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Corporate Financial Flexibility Capital Structure and Long Term Organizational Sustainability Evidence from Emerging Markets

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Abstract

This study examines whether corporate financial flexibility supports long-term organizational sustainability, whether capital structure mediates the relationship, and how institutional quality and non-linearity condition it. An unbalanced panel covers 5,214 listed non-financial firms in 20 emerging economies during 2010–2023, comprising 52,860 firm-years. Composite sustainability analysis uses the ESG-rated subsample of 1,987 firms and 18,412 firm-years; the fully controlled dynamic model contains 14,238 observations. Principal-components indices measure flexibility through spare debt capacity, cash reserves and operating cash flow, and sustainability through sustainable growth, ESG performance and solvency. Two-step system GMM, mediation analysis and alternative estimators indicate positive flexibility–sustainability associations, lower leverage and longer debt maturity. Capital structure transmits 32.6% of the total association. Institutional quality negatively moderates the flexibility coefficient, consistent with substitution between internal buffers and external financing infrastructure. A concave specification identifies a turning point at 1.41 standard deviations above mean flexibility, while flexibility is more protective during the COVID-19 period and among weaker sustainability performers. These findings support deliberate management of liquidity and maturity, subject to observational identification assumptions, proxy measurement and selection into ESG coverage.

Keywords: Financial flexibility; capital structure; corporate sustainability; ESG; emerging markets; institutional quality; dynamic panel GMM. **JEL:** G32, G30, G34, M14, O16.

1 Introduction

Financial flexibility is the ability to mobilize funds at low cost and short notice when opportunities or shocks arise (Denis, 2011; Gamba & Triantis, 2008). Its value is particularly relevant where capital markets are shallow, contracts unevenly enforced and refinancing conditions volatile. Survey evidence identifies flexibility as a central consideration in financing policy (Graham & Harvey, 2001), and emerging-market studies associate it with investment and performance (Yung et al., 2015). The strategic question is how reserve financing capacity contributes to organizational continuity and sustainability beyond short-term profitability.

Prior evidence commonly focuses on investment, accounting returns or crisis-period outcomes (Marchica & Mura, 2010; Arslan-Ayaydin et al., 2014; Ferrando et al., 2017). Three related questions remain. First, leverage may transmit the flexibility association rather than act solely as a confounding control. Second, strong institutions may either facilitate deployment of reserve capacity or reduce the need to hold it. Third, option value may diminish while agency costs increase, producing a concave relationship. This study integrates these mechanisms with a sustainability measure combining economic, environmental–social and resilience components.

The research asks whether flexibility is positively associated with sustainability, how leverage and maturity contribute to that association, whether institutional quality supports complementarity or substitution, and whether an interior turning point exists. The cross-country panel provides institutional variation; dynamic estimation recognizes persistence and potential endogeneity. The analysis distinguishes the full accounting sample from the narrower ESG-rated sample and treats causal interpretations as conditional on identification assumptions.

2 Theory and hypotheses

2.1 Financing capacity and sustainability

The dynamic extension of trade-off theory treats unused borrowing capacity as an option rather than an unexplained deviation from target leverage (DeAngelo & DeAngelo, 2007; DeAngelo et al., 2011). Pecking-order theory explains why internal funds become especially valuable when external finance is information-sensitive (Myers, 1984; Myers & Majluf, 1984). Real-options theory supplies the benefit of investing, restructuring or absorbing losses without distressed financing (Gamba & Triantis, 2008). These benefits are qualified by free-cash-flow agency costs, including overinvestment and private benefits of control (Jensen, 1986).

Dynamic capabilities link financial resources to adaptation and reconfiguration (Teece et al., 1997). Stakeholder and triple-bottom-line perspectives broaden the outcome beyond shareholder returns: continuity depends partly on sustaining commitments to employees, suppliers and environmental responsibilities (Freeman, 1984; Elkington, 1997). Flexibility can protect investment programmes, prevent transitory shocks from becoming insolvency events and maintain stakeholder commitments. The investment cuts documented during financial crises support these mechanisms (Campello et al., 2010). **H1:** Financial flexibility is positively associated with long-term organizational sustainability.

2.2 Capital structure as a transmission mechanism

Debt can provide discipline but also increases fixed claims, refinancing exposure and debt overhang (Myers, 1977; Jensen, 1986). Short maturities can intensify these costs in markets where long-term borrowing is limited (Demirgüç-Kunt & Maksimovic, 1999; Fan et al., 2012). **H2a:** Leverage is negatively associated with sustainability. **H2b:** The proportion of long-term debt is positively associated with sustainability.

Firms preserving flexibility can use internal cash generation and spare borrowing capacity to maintain lower leverage and improve maturity structure (Almeida et al., 2004; Marchica & Mura, 2010). **H3:** Flexibility is negatively associated with leverage and positively associated with debt maturity. Since liquidity and internal cash generation also provide benefits beyond financing composition, **H4:** Capital structure partially mediates the flexibility–sustainability relationship. The mechanical overlap between spare debt capacity and leverage makes a cash-only flexibility check essential.

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2.3 Institutions and non-linearity

Complementarity predicts that strong institutions make borrowing capacity easier to deploy. Substitution predicts that reliable capital markets reduce the need for internal self-insurance. Cross-country evidence on financing and adjustment supports examining this institutional gradient directly (Booth et al., 2001; Fan et al., 2012; Öztekin & Flannery, 2012). Because cash and internal cash flow can be used without a new lending counterparty, substitution is expected. **H5:** Institutional quality negatively moderates the flexibility–sustainability relationship.

The first units of reserve capacity insure against important contingencies; subsequent accumulation supplies progressively less additional protection. Carry costs and agency problems can continue to increase (Jensen, 1986; Opler et al., 1999). Prior evidence of non-linearity in risk-taking motivates a sustainability-specific test (Hunjra et al., 2024). **H6:** The flexibility–sustainability relationship is concave, with diminishing and eventually negative marginal associations at high flexibility levels.

3 Research methodology

3.1 Sample and data

The panel covers Brazil, Chile, China, Colombia, Czechia, Egypt, Greece, Hungary, India, Indonesia, Malaysia, Mexico, Peru, the Philippines, Poland, Saudi Arabia, South Africa, Thailand, Türkiye and the United Arab Emirates over 2010–2023. Financial firms and utilities are excluded. Other screens remove missing core accounts, negative equity, assets below USD 10 million and firms with fewer than four consecutive observations. Continuous variables are winsorized at the 1st and 99th percentiles. China and India together account for approximately 40% of full-sample firm-years.

Table 1 Sample construction

Screen	Firm-years	Firms
Initial listed-firm universe	96,428	9,847
After financial firms and utilities are excluded	81,346	8,214
After missing core accounts are removed	68,912	7,336
After negative-equity observations are removed	64,105	6,981
After minimum asset-size screen	58,274	6,102
Final full sample after continuity screen	52,860	5,214
ESG-rated subsample for composite sustainability	18,412	1,987

The ESG-rated subsample is contained within the full sample. Lags and estimation requirements further reduce regression observations.

Accounting and market data are from LSEG Refinitiv Worldscope and Datastream; sustainability scores are from the LSEG ESG database. Institutional variables use the World Bank Worldwide Governance Indicators and World Development Indicators (Kaufmann et al., 2011). Economic policy uncertainty follows Baker et al. (2016). Monetary values are expressed in constant 2015 US dollars.

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3.2 Variables and measurement

The Corporate Sustainability Index (CSI) is the first principal component of three country-year standardized pillars: sustainable growth rate, LSEG ESG combined score and the emerging-market Z″ solvency score (Higgins, 1977; Altman, 2005). Sustainable growth equals return on equity multiplied by the earnings-retention ratio. The ESG combined score includes a controversy overlay; it covers governance as well as environmental and social performance. The first component explains 61.4% of variance and is rescaled to mean zero and unit standard deviation. CSI remains a proxy for multidimensional sustainability rather than a direct measure of organizational longevity.

The Financial Flexibility Index (FFI) combines standardized spare debt capacity, cash flexibility and internal-funds flexibility through their first principal component, explaining 58.9% of variance (Ang & Smedema, 2011; Marchica & Mura, 2010). Spare debt capacity is the positive difference between industry-year median leverage and firm leverage, floored at zero. Cash flexibility is cash and short-term investments divided by assets, demeaned by industry-year; internal-funds flexibility applies the same demeaning to operating cash flow divided by assets. A cash-only alternative excludes spare debt capacity.

Table 2 Mediators moderator and controls

Role	Variables and measurement
Capital structure	LEV = total debt / total assets; MAT = long-term debt / total debt. Alternative DEV = absolute deviation from estimated target leverage.
Institutions	INST = first principal component of six WGI dimensions. Alternatives are private credit / GDP and rule of law.
Firm controls	Size = log assets; ROA = EBIT / assets; tangibility = net PPE / assets; market-to-book equity; age = log(1 + years listed); dividend-payer indicator.
Governance and investment controls	Largest-shareholder ownership; independent directors / board size; R&D / sales, with missing R&D set to zero.
Country and time controls	Real GDP growth, CPI inflation, log policy uncertainty; country, industry and year effects. COVID indicator equals one in 2020–2021.

Target leverage follows a partial-adjustment approach (Flannery & Rangan, 2006). Controls follow established capital-structure research (Frank & Goyal, 2009).

3.3 Dynamic model mediation and estimation

The baseline relates current sustainability to its lag, lagged financing variables and controls. To express the specification compactly, F is the vector containing FFI, LEV and MAT; X contains other firm-level controls and Z country-level controls:

$$CSI_{it} = \alpha + \gamma CSI_{i,t-1} + \beta' F_{i,t-1} + \delta' X_{i,t-1} + \theta' Z_{ct} + FE + \varepsilon_{it}$$

FE denotes country, year and industry effects. Firm regressors are lagged one period. Two-step system GMM estimates level and differenced equations jointly using lag instruments (Arellano & Bover, 1995; Blundell & Bond, 1998). FFI, LEV, MAT, ROA, size and market-to-book are treated as endogenous; institutional and macroeconomic variables are treated as exogenous. Collapsed instruments and restricted lag depth limit instrument proliferation (Roodman, 2009), and Windmeijer (2005) corrections adjust standard errors. Pooled OLS and firm fixed-effects estimates provide comparisons.

Mediation distinguishes the total association c, the direct association c′, and indirect associations through leverage and maturity. Inference uses 5,000 firm-clustered bootstrap replications and bias-corrected intervals (Preacher & Hayes, 2008). The mediation system uses firm fixed effects, with GMM path estimates as a cross-check. Moderation adds INST and FFI × INST after mean-centering; non-linearity adds FFI squared. The latter is evaluated through a turning-point interval and the Lind–Mehlum test (Lind & Mehlum, 2010).

Diagnostics examine stationarity, cross-sectional dependence, serial correlation and heteroskedasticity. Robustness exercises include alternative indices and pillars, cash-only flexibility, entropy balancing (Hainmueller, 2012), ESG-coverage selection correction, Lewbel instruments (Lewbel, 2012), quantile estimation (Koenker & Bassett, 1978), alternative standard errors and subsample exclusions. Internal instruments and reweighting address particular threats but do not supply an independently verified exogenous shock.

4 Results

4.1 Descriptive evidence and diagnostics

Mean leverage is .247 (SD .176), mean long-term debt share .474 (SD .298) and mean spare debt capacity .084 (SD .109). The ESG score averages 42.71 (SD 18.94). FFI correlates positively with CSI (.284) and negatively with leverage (−.412); leverage correlates negatively with CSI (−.267), while maturity correlates positively (.121). The maximum reported VIF is 2.31. Cross-sectional independence, no autocorrelation and homoskedasticity are rejected; second-generation CIPS tests support stationarity for the main variables. These findings motivate dynamic estimation and robustness checks for dependence.

4.2 Baseline estimates

Table 3 Dynamic sustainability estimates

Variable	Pooled OLS	Firm FE	GMM full controls
CSI_{t-1}	0.784*** (0.009)	0.412*** (0.016)	0.608*** (0.043)
FFI_{t-1}	0.089*** (0.011)	0.118*** (0.019)	0.147*** (0.026)
LEV_{t-1}	−0.156*** (0.018)	−0.181*** (0.031)	−0.212*** (0.058)
MAT_{t-1}	0.048*** (0.014)	0.061** (0.026)	0.084** (0.038)
$SIZE_{t-1}$	0.118*** (0.012)	0.094*** (0.028)	0.126*** (0.034)
ROA_{t-1}	0.221*** (0.014)	0.196*** (0.022)	0.238*** (0.041)
$TANG_{t-1}$	−0.036** (0.015)	−0.029 (0.024)	−0.041* (0.023)
MTB_{t-1}	0.049*** (0.010)	0.041*** (0.014)	0.057*** (0.018)
AGE_{t-1}	0.028** (0.012)	0.019 (0.031)	0.033** (0.016)
DIV_{t-1}	0.041*** (0.011)	0.036** (0.017)	0.049*** (0.015)
OWN_{t-1}	−0.031*** (0.010)	−0.024* (0.014)	−0.038*** (0.013)
$BIND_{t-1}$	0.054*** (0.013)	0.048** (0.021)	0.062*** (0.019)

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Variable	Pooled OLS	Firm FE	GMM full controls
RND_{t-1}	0.038*** (0.011)	0.032** (0.015)	0.045*** (0.017)
GDPG	0.024** (0.011)	0.021* (0.012)	0.028** (0.013)
INF	−0.027** (0.012)	−0.024** (0.011)	−0.031** (0.014)
EPU	−0.038*** (0.013)	−0.034** (0.015)	−0.044*** (0.016)
Observations	16,425	16,425	14,238
Firms	1,987	1,987	1,987
AR(2) p-value	—	—	.318
Hansen J p-value	—	—	.246
Instruments	—	—	41

Standardized coefficients; standard errors in parentheses. *** $p < .01$, ** $p < .05$, * $p < .10$. GMM standard errors are Windmeijer-corrected. Models include the reported country, industry and year effects; firm FE absorbs time-invariant firm characteristics.

The fully controlled GMM coefficient on FFI is .147 (SE .026), supporting H1. Leverage is negative (−.212, SE .058), while maturity is positive (.084, SE .038), supporting H2a and H2b. The lagged CSI coefficient is .608, between the OLS estimate of .784 and the firm-FE estimate of .412. AR(2) and Hansen tests do not reject at conventional levels, although non-rejection alone does not establish instrument validity.

4.3 Capital structure mediation

Flexibility predicts lower leverage (−.241, $p < .01$), longer debt maturity (.238, $p < .01$) and smaller deviation from target leverage (−.117, $p < .01$), supporting H3. The cash-only specification retains the expected leverage (−.164) and maturity (.201) associations, reducing concern that the entire relationship arises mechanically from FFI construction.

Table 4 Mediation decomposition

Effect	Estimate	Bootstrap SE	95% CI	Share
Total	.218	.029	[.161, .276]	100.0%
Direct	.147	.026	[.096, .198]	67.4%
Total indirect	.071	.012	[.048, .096]	32.6%
Through leverage	.051	.009	[.034, .070]	23.4%
Through maturity	.020	.007	[.008, .035]	9.2%

All reported effects $p < .01$; 5,000 firm-clustered bootstrap replications. Indirect effects remain associational unless the mediation identification assumptions hold.

The direct association remains significant, supporting partial mediation under H4. Leverage accounts for the larger share, but maturity contributes independently. Models conditioning on these mediators estimate a different quantity from the total association; interpretation therefore depends on whether financing policy is treated as mechanism, confounder or both.

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4.4 Institutional moderation non-linearity and crisis effects

Table 5 Contingency and distributional results

Test or quantity	Reported estimate	Inference
FFI × institutional quality	−.062, p < .01	Supports H5
FFI × financial development	−.055, p < .05	Substitution pattern
FFI × rule of law	−.058, p < .01	Substitution pattern
FFI and FFI squared	.243 and −.086, both p < .01	Supports H6
Turning point	1.41 SD; 95% CI [1.06, 1.94]	Within observed range
FFI × COVID period	.091, p < .01	Stronger crisis association
FFI at CSI quantiles 10 / 50 / 90	.212 / .144 / .071	Larger at lower quantiles

The flexibility association declines from .245 at institutional quality 1.5 SD below its mean to .152 at the mean and .059 at 1.5 SD above it. The Johnson–Neyman significance boundary is +1.18 SD, below which 91.4% of observations fall. These patterns are consistent with internal reserve capacity substituting for weaker external institutions.

The quadratic model supports a concave relationship. The Lind–Mehlum statistic is 3.84 ($p < .001$), and 7.9% of firm-years lie beyond the estimated turning point. A decile specification shows a similar profile. During 2020–2021 the marginal flexibility association increases from .131 to .222, while quantile estimates decline from .212 at the 10th percentile to .071 at the 90th. These results are consistent with downside protection, but the turning point is sample-specific and is not a universal cash or leverage target.

4.5 Robustness

Table 6 Selected robustness estimates for lagged FFI

Specification	Coefficient	SE	N
Equal-weight sustainability index	.141***	.027	14,238
Cash-only flexibility	.128***	.029	14,238
ESG pillar only	.118***	.031	14,238
Sustainable growth pillar only	.164***	.024	41,286
Solvency pillar only	.186***	.028	41,286
Entropy balancing	.158***	.033	9,486
ESG-coverage selection correction	.139***	.028	14,238
Lewbel instruments	.144***	.035	14,238
Excluding China	.163***	.030	10,617
Excluding 2020–2021	.138***	.028	12,092
Country × year effects	.142***	.029	14,238
Difference GMM	.131***	.038	12,251

*** p < .01. Across all 19 alternatives reported in the study, coefficients range from .098 to .186. Other checks use alternative flexibility proxies, market leverage and dependence-robust inference.

The selection model reports a significant inverse Mills ratio (.084, $p < .05$), indicating non-random ESG coverage, while the flexibility coefficient remains close to baseline. This sensitivity result does not eliminate selection concerns. Alternative standard errors, including Driscoll–Kraay and two-way clustering, retain positive estimates (Driscoll & Kraay, 1998; Petersen, 2009). The cash-only index and exclusion of China address two particularly important construction and sample-composition risks.

5 Discussion and implications

The results connect financing capacity with a multidimensional sustainability proxy and show that leverage and maturity carry part of the association. They extend investment and crisis-window findings (Arslan-Ayaydin et al., 2014; Ferrando et al., 2017) while preserving an important distinction: observed persistence and mediation are consistent with a capability mechanism, but do not uniquely establish it. Better sustainability can also improve finance access, making reciprocal relationships plausible (Cheng et al., 2014).

Institutional moderation and crisis interactions support a common interpretation. Internal buffers are most valuable when external financing is unreliable, either structurally or during systemic stress. The stronger estimates among lower sustainability quantiles further suggest a protective role. Concavity qualifies the implication that reserves are always beneficial: the balance between optionality, carrying costs and agency concerns depends on firm and institutional conditions.

Managers can make reserve capacity an explicit financing decision, assess rollover exposure separately from debt levels, and relate liquidity plans to long-horizon investment commitments. The estimated turning point should inform further firm-specific analysis rather than serve as a mechanical rule. Boards can review persistent accumulation alongside credible investment needs and distribution policy. For policymakers, long-term financing access and reliable institutions can support sustainability investment while reducing the cost of private self-insurance. These implications remain conditional on the observational evidence.

6 Limitations and conclusion

Financial flexibility lacks a single accepted measure. Undrawn credit lines, internal business-group markets and state-directed financing are incompletely observed. ESG-rated firms are larger and more visible than unrated firms, and the composite outcome cannot fully capture legitimacy, adaptive culture or stakeholder trust. R&D imputation, cross-country accounting differences and the overlap of accounting components also warrant sensitivity analysis. Pooling 20 economies imposes common slopes beyond the modeled interaction.

System GMM depends on valid moment conditions and restricted serial correlation; alternative estimators do not remove all reverse causality and omitted-variable concerns. Stronger tests could exploit externally induced financing changes, examine unrated and unlisted firms, disaggregate ESG pillars, and observe undrawn credit commitments. Further work should assess how governance and transition risk shift the position of the concave relationship.

Financial flexibility is positively associated with long-term organizational sustainability in the listed emerging-market sample. Leverage and debt maturity jointly transmit approximately one-third of the total association, institutional quality reduces its marginal size, and the relationship is concave. The evidence supports treating reserve financing capacity as a strategic choice whose benefits depend on financing composition and operating conditions.

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