
	(0.0049)	(0.0045)	(0.0050)
ECONFREE	-0.0347***	-0.0315***	-0.0327***
	(0.0038)	(0.0038)	(0.0040)
MARKET DEPOSITS		0.0020	0.0011
		(0.0013)	(0.0013)
CONC3		0.0030***	0.0031***
		(0.0009)	(0.0010)
Constant	8.6070***	6.8120***	7.9600***
	(0.8320)	(0.7830)	(0.8670)
Observations	2,870	3,116	2,765
R-squared	0.448	0.451	0.443
Number of banks	448	455	430
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Standard errors clustering	No	No	No

Panel regression results with firm-fixed effects and year-fixed effects. In all the cases the depended variable is the M/B ratio. All the variables are defined in Table A1 in the Appendix. Standard errors in parentheses. ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level.

In Table 3 we extend the baseline specification to control for some additional firm-specific and country-specific characteristics. In Column 1 we add the firm-specific return on equity (ROE), investment securities available for sale divided by total assets (SECURITIES), and net interest

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income divided by total assets (NII). In Column 2 we control for country-level aggregated bank deposits to GDP (MARKET DEPOSITS), and market concentration of the 3 largest commercial banks in terms of total assets (CONC3). In Column 3 we add simultaneously all these controls in our specification. In all cases, the main results hold.

TABLE 4 – *Robustness Test: Alternative Estimation of CRFPI*

	(1)	(2)	(3)
CRFPI_2	0.0039***		
	(0.0009)		
CRFPI_3		0.0038***	
		(0.0008)	
CRFPI_4			0.0053***
			(0.0011)
SIZE	-0.1770***	-0.1750***	-0.1890***
	(0.0325)	(0.0324)	(0.0327)
LIQUIDITY	-0.3410	-0.1510	-0.3370
	(0.2400)	(0.2410)	(0.2400)
ROA	6.7320***	6.7210***	6.6970***
	(1.0770)	(1.076)	(1.0760)
GDP GROWTH	0.0269***	0.0277***	0.0260***
	(0.0049)	(0.0049)	(0.0048)
ECONFREE	-0.0360***	-0.0365***	-0.0367***
	(0.0040)	(0.0040)	(0.0040)
Constant	8.5110***	8.4860***	8.8650***
	(0.8000)	(0.7970)	(0.8080)
Observations	3,295	3,295	3,295
R-squared	0.434	0.435	0.436
Number of banks	476	476	476
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Standard errors clustering	No	No	No

Panel regression results with firm-fixed effects and year-fixed effects. In all the cases the depended variable is the M/B ratio. All the variables are defined in Table A1 in the Appendix. Standard errors in parentheses. ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level.

Columns 1 to 3 in Table 4 present the results with the use of the alternative versions of the CRFPI. As mentioned earlier, these versions of CRFPI are based on alternative weighting schemes employed by D'Orazio and Thole (2022). In all the cases, the results remain the same.

In Table 5, we use a 2-stage least square (2SLS) regression to account for potential endogeneity concerns. Reverse causality is unlikely to be a concern since one cannot claim that the adoption of country-level climate-related financial policies is driven by the valuation of individual banks. However, one may have concerns about endogeneity arising from omitted variables and measurement errors. To account for this, we instrument CRFPI_1 by the country-level percentage of respondents in the world value survey who replied that they are active members in voluntary environmental organizations (MEMBER ENVIR)[14]. The choice of this instrument is driven by earlier research suggesting that environmental organizations empower the public to play a major role in local environmental governance (Wang *et al.*, 2020) as well as that public opinion favoring environmental protection is associated with the introduction of renewable energy policies (Anderson, Bohmelt and Ward, 2017). Therefore, we assume that countries where more people are involved in environmental organizations will be under pressure to adopt more climate-related financial policies. The first stage regression in Panel B of Table 5 confirms this expectation. The results of the second stage regression in Panel A show that the instrumented CRFPI_1 enters the regression with a positive and statistically significant coefficient.

[14]The question that we consider is the following: "*Now I am going to read out a list of voluntary organizations; for each one, could you tell me whether you are a member, an active member, an inactive member or not a member of that type of organization: Environmental organization".* The world value surveys are conducted in waves (i.e. 1981-1984, 1990-1994, 1995-1998, 1999-2004, 2005-2009, 2010-2014, 2017-2022). Given the period of our analysis, we use data from the following waves: 2005-2009, 2010-2014, 2017-2022. There is a closely related question to the one that we consider in the 2000-2004 wave (i.e. "*Please look carefully at the following list of voluntary organisations and activities and say…which, if any, do you belong to? Conservation, the environment, ecology, animal rights*"). However, as the question in 2000-2004 wave is phrased in a different way and appears to cover additional issues (conservation, ecology, animal rights) we refrain from using it in our analysis. Some countries are covered in all three waves, and others in just one or two waves. Additionally, we have no data for the period 2000-2004 and 2015-2016. To avoid an arbitrary allocation of survey data to the bank-year observations we take an average per country using all data that are available to us.

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TABLE 5 – *Accounting for Endogeneity – 2SLS Estimates*

	(1)
	Panel A: 2nd Stage results
	Dependent: M/B ratio
CRFPI_1 instrumented	0.0265 ***
	(0.0036)
Observations	2,646
Control variables	Yes
Year Fixed Effects	Yes
	Panel B: 1st Stage results
	Dependent: CRFPI_1
MEMBER ENVIR	1.6259 ***
	(0.1031)
Control variables	Yes
Year Fixed Effects	Yes
Kleibergen-Paap rk LM statistic	87.522
Kleibergen-Paap Wald F statistic	248.446

Estimates obtained from 2SLS regression. Panel A presents the results of the second stage regression, where the depended variable is the M/B ratio and the key independent variable is the instrumented CRFPI1. Panel B presents the results of the first stage regression, where the depended variable is the CRFPI1 ratio and the key independent variable) is the country-level % of active membership in an environmental organization (MEMBER ENVIR). All the variables are defined in Table A1 in the Appendix. Standard errors in parentheses. ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level.

3.2. The Moderating Role of Country-Level Characteristics

In Table 6 we account for some additional country-specific characteristics, putting the spotlight on the potential moderating role that they may have. Column 1 in Table 6 present the results of the baseline specification (Column 2, Table 2) when controlling for the country's vulnerability to climate disruptions and its readiness to leverage private and public sector investment for adaptive

actions. To account for this, we use the Notre Dame Global Adaptation Initiative's (ND-GAIN) country index. This index assesses the vulnerability of a country by considering six life-supporting sectors: food, water, health, ecosystem services, human habitat and infrastructure. Each sector is in turn represented by various indicators that relate to three cross-cutting components: exposure, sensitivity, and adaptive capacity. Additionally, ND-GAIN measures overall readiness by considering three components: economic readiness, governance readiness, and social readings. The ND-GAIN score is computed by subtracting the vulnerability score from the readiness score for each country and scaling the scores to give a value 0 to 100. Higher values indicate an overall better assessment. The results in Column 1 show that controlling for ND-GAIN does not influence our findings about CRFPI1. Contrary to our expectations, ND-GAIN enters the regression with a negative coefficient; however, this is statistically significant only at the 10% level.

In Column 2, we account for climate risk using an indicator from Germanwatch. This index reflects the effect of climate-related extreme weather events (hydrological, metrological, climatological) in terms of observed economic losses, fatalities, and affectedness in a country[15,16]. In the original version of the Germanwatch index, higher values indicate lower climate risk. Following Huang, Kerstein and Wang (2018), we multiply the original values by -1, so that higher scores in our analysis indicate higher climate risk. Consistent with our expectations, the coefficient of climate risk is negative; however, like in the case of ND-GAIN it is statistically significant only at the 10% level.

In Column 3 we control for the natural environment pillar from the Legatum Prosperity Index (NATURE). This pillar relates to the aspects of the physical environment that have a direct effect on people in their daily lives and changes that might impact the prosperity of future generations. The score for this pillar is based on the following six subcomponents, each one of them estimated

[15] Therefore, this index is quite different than the ND-GAIN one. In more detail, while the Germanwatch climate risk index considers historical data like actual fatalities and economic losses from extreme weather conditions, the ND-GAIN index considers general indicators of readiness (e.g. regulatory quality, social inequality, ICT infrastructure) and forward-looking vulnerability indicators like projected changes of: cereal yield, annual surface water resources, deaths from climate change induced diseases, marine biodiversity. The correlation coefficient between ND-GAIN and CLIMATE RISK is just 0.07.

[16] The climate risk index is available for the years 2006 to 2021 and for 2025. However, the data used for the construction of the index are with a 2-years lag. For example, the 2006 index is based on data from 2004, the 2007 index is based on data from 2005, and so on. To pursue our analysis, we match the bank-year observations based on the year of the data used for the index rather than the year of its publication. For example, the values of the 2006 index (i.e. that is based on 2004 data) are assigned to the 2004 bank-specific data. Consequently, the estimates in Columns 2 and 5 in Table 6 are restricted to the 2004-2019 period.

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based on various criteria: (i) Emissions, (ii) Exposure to Air Pollution, (iii) Forest, Land and Soil, (iv) Freshwater, (v) Oceans, (vi) Preservation Efforts. Higher figures indicate stronger performance of the country. The results show that both CRFFPI_1 and NATURE enter the regression with a positive and statistically significant coefficient.

In columns 4 to 6 we interact the above-mentioned indicators with CRFPI_1. It should be noted that the inclusion of the interaction terms alters the interpretation of the coefficients of the main effects. For example, the negative sign of CRFPI_1 in Column 4 shows a negative effect of climate-related financial policies on the market to book value conditional on the special case that the other variable (i.e. ND-GAIN) is equal to zero. Similarly, the coefficient of ND-GAIN in Column 4 shows the effect of a country's vulnerability and readiness on the market to book value, conditional on CRFPI 1 being equal to 0. As these special cases might be of less interest, we turn our attention to the interaction term.

Interestingly, in the case of Column 4, the interaction term is positive and statistically significant. This means that the effect of CRFPI_1 on the market to book value changes for different values of ND-GAIN. To gain a better understanding about this, we estimate the average marginal effect of CRFPI_1 for different values of ND-GAIN (Table 7). These estimates show that for low to moderate values of ND-GAIN, CRFPI_1 has a negative effect on the M/B ratio. In contrast, for moderate values of ND-GAIN (i.e. over 50), the effect of CRFPI_1 on the M/B ratio becomes positive. This difference possibly shows that countries with relatively higher vulnerability and lower readiness (i.e. lower ND-GAIN scores) have less overall experience in managing green financial reforms or that banks in these countries face higher transitional challenges. This has a negative effect on market expectations. In other words, when a country is considered as less ready to mitigate climate-disruption spillovers, market participants may perceive 'green lending' policies as more costly, riskier, and less likely to generate near-term profitable opportunities, resulting in lower expected bank value. To elaborate further on this, it should be noted that some of the criteria in ND-GAIN refer to economic and governance readiness related to the mobilization of capital and investment risks. At the same time, the D'Aprile *et al.* (2020) report, outlines: (i) the necessity for government intervention to encourage individual stakeholders to make clean technology investments in the absence of compelling investment cases, and (ii) the need to have the right infrastructure in place as a precondition to achieve the desirable decarbonization. Apparently, in a country that is not ready

TABLE 6 – *The Role of other Country-Specific Characteristics*

	(1)	(2)	(3)	(4)	(5)	(6)
CRFPI_1	0.0046***	0.0050***	0.0027***	-0.0145***	0.0090***	0.0013
	(0.0009)	(0.0009)	(0.0008)	(0.0035)	(0.0012)	(0.0036)
ND-GAIN	-0.0096*			-0.0217***		
	(0.0049)			(0.0053)		
CLIMATE RISK		-0.0007*			-0.0026***	
		(0.0004)			(0.0006)	
NATURE			0.0252**			0.0246**
			(0.0100)			(0.0101)
CRFPI_1 x ND-GAIN				0.0003***		
				(0.0000)		
CRFPI_1 x CLIMATE RISK					-0.0001***	
					(0.0000)	
CRFPI_1 x NATURE						0.0000
						(0.0000)
Constant	8.9290***	9.3950***	8.0430***	8.8790***	9.616***	7.9990***
	(0.8180)	(0.7930)	(0.9560)	(0.8130)	(0.791)	(0.9630)
Observations	3,295	2,982	2,961	3,295	2,982	2,961
R-squared	0.463	0.436	0.270	0.469	0.442	0.270
Number of banks	476	457	458	476	457	458
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Standard errors clustering	No	No	No	No	No	No

Panel regression results with firm-fixed effects and year-fixed effects. In all the cases the depended variable is the M/B ratio. All the variables are defined in Table A1 in the Appendix. Standard errors in parentheses. ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level.

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for such a transition, the imposition of additional requirements in the form of green finance policies could impose an additional burden. For example, as mentioned earlier, the interviewees in the study of Aguila *et al.* (2025) outline various issues related to complexity and additional costs. Hence, low overall country readiness together with the imposition of demanding green finance requirements could amplify challenges for banking institutions, with detrimental effects for their valuation.

The interaction term in Column 5 has a negative and statistically significant coefficient. Therefore, the positive effect of CRFPI_1 diminishes in countries with higher climate risk. For example, the estimates in Table 7 show that the average effect of CRFPI_1 on the M/B ratio equals 0.0087 when the climate risk index takes the value of -2.5 (i.e. low climate risk), equals 0.0040 when the climate risk index takes the value of -60 (i.e. moderate climate risk), and becomes statistically insignificant in the case of very high climate risk (e.g. index values of -100 and -120).

Finally, the results in Column 6 show that interaction of CRFPI_1 with NATURE is statistically insignificant. Hence, the effect of CRFPI_1 on the M/B ratio does not differ across different values of the Legatum's natural environment assessment.

TABLE 7 – *Average Marginal Effects*

(1)	(2)	(3)	(4)
ND-Gain Values	Average Marginal Effect of CRFPI_1	CLIMATE RISK Values	Average Marginal Effect of CRFPI_1
10	-0.0113***	-120	-0.0080
	(0.0029)		(0.0015)
20	-0.0081***	-100	0.0007
	(0.0024)		(0.0012)
30	-0.0050***	-80	0.0240**
	(0.0019)		(0.0010)
40	-0.0018***	-60	0.0040***
	(0.0014)		(0.0090)
50	0.0012***	-40	0.0056***
	(0.0010)		(0.0009)
60	0.0044***	-20	0.0073***
	(0.0008)		(0.0010)
70	0.0075***	-10	0.0081***
	(0.0010)		(0.0011)
80	0.0107***	-2.5	0.0087***
	(0.0013)		(0.0012)

This table presents the average marginal effects of the regressions presented in Columns 2 and 6 of Table 6. The first column presents eight different values of ND-GAIN, and the second column reports the corresponding marginal effect of CRFPI_1 on the M/B ratio. The third column presents eight different values of, and the fourth column reports the corresponding effect of CRFPI_1 on the M/B ratio. The parentheses show standard errors obtained with the Delta-method. ***Statistically significant at the 1% level, **Statistically significant at the 5% level, *Statistically significant at the 10% level.

4. CONCLUSIONS

In recent years, various countries have adopted climate-related financial policies, aiming to address climate-related risks and to promote the transition to a green economy. In the present study we examine the effect of such policies on the bank market to book value.

Using a cross-country sample, we find that climate-related financial policies are positively associated with bank value. Additionally, we find that this relationship depends on the country's vulnerability to climate disruptions and its readiness to leverage investments for adaptive actions.

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For low to moderate values of the indicator of vulnerability and readiness, the climate-related financial policies have a negative effect on bank value. However, once this indicator exceeds a threshold, the effect of the policies on bank valuation becomes positive. Finally, a country's climate risk also plays a moderating role, with the positive effect of climate-related financial policies on bank valuation diminishing in countries with higher climate risk.

Several avenues for further research emerge from this study. First, a regional breakdown of the analysis would allow for a more granular understanding of how institutional, regulatory, and developmental contexts shape the relationship between climate-related financial policies and bank value. Second, future research could examine how bank valuations would respond if financial markets were to reassess their assumptions about the timing and severity of climate risks. Exploring this through stress-testing frameworks or event-study methodologies would represent a valuable contribution to both the academic literature and financial stability policy.

These results have policy implications, since they show an overall positive effect of climate related financial policies on bank valuation. At the same time, our findings indicate that there is no one size fits all in regulatory adoption, and that policy makers should take decisions in the light of other country-specific attributes.

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APPENDIX

TABLE A1 – *Definition of Variables*

M/B ratio	Market value of equity divided by book value of equity. LSEG Refinitiv; Authors' calculations
CRFPI_1	The index reflects climate related financial policies along the following areas: (i) Green Prudential Regulations (e.g. climate-related stress tests, and climate-related risk disclosure), (ii) Green Credit Allocation Policies (e.g. green lending quotas, lending limits to "brown" sectors), (iii) Green Financial Guidelines (e.g. taxonomies, sustainability reporting and compliance practice), (iv) Other Green Disclosure Requirements (i.e. measures mandating or recommending specific environmental criteria for pension funds, insurance companies, and other non-financial institutions), (v) Green Bonds Taxonomy and Issuing. For each area a score is calculated based on whether certain policies have been adopted (taking the value of 1 per policy under consideration) or not (taking the value of 0 per policy under consideration). The Index also considers the extent of policy bindingness, which is assessed based on whether: (i) there is no information on the bindingness or the policy is not binding, (ii) the adoption of the policy is voluntary, (iii) the adoption of the policy is mandatory. The CRFI1 is based on an additive model with equal weights for the five areas. Data are from D'Orazio & Thole (2022); D'Orazio (2023).
CRFPI_2	Considers the same additive model as CRFPI1 but assigns higher weights to prudential and credit allocation policy areas and lower weights to the other three areas. Data are from D'Orazio & Thole (2022); D'Orazio (2023).
CRFPI_3	Same as CRFPI1 but *without* bindingness. Data are from D'Orazio & Thole (2022); D'Orazio (2023).
CRFPI_4	Weighted sum of policies with bindingness and detailed policy indicator for the prudential policy area. Data are from D'Orazio & Thole (2022); D'Orazio (2023).
SIZE	Natural logarithm of total assets. Data are from LSEG Refinitiv.
LIQUIDITY	Ratio of liquid assets to total assets. Data are from LSEG Refinitiv.
ROA	Return on assets measured by dividing net income to total assets. Data are from LSEG Refinitiv.
ROE	Return on equity measured by dividing net income to total shareholder's equity. Data are from LSEG Refinitiv.
SECURITIES	Investment Securities available for sale divided by total assets. Data are from LSEG Refinitiv.
NII	Net interest income divided by total assets. Data are from LSEG Refinitiv.
MARKET DEPOSITS	Bank deposits to GDP (%). Data are from the World Bank.

TABLE A1 - *continued*

CONC3	Concentration of three largest banks in the country. Measured as assets of three largest commercial banks as a share of total commercial banking assets. Data are from the World Bank.
GDP GROWTH	Annual percentage real GDP growth. Data are from the World Bank.
ECONFREE	Index of Economic Freedom. It is based on 12 indicators, grouped into four broad categories, or pillars, of economic freedom: Rule of Law (Property rights, Government integrity, Judicial effectiveness); Government Size (Government spending, Tax burden, Fiscal health); Regulatory Efficiency (Business freedom, Labor freedom, Monetary freedom); and Open Markets (Trade freedom, Investment freedom, Financial freedom). Each of the twelve indicators is graded on a scale of 0 to 100. A country's overall score is derived by averaging these twelve economic freedoms, with equal weight being given to each. Higher scores denote higher overall economic freedom. Data are from the Heritage Foundation.
ND-GAIN	Notre Dame Global Adaptation Initiative's (ND-GAIN) country index. Indicator of a country's vulnerability to climate disruptions and its readiness to leverage investments for adaptive actions. The index assesses the vulnerability of a country by considering six life-supporting sectors: (i) (ii) food, (iii) water, (iv) health, (v) ecosystem services, (vi) human habitat and infrastructure. Each sector is in turn represented by various indicators that represent three cross-cutting components: (i) the exposure of the sector to climate-related or climate-exacerbated hazards, (ii) the sensitivity of that sector to the impacts of the hazard, and (iii) the adaptive capacity of the sector to cope with or adapt to these impacts. Additionally, ND-GAIN measures overall readiness by considering three components: (i) economic readiness (i.e. investment climate that facilitates mobilizing capitals from private sector), (ii) governance readiness (i.e. the stability of the society and institutional arrangements that contribute to the investment risks), and (iii) social readiness (i.e. social conditions that help society to make efficient and equitable use of investment and yield more benefit from the investment). The ND-GAIN score is computed by subtracting the vulnerability score from the readiness score for each country and scaling the scores to give a value 0 to 100. Higher values indicate an overall better assessment. Data are from the Notre Dame Global Adaptation Initiative, University of Notre Dame.

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TABLE A1 - *continued*

NATURE	The score for this indicator is based on the following six subcomponents, each one of them estimated based on various criteria: (i) Emissions (weight of 15%), that measures the level of emissions of greenhouse gas and other pollutants within a country (e.g. CO2 emissions, Methane emissions, etc.). (ii) Exposure to Air Pollution (weight of 15%), that captures the level of emissions to which a country's population is physically exposed, and the effects this may have on their quality of life (e.g. Exposure to fine particulate matter, Satisfaction with air quality), (iii) Forest, Land and Soil (weight of 20%), that assesses the quality of a country's land, forest and soil resources and the impact this may have on citizens' quality of life (e.g. Flood occurrence, Sustainable nitrogen management), (iv) Freshwater (weight of 20%), that assesses the quality of a country's freshwater resources and the impact this may have on citizens' quality of life (e.g. Wastewater treatment, Satisfaction with water quality), (v) Oceans (weight of 15%), that measures the quality of a country's marine resources and the impact this may have on citizens' quality of life (e.g. Overexploitation of fish stocks, Stability of marine biodiversity), (vi) Preservation Efforts (weight of 15%), that captures the extent of efforts to preserve and sustain the environment for future generations, and public satisfaction with those efforts (e.g. Terrestrial protected areas, Protection for biodiverse areas, Pesticide regulation). Data are from the Legatum Institute.
CLIMATE RISK	
MEMBER ENVIR	Country-level percentage of the respondents that replied that they are active members in an environmental organization. Average over available waves per country. Data are from the World Value Surveys.

TABLE A2 – *Country List and Composition*

Country	Number of Unique Banks	Freq.	Percent	Cum.
ARGENTINA	6	19	0.58	0.58
AUSTRALIA	7	98	2.97	3.55
AUSTRIA	3	35	1.06	4.61
BAHRAIN	1	5	0.15	4.76
BELGIUM	1	15	0.46	5.22
BRAZIL	6	55	1.67	6.89
CHILE	4	37	1.12	8.01
CHINA	26	147	4.46	12.47
COLOMBIA	5	27	0.82	13.29
CZECH REPUBLIC	2	14	0.42	13.72
DENMARK	4	48	1.46	15.17
EGYPT	2	19	0.58	15.75
FINLAND	2	15	0.46	16.21
FRANCE	3	53	1.61	17.81
GERMANY	2	19	0.58	18.39
GREECE	4	68	2.06	20.46
HUNGARY	1	11	0.33	20.79
INDIA	15	113	3.43	24.22
INDONESIA	6	59	1.79	26.01
IRELAND	4	49	1.49	27.5
ISRAEL	4	40	1.21	28.71
ITALY	9	107	3.25	31.96
JAPAN	25	320	9.71	41.67
MALAYSIA	8	85	2.58	44.25
MEXICO	4	28	0.85	45.1
MOROCCO	1	13	0.39	45.49
NETHERLANDS	2	19	0.58	46.07
NEW ZEALAND	1	4	0.12	46.19
NORWAY	5	23	0.7	46.89
PAKISTAN	3	7	0.21	47.1
PERU	4	16	0.49	47.59
POLAND	9	84	2.55	50.14
PORTUGAL	1	17	0.52	50.65
RUSSIA	2	18	0.55	51.2

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Table A2 – *continued*

Country	Number of Unique Banks	Freq.	Percent	Cum.
SAUDI ARABIA	10	34	1.03	52.23
SINGAPORE	3	47	1.43	53.66
SOUTH AFRICA	4	43	1.31	54.96
SPAIN	6	81	2.46	57.42
SWEDEN	3	49	1.49	58.91
SWITZERLAND	2	22	0.67	59.58
THAILAND	7	60	1.82	61.4
TURKEY	6	64	1.94	63.34
UAE	8	27	0.82	64.16
UNITED KINGDOM	10	120	3.64	67.8
USA	235	1,061	32.2	100

TABLE A3 – *CRFPI INDEX Country Level Average*

country	Mean	SD	Min	Max
ARGENTINA	12.05	2.25	7.00	13.00
AUSTRALIA	39.93	21.76	20.00	73.00
AUSTRIA	23.97	9.00	0.00	40.00
BAHRAIN	1.40	3.13	0.00	7.00
BELGIUM	24.93	10.33	20.00	47.00
BRAZIL	66.45	13.91	33.00	73.00
CHILE	8.76	11.81	0.00	33.00
CHINA	53.78	13.55	33.00	67.00
COLOMBIA	19.00	5.92	0.00	27.00
CZECH REPUBLIC	10.00	10.38	0.00	20.00
DENMARK	13.12	11.51	0.00	27.00
EGYPT	7.05	8.77	0.00	27.00
FINLAND	9.87	12.69	0.00	27.00
FRANCE	44.91	19.39	20.00	80.00
GERMANY	24.21	25.45	0.00	60.00
GREECE	17.65	6.49	0.00	20.00
HUNGARY	4.91	10.92	0.00	27.00
INDIA	41.29	17.48	0.00	53.00
INDONESIA	61.93	20.17	40.00	87.00
IRELAND	4.90	8.69	0.00	20.00
ISRAEL	4.90	3.25	0.00	7.00
ITALY	22.83	7.80	0.00	33.00
JAPAN	28.83	18.12	0.00	53.00
MALAYSIA	19.02	11.34	0.00	27.00
MEXICO	14.64	15.5	0.00	33.00
MOROCCO	8.15	13.27	0.00	33.00
NETHERLANDS	28.26	28.48	0.00	67.00
NEW ZEALAND	10.00	15.68	0.00	33.00
NORWAY	25.96	22.57	0.00	47.00
PAKISTAN	40.00	0.00	40.00	40.00
PERU	30.00	17.89	0.00	40.00
POLAND	10.71	10.03	0.00	20.00
PORTUGAL	15.24	7.75	0.00	20.00
RUSSIA	29.56	8.62	20.00	47.00
SAUDI ARABIA	7.00	0.00	7.00	7.00

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TABLE A3 – *continued*

country	Mean	SD	Min	Max
SINGAPORE	10.79	15.41	0.00	47.00
SOUTH AFRICA	35.53	18.16	0.00	53.00
SPAIN	20.00	0.00	20.00	20.00
SWEDEN	26.92	10.67	20.00	60.00
SWITZERLAND	7.82	9.86	0.00	33.00
THAILAND	22.68	20.99	0.00	60.00
TURKEY	21.75	6.83	13.00	27.00
UAE	9.56	11.87	0.00	27.00
UNITED KINGDOM	33.67	14.66	20.00	60.00
USA	31.04	13.23	0.00	47.00

TABLE A4 - *Excluding USA, Japan, China*

	Excl. USA	Excl. Japan	Excl. China
	(1)	(2)	(3)
VARIABLES	book_market_w	book_market_w	book_market_w
CRFPI_1	0.00266***	0.00453***	0.00425***
	(0.00102)	(0.00101)	(0.000905)
SIZE	-0.206***	-0.169***	-0.126***
	(0.0359)	(0.0316)	(0.0313)
LIQUIDITY	0.24	0.0309	-0.19
	(0.255)	(0.286)	(0.228)
ROA	6.752***	6.286***	6.905***
	(1.24)	(1.028)	(1.009)
GDP GROWTH	0.0140***	0.0184***	0.0159***
	(0.005)	(0.00471)	(0.00457)
ECONFREE	-0.0151***	-0.0370***	-0.0341***
	(0.00444)	(0.00391)	(0.00374)
Constant	7.808***	8.443***	7.202***
	(0.893)	(0.769)	(0.768)
Observations	2,234	2,975	3,148
R-squared	0.471	0.47	0.468
Number of id	241	451	450
Firm Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
R-sq	0.471	0.47	0.468

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