

International Financial Integration and Perceived Sustainable Economic Growth Prospects: The Roles of Financial Development and Institutional Quality

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Abstract

Purpose: This study examines a conditional framework linking international financial integration with perceived sustainable economic growth prospects through financial development and tests institutional quality as a moderator of the direct integration–growth association. It distinguishes access to international finance from domestic intermediation capacity and the governance conditions under which financial integration is associated with sustainable development prospects. **Method:** A cross-sectional quantitative survey of 480 respondents was analyzed using SmartPLS 4 and partial least squares structural equation modeling (PLS-SEM). The instrument comprised 20 seven-point items measuring international financial integration, financial development, institutional quality, and sustainable economic growth prospects. The measurement and structural models were evaluated, and direct, indirect, and interaction paths were assessed using 5,000 bootstrap replications. Cross-validation, robustness, and sensitivity analyses served as additional diagnostics. **Findings:** In the sample, international financial integration was positively associated with financial development ($\beta = .494$), which was positively associated with sustainable growth prospects ($\beta = .343$). The indirect association was .170, with a 95% bootstrap confidence interval of [.122, .219]. The direct association at average institutional quality was not statistically supported ($\beta = .040$, $p = .396$), whereas the integration–institutional-quality interaction was positive ($\beta = .209$, $p < .001$). Explained variance was .266 for financial development and .278 for sustainable growth prospects. These findings support a conditional integration–intermediation–governance pattern within the study sample, while the cross-sectional design does not establish causal effects. **Originality/Implications:** The study evaluates an explicitly bounded integration–intermediation–governance framework with transparent measurement and conditional-effect reporting. The findings suggest that financial openness, domestic financial capability, and institutional safeguards should be considered jointly rather than treating cross-border financial volume as equivalent to sustainable development.

Keywords: International Financial Integration, Sustainable Economic Growth, Financial Development, Institutional Quality, Mediation; Moderation, Pls-Sem

Introduction

International financial integration can expand the set of investors, instruments, and funding sources available to an economy. Yet the existence of cross-border financial claims does not establish that finance reaches productive activities, strengthens resilience, or preserves the assets supporting future welfare. Gross financial positions can contain intermediated transactions whose connection to domestic production is weak. The distinction between financial connectedness and developmental contribution is consequently central to the present study. Work on external wealth documents the complexity of international balance sheets, while research reallocating cross-border holdings to ultimate issuers demonstrates that the geography of finance differs from the geography implied by immediate counterparties (Coppola et al., 2021; Lane & Milesi-Ferretti, 2018). These considerations motivate a framework that looks beyond the volume of international transactions.

A second difficulty concerns the outcome being explained. Growth in current output is not synonymous with sustainable economic growth. An economy may raise measured production while depleting natural assets, accumulating fragile debt structures, or excluding substantial parts of its population from financial opportunity. Wealth-based development accounting therefore complements income accounting by asking whether the productive asset base is maintained. The economics of biodiversity further challenges approaches that treat nature as a freely replaceable input (Dasgupta, 2021; World Bank, 2021). In this study, sustainable growth means an economically durable development trajectory compatible with environmental constraints and broader access to opportunity. The survey measures professionals' perceptions of such prospects rather than national accounts or observed ecological outcomes.

International finance also transmits risks. Monetary conditions in major financial centers can influence international asset prices and financing conditions, although common global factors do not explain all capital-flow variation. The literature on the global financial cycle should therefore be read alongside evidence of heterogeneous country and flow responses (Cerutti et al., 2019; Miranda-Agrippino & Rey, 2020). Currency denomination and the organization of international portfolios further shape financing exposures. Dominant-currency pricing and currency-specific investor preferences indicate that access to foreign funding cannot be assessed independently of monetary and balance-sheet structures (Gopinath et al., 2020; Maggiori et al., 2020). A theoretical expectation of developmental benefits must accommodate these vulnerabilities rather than assume that financial integration is automatically beneficial.

The present study examines how domestic financial development and institutional quality are jointly associated with the integration–sustainability relationship. Financial development is treated as an intermediation pathway: international connections may be associated with the domestic system's ability to mobilize, evaluate, and allocate finance. Institutional quality is treated as a boundary condition: credible rules and effective implementation may shape the remaining direct association. These roles differ analytically. A mediator represents an intervening statistical pathway; a moderator represents variation in an association across

conditions. Distinguishing the two is necessary for coherent interpretation of both coefficients and policy implications.

Existing research already connects international integration, institutions, financial development, and growth. Recent European threshold evidence examines conditions affecting integration's growth relationship, while other studies investigate institutions and integration jointly or revisit the finance–institutions–growth nexus (Binder et al., 2024; Caporale et al., 2025; Haini et al., 2023). Accordingly, this study does not claim to discover the importance of institutional conditions or to provide the first joint consideration of these variables. Its narrower contribution is to specify and empirically test a transparent mediation-plus-moderation framework, connect that framework to sustainability-sensitive measurement, and evaluate the relationships using cross-sectional survey data analyzed with PLS-SEM.

The evidential boundary is equally important. The study uses cross-sectional, perception-based survey data, so the estimated paths represent theory-guided associations rather than causal effects of financial liberalization on national growth. The analysis therefore distinguishes respondent perceptions from objective macroeconomic or environmental performance and interprets mediation and moderation within this claim boundary.

International financial integration and allocation opportunities

International financial integration refers to connections between domestic financial actors and international sources or destinations of finance. In macroeconomic research, it can be operationalized through external assets and liabilities, cross-border flows, or measures of legal openness. These alternatives are not interchangeable. De facto exposure can change through valuations without a change in policy; legal openness can increase without substantial realized flows. External balance-sheet research therefore provides a conceptual foundation for distinguishing financial openness from observed financial connectedness (Lane & Milesi-Ferretti, 2018). The survey instrument operationalizes perceived access to and participation in international financial channels within a respondent's country and professional sector.

An allocation-based account suggests that wider financial connections can enlarge financing choices, support risk sharing, and introduce investment capabilities. Nevertheless, potential access must be distinguished from usable funding. Small firms may lack the collateral, reporting capacity, or scale required to benefit. Internationally mobile funds may also prefer liquid claims to long-horizon projects. The investment-facilitation perspective emphasizes the administrative environment through which potential investment becomes operational activity, rather than assuming that an announcement or financial commitment is already a productive investment (United Nations Conference on Trade and Development, 2024). This distinction motivates an intervening domestic capability mechanism and a separate institutional boundary condition.

Financial development and sustainable growth prospects

Financial development is conceptualized as the domestic system's capability to provide accessible, effective, and appropriately structured financial services. It should not be reduced to expanding credit quantities. Evidence linking financial development with growth provides motivation for the intermediation pathway, while inclusion research draws attention to who can actually use financial services (Guru & Yadav, 2019; Sethi & Acharya, 2018). The Global Findex framework similarly distinguishes account access, payments, saving, borrowing, and resilience-related financial behaviors (Demirgüç-Kunt et al., 2022). These dimensions informed the item content, but neither the cited macroeconomic measures nor the Findex questions are represented here as validated versions of the current scale.

The sustainable-growth link depends on allocation quality. Funding a productive low-emission technology, refinancing speculative assets, and expanding resource-intensive capacity can all increase financial activity while producing different social and environmental consequences. Financial development is therefore interpreted as an enabling capability, not a sufficient sustainability policy. Research on climate finance illustrates why discount rates, risk perceptions, preferences, and policy expectations matter for the allocation of investment (Giglio et al., 2021). Accordingly, the framework hypothesizes that stronger domestic intermediation is positively associated with perceived sustainable growth prospects, conditional on the conceptual scope of the outcome and the possibility of competing allocation channels.

Institutional quality and credible implementation

Institutional quality concerns the credibility, consistency, and effectiveness of rules governing economic activity. It includes expectations about enforcement and administrative behavior, not simply the formal presence of legislation. The governance perspective emphasizes commitment, coordination, cooperation, and the distribution of power affecting implementation (World Bank, 2017). This provides the basis for an institutional-complementarity argument: international finance may contribute differently when contracts are enforceable, decisions are predictable, and supervision is credible. A perception measure can capture professional judgments about these conditions, but it cannot be treated as equivalent to an externally assessed national governance index.

Institutions are also multidimensional and politically contested. Research linking democratic transitions and growth concerns a particular institutional configuration and identification strategy, not proof that every governance dimension has the same effect (Acemoglu et al., 2019). Political responses to globalization likewise reveal that aggregate gains can coexist with concentrated losses and legitimacy problems (Rodrik, 2018). The moderator is therefore interpreted as a bounded professional assessment of institutional implementation. Its dimensional coherence is assessed within the measurement model, while the construct remains a perception measure rather than an externally assessed national governance index.

Literature Review

International financial integration and sustainable economic growth

The case for a positive integration–growth relationship begins with access to a wider funding base and the possibility of matching domestic investment opportunities with international saving. However, contemporary evidence is increasingly conditional. European threshold research and cross-country institutional analyses suggest that the developmental

relationship varies with domestic circumstances (Binder et al., 2024; Caporale et al., 2025). For sustainable growth, the question becomes still more selective: which projects are financed, which risks are transferred, and whether investment preserves the foundations of future production. Research explicitly connecting integration, renewable energy investment, technology transfer, and climate-related factors brings this wider agenda into view (Nassani et al., 2025).

Corporate sustainable-finance research offers potential mechanisms but not direct macroeconomic proof. Green bond studies investigate corporate environmental outcomes, shareholder responses, and the pricing implications of environmentally motivated investors (Flammer, 2021; Tang & Zhang, 2020; Zerbib, 2019). These findings make it plausible that international financial channels can support sustainability-oriented investment. They do not establish that all cross-border finance is green, that every labeled instrument has additional environmental impact, or that firm-level changes necessarily aggregate into national sustainable growth. The hypothesized direct association must therefore remain a testable conditional expectation rather than a universal proposition.

A countervailing mechanism is exposure to volatile funding and policy uncertainty. Integration can transmit disturbances, and poorly governed inflows can finance activities that weaken resilience. The International Monetary Fund's institutional review recognizes circumstances in which capital-flow management measures have a role, while retaining the importance of appropriate macroeconomic policies (International Monetary Fund, 2022). H1 is therefore formulated as a conditional positive association evaluated at average institutional quality in the specified linear-interaction model rather than as an assumption of uniform benefits from integration.

H1: International financial integration is positively associated with perceived sustainable economic growth prospects, controlling for financial development and evaluated at average institutional quality.

International financial integration and financial development

International financial connections may support domestic financial development through competition, organizational learning, funding diversification, and access to financial expertise. These mechanisms require local absorption. A new international lender does not necessarily improve the assessment of domestic projects, and an increase in foreign holdings need not expand access for underserved borrowers. The finance–institutions–growth literature therefore provides a more useful starting point than a simple assumption that cross-border exposure and financial development are equivalent (Haini et al., 2023). Their distinction is essential for mediation: an explanatory variable cannot meaningfully mediate itself under a different label.

Inclusion and stability provide complementary criteria for interpreting intermediation quality. Cross-country inclusion research links broader financial participation with economic outcomes, while bank-level evidence examines the relationship between inclusion and stability (Ahamed & Mallick, 2019; Sethi & Acharya, 2018). These studies motivate the idea that useful financial development combines wider access with reliable intermediation rather than maximizing balance-sheet size alone. The FD items capture professional perceptions of

domestic financing accessibility, appraisal capability, long-term funding availability, efficiency, and resilience. Their conceptual breadth warrants cautious interpretation and may motivate higher-order or formative specifications in subsequent research.

The framework allows institutional quality to be associated with financial development independently of integration. Omitting this main effect would attribute all favorable domestic conditions to international finance. Accordingly, the mediator equation includes both integration and institutional quality, although H2 concerns the former. Because the study is cross-sectional, directionality is theory-guided and reverse association cannot be ruled out; financially developed systems may also attract international investors.

H2: International financial integration is positively associated with perceived financial development, controlling for institutional quality.

Financial development and sustainable economic growth

Financial development can support sustainable growth when it improves the selection, financing, and monitoring of productive investment. However, the environmental effects of financial structure remain empirically debated. Research on finance and green growth provides a prominent account of how financial systems can relate to emissions outcomes (De Haas & Popov, 2023a). A subsequent comment and the authors' reply underscore that coding choices, inference, and identification deserve close scrutiny (De Haas & Popov, 2023b; Listo et al., 2025). The implication is not that the financial mechanism should be discarded, but that evidence must be reproducible and claims proportionate to robustness.

Sustainable investment also involves distinctions between expected returns and realized performance. Equilibrium research explains how investor preferences and sustainability characteristics interact with asset pricing, while research on realized green returns cautions against treating favorable historical performance as a guaranteed future premium (Pástor et al., 2021, 2022). An efficient-frontier perspective similarly shows that responsible investment involves both information and investor objectives (Pedersen et al., 2021). Domestic financial capability may help evaluate these trade-offs; it does not make them disappear. Better financial development can enable sustainable investment without making every sustainable asset privately optimal under all market conditions.

The hypothesized positive FD–SEG association therefore concerns the capacity to support a durable development trajectory rather than a promise that expanding finance lowers emissions automatically. Evidence considering financial development, institutions, and sustainable growth in South Asia provides a relevant substantive connection (Ahmed et al., 2022). Nonetheless, the present perception-based construct remains distinct from the objective indicators employed in macroeconomic studies. The hypothesis is therefore interpreted as an association between perceived financial development and perceived sustainable growth prospects.

H3: Perceived financial development is positively associated with perceived sustainable economic growth prospects, controlling for integration, institutional quality, and their interaction.

The mediating role of financial development

The mediation proposition connects international opportunity with domestic financial capability. Integration may provide resources and knowledge, but domestic intermediaries decide which projects receive funding, under what terms, and with what monitoring. The hypothesized indirect pathway is therefore integration → financial development → sustainable growth prospects. It complements the direct relationship by making the intervening capability explicit. It also creates an empirical distinction between an economy that is financially connected and one that can use those connections effectively.

A positive indirect estimate is a statistical product, not automatically evidence that the hypothesized mechanism operates causally. Observational path models can be consistent with alternative causal structures, including common causes and reversed relationships (Rohrer, 2018; Rohrer et al., 2022). In the present cross-sectional survey, the temporal order is theory-guided rather than observed. The indirect path is therefore interpreted as a statistical mediation pattern, while causal mediation would require stronger temporal and confounding-control assumptions.

The model does not hypothesize that institutional quality moderates the indirect pathway. Neither the integration-to-development coefficient nor the development-to-growth coefficient contains an interaction with institutional quality. Consequently, the indirect estimate is constant across the moderator within the specified equations. This distinction follows the logic of regression-based conditional-process analysis and prevents a mediation-plus-moderation design from being mislabeled as moderated mediation (Hayes, 2022).

H4: Financial development carries a positive indirect association between international financial integration and perceived sustainable economic growth prospects.

The moderating role of institutional quality

Institutional quality may affect whether international finance supports durable investment or instead amplifies misallocation and vulnerability. Predictable implementation can improve investment planning, credible supervision can discourage excessive risk accumulation, and administrative integrity can reduce diversion of funds. These are institutional-complementarity arguments, not claims that institutions eliminate financial risk. Existing work on integration and output growth motivates explicit attention to state-dependent relationships rather than uniform benefits (Binder et al., 2024; Caporale et al., 2025). The moderator is positioned on the direct integration–growth path because the study examines whether governance changes the relationship remaining after domestic financial development is considered.

Climate-related investment makes implementation particularly important. Central-bank and financial-regulation research identifies physical and transition risks, while network stress-testing demonstrates how exposures can propagate through interconnected financial systems (Battiston et al., 2017; Campiglio et al., 2018). Investor studies and carbon-risk evidence show that climate considerations can affect financial judgments and pricing, but they do not imply that market prices fully internalize all social costs (Bolton & Kacperczyk, 2021; Krueger et al., 2020). Institutional capability may therefore matter for disclosure, enforcement, prudential oversight, and the credibility of transition-related commitments.

The interaction must be interpreted alongside institutional quality's main effect. A positive interaction means that the integration slope becomes more positive as the moderator increases; it does not mean that institutional quality only matters in highly integrated economies. Nor does it establish a policy threshold in national governance units. The standardized interaction is interpreted as a local statistical representation of complementarity rather than as a causal national threshold.

H5: Institutional quality positively moderates the direct association between international financial integration and perceived sustainable economic growth prospects, such that the association becomes more positive at higher institutional quality.

Research Gap

Three bounded gaps organize the contribution. First, integration–growth research frequently addresses output outcomes, while sustainability requires separate attention to environmental constraints, inclusion, and resilience. Second, even when integration, financial development, and institutions appear together, researchers must distinguish an intervening capability pathway from a conditioning relationship. Third, measurement and analytical transparency are often treated as secondary to a theoretically attractive path diagram. The present study addresses these issues by connecting explicit construct definitions with reproducible mediation and interaction calculations rather than claiming an entirely unexplored variable combination.

The measurement gap is particularly consequential. Divergence among environmental, social, and governance ratings demonstrates that apparently similar sustainability labels can encode different measurement decisions (Berg et al., 2022). The present study therefore does not treat a favorable perception score as proof of actual sustainable growth. Instead, the survey instrument operationalizes the four constructs transparently, and the empirical PLS-SEM assessment evaluates the measurement and structural relationships within the study sample.

Theoretical Model

Figure 1 presents the direct, mediated, and moderated organization of the study model. *X* denotes perceived international financial integration; *M* denotes perceived financial development; *W* denotes perceived institutional quality; *Y* denotes perceived sustainable growth prospects. The main paths are $X \rightarrow M$, $M \rightarrow Y$, and $X \rightarrow Y$. Institutional quality has main effects on *M* and *Y*, and $X \times W$ enters the outcome equation. *X* and *W* are allowed to covary. These auxiliary paths are included for coherent estimation rather than presented as additional numbered hypotheses.

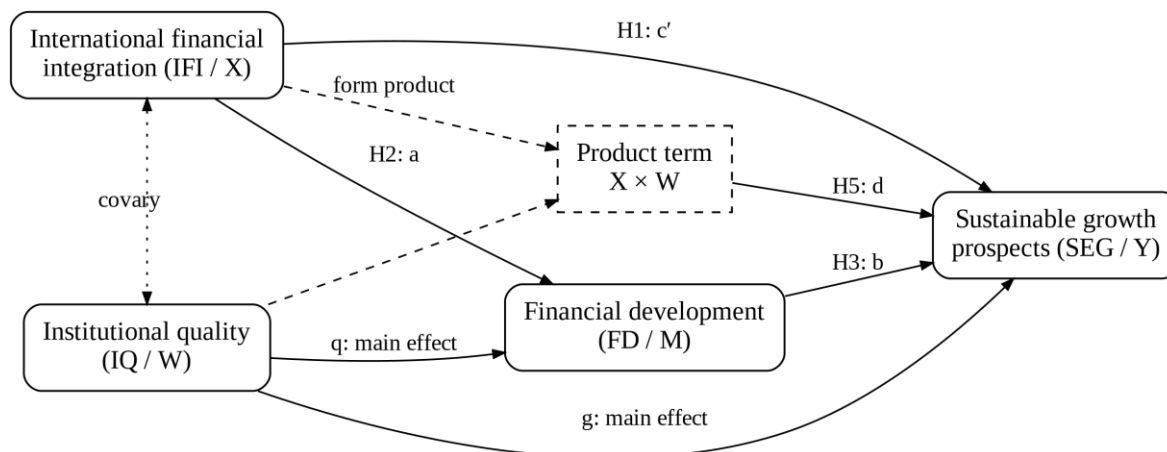


Figure 1. Theoretical Model: Perception-Based Mediation and Moderation Framework

Note. H4 is the indirect pathway $X \rightarrow M \rightarrow Y$. Institutional quality moderates the direct relationship through $X \times W$; q and g are main effects. Dashed arrows form the product; the dotted double-headed line denotes covariance. The figure represents the hypothesized relationships.

Methodology

Research design and unit of analysis

The study employed a cross-sectional quantitative survey design. The unit of analysis was the individual respondent, and the final analytical sample comprised 480 valid responses. The four constructs were measured through 20 seven-point survey items. Because all variables were collected in a single cross-sectional survey, the estimated relationships are interpreted as theory-guided associations rather than causal effects.

The theoretical topic concerns international finance and sustainable economic growth, but the measures capture professional perceptions of country-sector conditions. The results are therefore not treated as objective national indicators. Aggregation to country-level conclusions would require a multilevel design, sufficient observations within countries, evidence of within-unit agreement, and external criterion measures. The present analysis remains at the respondent level and avoids macroeconomic causal claims.

The survey targeted finance professionals, regulators, development practitioners, and sustainability-oriented investment specialists with relevant knowledge of international finance and domestic financial conditions. Eligibility required sufficient professional experience to evaluate the survey statements. A total of 480 valid responses were included in the final analysis.

Survey instrument

The instrument contained five items for each of four constructs. Responses used a seven-point agreement scale from 1, strongly disagree, to 7, strongly agree. Respondents evaluated the country and professional sector they knew best over the preceding three years; SEG items concerned perceived prospects over the subsequent five years. This common framing

reduced ambiguity but did not establish causal sequencing because all judgments were collected within the same cross-sectional survey.

Table 1
Survey Instrument Profile

Construct	Role and perspective	Items	Conceptual basis
IFI	Perceived international financing access and participation	5	Lane & Milesi-Ferretti (2018); Coppola et al. (2021)
FD	Perceived domestic intermediation capability; mediator	5	Guru & Yadav (2019); Demirgüç-Kunt et al. (2022)
IQ	Perceived institutional implementation; moderator	5	World Bank (2017); Binder et al. (2024)
SEG	Perceived sustainable growth prospects; outcome	5	World Bank (2021); Dasgupta (2021)

Note. Literature informed the construct domains. All items used seven response categories. IFI, FD, and IQ used a preceding-three-year reference frame; SEG concerned the subsequent five years.

The questionnaire was developed from the conceptual literature rather than described as a verbatim adaptation of a single previously validated scale. The complete item set used in the survey is reported in Table 2. Scale-development guidance emphasizes the link between domain definition, item generation, and evaluation (Boateng et al., 2018), while measurement critiques warn that acceptable statistics do not compensate for unclear constructs (Flake & Fried, 2020). Construct reliability and validity were therefore evaluated empirically through the measurement model, and the full item content is disclosed.

Table 2
Survey Questionnaire Items

Code	Item statement
IFI1	Organizations in my sector can access financing from international providers.
IFI2	International investors participate actively in financing organizations in my sector.
IFI3	Domestic financial intermediaries in my sector maintain effective international financing links.
IFI4	Cross-border financial channels offer usable funding alternatives for my sector.
IFI5	Organizations in my sector can participate meaningfully in international financial markets.
FD1	Domestic financial services are accessible to viable organizations in my sector.
FD2	Domestic financial intermediaries can assess the quality of investment proposals effectively.
FD3	Domestic financial markets provide suitable long-term financing for productive investment.
FD4	Domestic financial services allocate funds efficiently to viable investment opportunities.

Code	Item statement
FD5	The domestic financial system can maintain essential financing during economic disruptions.
IQ1	Financial and investment rules are implemented predictably in my country.
IQ2	Contractual obligations in financial transactions can be enforced credibly.
IQ3	Public decisions affecting investment are protected against improper private influence.
IQ4	Financial supervisory bodies implement their responsibilities effectively.
IQ5	Organizations can hold relevant public authorities accountable for investment-related decisions.
SEG1	My country has favorable prospects for maintaining economically durable growth.
SEG2	My country has favorable prospects for growth compatible with environmental protection.
SEG3	My country has favorable prospects for growth that preserves productive natural assets.
SEG4	My country has favorable prospects for growth that broadens economic opportunity.
SEG5	My country has favorable prospects for growth resilient to major economic disruptions.

Note. Respondents identified one country and their professional sector before answering. Responses: 1 = strongly disagree; 7 = strongly agree. No item required reverse scoring.

A substantive measurement issue remains: access, efficiency, resilience, and appraisal capability are conceptually broad components of financial development, while environmental compatibility, inclusion, and durability are broad components of sustainable growth. In the current PLS-SEM model, the constructs were modeled reflectively and assessed through indicator loadings, reliability, average variance extracted, and discriminant validity. This empirical specification does not imply that alternative higher-order or formative conceptualizations are theoretically interchangeable (Sarstedt et al., 2019).

PLS-SEM analysis procedure

Data analysis was conducted in SmartPLS 4 using partial least squares structural equation modeling (PLS-SEM). The model specified international financial integration (IFI) as the exogenous construct, financial development (FD) as the mediator, institutional quality (IQ) as the moderator, and sustainable economic growth prospects (SEG) as the outcome. The IFI × IQ interaction was specified on the direct IFI–SEG path, while the constituent main effects were retained. PLS-SEM was used to evaluate the measurement and structural components of the mediation-plus-moderation model within a single analytical workflow (Benitez et al., 2020; Hair et al., 2019).

Measurement-model assessment examined indicator loadings, Cronbach’s alpha, composite reliability, average variance extracted (AVE), and heterotrait–monotrait ratios (HTMT). Reliability, convergent validity, and discriminant validity were interpreted jointly rather than by a single mechanical cutoff. Because the constructs were measured in the same survey, these diagnostics do not by themselves eliminate common-method concerns.

Structural-model assessment examined collinearity, path coefficients, explained variance, effect sizes, the specific indirect effect, and the interaction term. Statistical inference used

5,000 bootstrap replications and 95% bootstrap confidence intervals. Conditional direct and total associations were calculated across levels of institutional quality, and the unsupported direct hypothesis was retained rather than removed.

Measurement model assessment

The measurement model specified five indicators for each of the four constructs. Indicator loadings and internal consistency were evaluated at the construct level, and no item was deleted solely to improve a statistic.

The seven-category responses were analyzed within the specified PLS-SEM workflow, and measurement results were interpreted as evidence about the operationalization in this sample rather than as proof that the constructs are ontologically unidimensional. Estimator choice and scale treatment can affect model diagnostics, so global-fit indices are treated as supplementary rather than decisive evidence (Shi & Maydeu-Olivares, 2020).

Internal consistency is summarized using coefficient alpha and the reported omega/composite-reliability values, together with average variance extracted. Methodological work motivates reporting reliability beyond alpha and interpreting reliability in relation to the fitted measurement model (Flora, 2020; McNeish, 2018).

Discriminant validity was examined using the heterotrait–monotrait ratio with 5,000-bootstrap confidence intervals. These diagnostics evaluate empirical separability within the sample but do not eliminate conceptual overlap or common-source concerns. Discriminant-validity guidance emphasizes interpreting HTMT in relation to the measurement model rather than relying on a single mechanical rule (Rönkkö & Cho, 2022).

Structural model and inference

The structural model estimated the $IFI \rightarrow FD$, $FD \rightarrow SEG$, and $IFI \rightarrow SEG$ paths, together with institutional quality's main effects and the $IFI \times IQ$ interaction on SEG. H4 corresponds to the indirect pathway $IFI \rightarrow FD \rightarrow SEG$. Because neither component of the indirect pathway contains an interaction with institutional quality, the model represents mediation with moderation of the direct relationship rather than moderated mediation (Hayes, 2022).

SmartPLS 4 was used for PLS-SEM estimation, and statistical inference relied on 5,000 bootstrap replications. The indirect association was evaluated from its bootstrapped confidence interval, while conditional direct and total associations were calculated at $W = -1$, 0, and $+1$. All paths are interpreted as associations because the cross-sectional design does not establish temporal precedence or eliminate confounding.

For transparency, the HC3 statistics reported in the hypothesis table are retained as supplementary robustness diagnostics alongside the bootstrap confidence intervals. They are treated as ancillary evidence and are not used to recast the cross-sectional structural paths as causal effects.

Prediction, robustness, and sensitivity analysis

Ten-fold cross-validation was used as a supplementary predictive diagnostic for FD and SEG. Scaling was fitted within each training fold and applied to the held-out observations. Predictions were compared with the training-fold mean, and the SEG model was also compared with an additive specification excluding the interaction. Q^2CV is interpreted as a

cross-validated predictive diagnostic and is not described as PLSpredict or as evidence of external validity.

Supplementary robustness checks compared the primary specification with an alternative latent-score specification, added quadratic main-predictor terms, and examined a shared-response sensitivity scenario. These analyses assess sensitivity to specification and common-response structure; they do not eliminate unmeasured confounding, and robust standard errors do not solve endogeneity (Cinelli & Hazlett, 2020).

Sample-size sensitivity was examined using a Monte Carlo grid. Sample sizes of 240, 480, and 960 were crossed with assumed interaction coefficients of zero, .10, and .20, using 200 replications per cell. The resulting 1,800 replications summarize mean interaction estimates, dispersion, and rejection frequencies under the evaluated conditions. Sample-size justification should correspond to the effect and precision requirements of the study (Lakens, 2022).

Results

Variables reliability and validity

Table 3 reports alpha values between .859 and .885, omega/composite reliability values between .861 and .886, and average variance extracted between .556 and .608. These results indicate strong internal consistency and adequate convergent variance for the four constructs within the study sample. Because FD and SEG are conceptually broad perception-based constructs, statistical adequacy does not by itself resolve all theoretical boundary questions.

Table 3

Construct Reliability and Convergent Validity (n = 480)

Construct	Mean	SD	Alpha	Omega/CR	AVE
IFI	3.990	1.292	.859	.861	.556
FD	4.045	1.348	.870	.871	.575
IQ	4.009	1.350	.885	.886	.608
SEG	4.027	1.290	.862	.862	.557

Note. Means and standard deviations use raw item-average scores. AVE = average variance extracted.

Supplementary measurement-model diagnostics

Supplementary measurement-model diagnostics reported a chi-square value of 144.173 with 164 degrees of freedom and $p = .865$. CFI was 1.000, RMSEA was .000, SRMR was .028, and the uncapped TLI was 1.005 because the chi-square-to-degrees-of-freedom ratio was below one. These values are reported as supplementary diagnostics rather than as evidence of causality or as a substitute for the PLS-SEM measurement criteria reported above.

Measurement items

Table 4 presents standardized loadings, residual variances, means, standard deviations, and corrected item-total correlations. Estimated loadings range from .660 to .840. IFI5 has the lowest loading and is retained to preserve construct content rather than deleted solely to increase a statistical index. Item fit is not synonymous with substantive importance: an

indicator can perform adequately statistically while covering a distinct aspect of the construct.

Table 4
Measurement Item Statistics

Item	Mean	SD	Loading	Residual	Corrected r
IFI1	3.833	1.550	.770	.407	.708
IFI2	4.160	1.599	.754	.432	.682
IFI3	4.021	1.628	.705	.503	.643
IFI4	4.127	1.638	.827	.316	.744
IFI5	3.806	1.657	.660	.564	.608
FD1	3.840	1.668	.840	.295	.759
FD2	4.202	1.630	.735	.460	.675
FD3	4.029	1.669	.734	.461	.675
FD4	4.263	1.662	.776	.398	.719
FD5	3.890	1.680	.699	.511	.648
IQ1	3.842	1.652	.818	.331	.762
IQ2	4.104	1.600	.810	.344	.749
IQ3	4.092	1.645	.765	.415	.711
IQ4	4.177	1.609	.787	.381	.726
IQ5	3.829	1.649	.716	.487	.666
SEG1	3.877	1.609	.791	.375	.721
SEG2	4.223	1.641	.738	.455	.672
SEG3	4.044	1.517	.708	.498	.648
SEG4	4.283	1.661	.781	.390	.710
SEG5	3.706	1.605	.708	.499	.651

Note. Loading = standardized outer loading. Residual = $1 - \text{loading}^2$. Corrected r correlates the item with the sum of its other four construct items.

The single-factor comparator fit substantially worse, with chi-square 2,506.455 on 170 degrees of freedom, CFI .488, RMSEA .169, and SRMR .157. This provides a supplementary indication that a one-factor representation is inadequate. It does not demonstrate an absence of common-method variance, because a single-factor comparison cannot identify every source of shared response bias.

Discriminant Validity

All six HTMT estimates are below .60, ranging from .202 for IQ–FD to .589 for FD–IFI. Their bootstrap intervals are reported in Table 5; the largest upper limit is .661. Estimated factor correlations range from .206 to .586. These results support empirical separability among the four constructs in the sample while leaving conceptual boundary questions to be interpreted alongside theory and item content.

Table 5

Discriminant Validity: HTMT and Bootstrap Confidence Intervals

Construct pair	HTMT	95% bootstrap CI
FD / IFI	.589	[.510, .661]
IQ / IFI	.222	[.132, .322]
IQ / FD	.202	[.117, .301]
SEG / IFI	.290	[.191, .386]
SEG / FD	.477	[.395, .556]
SEG / IQ	.365	[.273, .460]

Note. HTMT = heterotrait–monotrait ratio; 5,000 bootstrap replications. Estimated factor correlations were IFI–FD = .586, IFI–IQ = .212, IFI–SEG = .282, FD–IQ = .206, FD–SEG = .482, and IQ–SEG = .364.

Structural effects overview

The integration-to-development estimate is .494, while the development-to-growth estimate is .343. Their product gives an indirect estimate of .170, with a bootstrap confidence interval from .122 to .219. The direct integration estimate at average institutional quality is .040 and its interval crosses zero. Institutional quality is positively associated with the outcome directly and changes the integration slope through an interaction estimate of .209. Table 6 distinguishes these quantities and reports conditional direct and total associations rather than a single total coefficient that would conceal the moderator.

Table 6

Structural Effects and Conditional Associations

Association	Estimate	Bootstrap SE	95% bootstrap CI
IFI → FD (a)	.494	.035	[.422, .560]
FD → SEG (b)	.343	.044	[.257, .427]
IQ → FD (q)	.081	.038	[.002, .159]
IQ → SEG (g)	.259	.040	[.182, .338]
IFI → SEG at W = 0 (c')	.040	.047	[−.052, .133]
IFI → FD → SEG (ab)	.170	.025	[.122, .219]
IFI × IQ → SEG (d)	.209	.038	[.135, .283]
Direct association: W = −1	−.170	.058	[−.276, −.051]
Direct association: W = +1	.249	.063	[.126, .373]
Total association: W = −1	.000	.057	[−.109, .111]
Total association: W = 0	.209	.042	[.126, .291]
Total association: W = +1	.419	.056	[.306, .527]

Note. W is standardized institutional quality. Direct = $c' + dW$; indirect = ab ; total = $c' + ab + dW$. All intervals use 5,000 percentile-bootstrap replications. The quantities are interpreted as associations within the cross-sectional model.

At institutional quality one standard deviation below its sample mean, the conditional direct estimate is $-.170$. At one standard deviation above the mean, it is $.249$. The corresponding total estimates are approximately zero and $.419$ after adding the constant indirect component. The negative low- W direct estimate does not establish a negative total relationship because its indirect component nearly offsets it and the total confidence interval includes zero. These conditional estimates should therefore be interpreted as sample-based associations rather than as country-level policy thresholds.

Explanatory and predictive diagnostics

The mediator equation explains 26.6% of the standardized variance, and the outcome equation explains 27.8%. Adjusted values are $.263$ and $.272$, respectively. Supplementary measurement-model fit and structural explanation are reported separately in Table 7 because they answer different questions. The largest variance-inflation factor is 1.382, indicating that numerical collinearity is not severe in the analyzed model.

Table 7

Model Fit, Explanatory, and Predictive Diagnostics

Diagnostic	Model / outcome 1	Model / outcome 2
A. Measurement model	Four-factor CFA	Single-factor CFA
Chi-square (df)	144.173 (164)	2,506.455 (170)
p-value	.865	< .001
CFI	1.000	.488
TLI, uncapped	1.005	.428
RMSEA	.000	.169
SRMR	.028	.157
B. Score equations	FD	SEG
R^2	.266	.278
Adjusted R^2	.263	.272
Cross-validated RMSE	.862	.859
Cross-validated MAE	.701	.686
Q^2CV	.259	.265
Mean-benchmark RMSE	1.001	1.001
Additive-model RMSE	Not applicable	.883

Note. Supplementary measurement-model fit and structural-model explanation answer different questions. TLI is reported without capping; RMSEA reaches its zero boundary. Cross-validation uses ten folds and training-only scaling. Q^2CV compares squared prediction errors with the training-mean benchmark; it is not PLSpredict.

Cross-validated RMSE is $.862$ for FD and $.859$ for SEG, with MAE values of $.701$ and $.686$. Both models improve on the training-mean benchmark, producing Q^2CV values of $.259$ and $.265$.

For SEG, the additive model's RMSE is .883, compared with .859 when the interaction is included.

Structural Model Results

Figure 2 summarizes the structural estimates, explained variance, and indirect pathway. It retains the institutional main effects and the product term so that the moderation specification is visible alongside the mediated pathway. Because the design is cross-sectional, the coefficients are interpreted as standardized associations rather than causal effects.

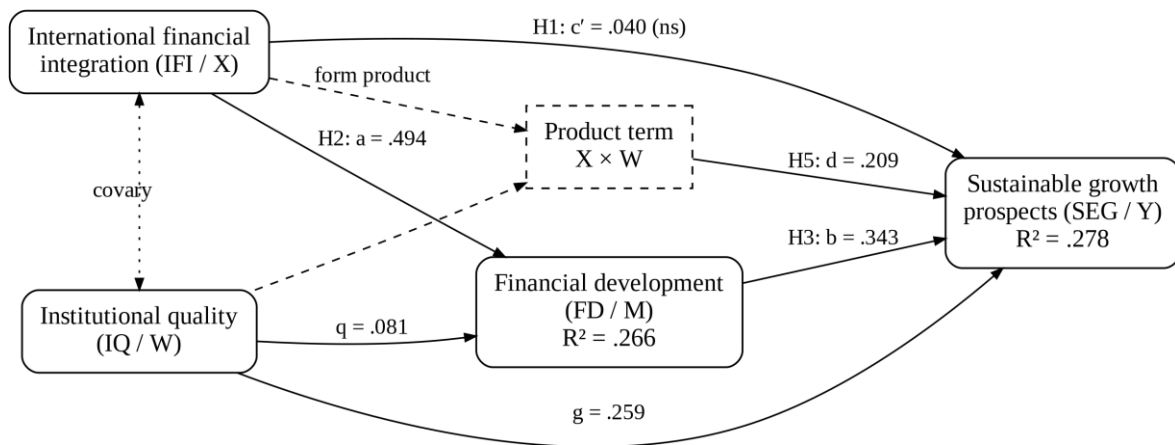


Figure 2 Structural Model Results

Note. $H4: ab = .170$, 95% bootstrap CI [.122, .219]. The interaction changes the direct association; the indirect association is constant. ns = not statistically supported at .05.

Hypothesis testing

Table 8 summarizes the hypothesis decisions. $H1$ is not statistically supported: the supplementary HC3 test gives $z = .849$ and $p = .396$, and the 95% bootstrap interval $[-.052, .133]$ includes zero. $H2$ and $H3$ are supported, with positive coefficients and p -values below .001. The bootstrap interval for the indirect association supports $H4$, while $H5$ is supported by the positive interaction estimate of .209 with $p < .001$ and a bootstrap interval of [.135, .283]. These decisions are interpreted within the cross-sectional PLS-SEM model.

Table 8
Structural Path Estimates and Hypothesis Decisions

H	Estimate	HC3 SE	z	p / test	95% bootstrap CI	Decision
H1	.040	.047	0.849	.396	$[-.052, .133]$	Not supported
H2	.494	.040	12.199	< .001	$ [.422, .560]$	Supported
H3	.343	.044	7.770	< .001	$ [.257, .427]$	Supported
H4	.170	—	—	Bootstrap	$ [.122, .219]$	Supported
H5	.209	.039	5.372	< .001	$ [.135, .283]$	Supported

Note. HC3 statistics are retained as supplementary robustness diagnostics. $H4$ is evaluated using the percentile-bootstrap interval rather than a z statistic. The 5,000-bootstrap confidence intervals are the principal uncertainty estimates reported for the direct, indirect, and interaction paths.

Effect-size comparisons further distinguish statistical detectability from explanatory contribution. Removing integration's direct main effect from the outcome equation changes explanation very little, with $f^2 = .002$. The corresponding values are .119 for financial development, .088 for institutional quality, and .062 for the interaction. Removing integration from the mediator equation gives $f^2 = .320$. These values indicate that the indirect pathway carries more explanatory weight than the direct coefficient at mean institutional quality, which remains small and uncertain.

Robustness and sensitivity analyses

An alternative latent-score robustness specification produced an integration-to-development component $a = .491$, a mediator–outcome coefficient $b = .393$, and an interaction coefficient of .227. The corresponding score-based interaction estimate was .209. Adding quadratic main-predictor terms left the interaction near .211 with $p < .001$. These checks indicate that the interaction is not solely an artifact of the primary linear specification, although they do not eliminate all plausible nonlinearities or omitted relationships.

The shared-response sensitivity scenario changed the indirect estimate to .215 and the interaction estimate to .154. The direction of change differed across effects, illustrating why a common response tendency cannot be assumed to inflate every coefficient uniformly. The result is treated as a sensitivity diagnostic rather than as a definitive test for common-method bias.

Table 9

Monte Carlo Interaction Sensitivity Assessment: 200 Replications per Cell

n	Assumed d	Mean estimate	Estimate SD	Rejection rate	MCSE
240	0.00	.007	.054	0.055	.016
240	0.10	.080	.051	0.290	.032
240	0.20	.152	.051	0.800	.028
480	0.00	.001	.042	0.065	.017
480	0.10	.081	.038	0.565	.035
480	0.20	.157	.038	0.980	.010
960	0.00	−.002	.029	0.065	.017
960	0.10	.079	.028	0.820	.027
960	0.20	.156	.029	1.000	.000

Note. Rejection uses a two-sided test at .05. MCSE is the binomial Monte Carlo standard error for the rejection rate. Coefficients are reported on the same scale across the evaluated cells. A rejection rate of 1.000 means 200 of 200 rejections in that cell and should not be interpreted as certainty outside the evaluated conditions.

The Monte Carlo sensitivity results qualify the sample-size interpretation. With $n = 480$ and an assumed interaction of .10, the interaction is detected in 56.5% of replications; this increases to 82.0% with $n = 960$. For an assumed interaction of .20, rejection frequencies are 98.0% and 100.0%, respectively. A result of 100% means all 200 replications in that cell rejected the null, not that detection is certain. Null-interaction rejection frequencies range

from 5.5% to 6.5%, with nontrivial Monte Carlo uncertainty. These results support design-specific sensitivity assessment rather than a universal sample-size endorsement.

Discussion

H1: Why integration's direct association cannot be presumed

The direct association between international financial integration and perceived sustainable growth prospects at average institutional quality was small and not statistically supported. This pattern is compatible with literature emphasizing heterogeneous integration relationships (Binder et al., 2024; Caporale et al., 2025), but the cross-sectional design does not adjudicate among competing causal explanations. The result therefore supports a conditional rather than uniformly positive interpretation of the integration–growth relationship.

The wider economic reasoning also cautions against a volume-based policy interpretation. Financial claims can finance imported equipment, refinance existing obligations, acquire existing assets, or pass through offshore structures. Only some of these transactions necessarily increase productive capacity. Evidence on global capital-flow geography highlights the importance of looking through immediate counterparties to underlying issuers and activities (Coppola et al., 2021). The present findings therefore support distinguishing financing composition, maturity, currency, ultimate recipient, and investment purpose rather than treating one integration ratio as a complete developmental description.

H2 and H3: Domestic financial capability as an intervening pathway

The positive IFI → FD and FD → SEG estimates are consistent with the hypothesized intermediation pathway. In the cross-sectional design, these relationships do not establish temporal causation, but they show that the association between international financial integration and sustainable growth prospects is statistically linked to perceived domestic financial capability. This interpretation directs attention to project evaluation, borrower access, long-term instruments, allocation efficiency, and financing resilience rather than treating financial connectedness and financial development as interchangeable.

Financial inclusion is particularly important for interpreting developmental reach. A financial system can appear deep while excluding smaller enterprises or households with limited collateral. Inclusion and financial-resilience research motivates examining which actors benefit from international financial connections (Ahamed & Mallick, 2019; Demirgüç-Kunt et al., 2022). The results therefore support distinguishing broad access from elite access and pairing aggregate perceptions with more disaggregated borrower- or organization-level evidence in subsequent research.

Environmental allocation must also be explicit. Carbon-related tail risks and the pricing of emissions exposure indicate that finance is connected to transition-related uncertainty, not simply to average investment returns (Bolton & Kacperczyk, 2021; Ilhan et al., 2021). The positive FD–SEG association supports H3 within the study sample, but it does not show that greater financial development automatically lowers emissions or causes sustainable growth. The relationship should therefore be interpreted within the wider policy and allocation environment.

H4: Indirect association without causal overclaim

The positive indirect association and uncertain mean-W direct coefficient might tempt a description of complete mediation. That label would overstate the evidence. A confidence interval containing zero does not prove that the direct effect is absent, and the model explicitly permits the direct association to vary with institutional quality. The significant indirect estimate supports statistical mediation within the specified model, but it does not establish the temporal and causal assumptions required for causal mediation (Hayes, 2022; Rohrer et al., 2022).

Three-time scales remain theoretically relevant. International financial exposure may change rapidly, domestic capabilities may develop gradually, and sustainable outcomes may require longer horizons. A cross-sectional survey compresses these processes into simultaneous judgments. Repeated measurement could strengthen temporal ordering, but it would not automatically solve confounding or anticipation. Baseline financial development, prior growth expectations, political changes, external demand, and exchange-rate conditions may jointly influence exposure and outcomes.

The sensitivity perspective is therefore substantive rather than cosmetic. Omitted-variable analysis can assess how strongly an unmeasured factor would need to relate to the explanatory and outcome variables to alter an observational estimate (Cinelli & Hazlett, 2020). Such diagnostics do not identify every confounder. Accordingly, bootstrap precision, robust standard errors, and favorable model diagnostics are not interpreted as solutions to endogeneity.

H5: Institutional complementarity and its limits

The positive interaction indicates an institutional-complementarity pattern: the integration slope becomes more favorable as perceived institutional quality increases. The conditional totals are especially informative because they combine the direct association with the constant financial-development pathway. At low W, the negative direct component nearly cancels the indirect component; at high W, both components are positive. This is a sample-based conditional-association interpretation, not evidence that countries can cross a causal governance threshold by adopting a particular regulation.

Governance should not be interpreted as a frictionless administrative input. Climate-related asset revaluation can redistribute wealth and political influence, producing resistance to transition even where formal institutions appear strong (Colgan et al., 2021). Institutional quality may therefore concern whose interests are protected and whether implementation remains credible when policies create concentrated losses. Responsible-business guidelines provide principles for enterprise conduct, but they are not interchangeable with enforceable domestic law or proof of compliance (Organisation for Economic Co-operation and Development, 2023). Institutional measurement should therefore distinguish formal commitments, implementation capacity, and observed behavior.

Trade and geopolitical conditions also complicate the boundary condition. Trade policies can favor pollution-intensive production, potentially offsetting incentives created by sustainable finance (Shapiro, 2021). Geopolitical risk can affect investment conditions independently of domestic financial capability (Caldara & Iacoviello, 2022). These considerations suggest that

institutions operate within a wider configuration of industrial, trade, environmental, and security policies. The current interaction specification is deliberately parsimonious and should not substitute for examining that wider configuration.

Measurement, prediction, and substantive explanation

The combination of favorable measurement diagnostics and moderate R^2 illustrates why different statistics answer different questions. Reliability, AVE, and HTMT address measurement quality; R^2 summarizes variation explained by the structural model; cross-validation evaluates prediction for held-out observations from the study sample. Supplementary global-fit indices are reported separately and are not treated as the basis for PLS-SEM model acceptance. None of these quantities establishes policy effectiveness or causal identification.

Conclusion

International financial integration should be understood as a set of financing opportunities and exposures whose developmental implications are associated with domestic intermediation and institutional conditions. In the PLS-SEM results, the indirect association through financial development and the interaction with institutional quality are positive, while the direct association at average institutional quality is not statistically supported. The conditional total association changes from approximately zero at low institutional quality to a more positive value at high institutional quality.

These findings support an integration–intermediation–governance account within the study sample while preserving the evidential limits of a cross-sectional perception-based design. The study does not estimate the causal effect of financial liberalization on national economic growth. Instead, it shows that financial integration, domestic financial capability, and institutional implementation are empirically linked in a conditional pattern that warrants joint consideration in research and policy analysis.

This study refines the conditional integration–growth account by distinguishing international financing access from domestic intermediation capability and institutional implementation. Building on research that already links integration, institutions, and growth (Binder et al., 2024; Caporale et al., 2025; Haini et al., 2023), its theoretical contribution is to assign financial development an intervening role and institutional quality a separate conditioning role on the direct integration–growth association. This separation clarifies both the capability through which integration may relate to sustainable growth prospects and the conditions under which its remaining direct association varies; it does not conflate direct-path moderation with moderated mediation. Contextually, the country–sector framing translates these distinctions into professional assessments of international financing access, domestic project appraisal and funding capacity, and credible financial-rule implementation. This focus is relevant to finance professionals, regulators, development practitioners, and sustainability-oriented investment specialists who need to distinguish constraints on attracting finance from constraints on allocating it productively. The outcome also brings perceived durability, environmental compatibility, preservation of natural assets, inclusiveness, and resilience into the finance–growth discussion rather than inferring sustainability from financial volumes alone. Its contextual significance therefore lies in connecting these distinct financing and governance considerations to sustainability-sensitive professional judgments. These

contributions remain bounded to the stated perception-based research context and do not demonstrate realized improvements in national sustainability or identify country-specific causal policy effects.

Implications of the study

Theoretical implications

The framework separates international access from domestic capability. This distinction clarifies why a financially integrated economy may fail to obtain broad developmental benefits and why domestic financial development can matter even when the direct integration coefficient is uncertain. It also avoids conceptual redundancy: integration describes cross-border connectedness, while financial development describes the domestic system's capacity to allocate and manage finance. The distinction should guide variable construction rather than be imposed only after estimation.

A second implication is that institutions can change the meaning of an average relationship. An interaction model does not support one unconditional estimate of integration's direct contribution. Researchers should report conditional effects and uncertainty over a substantively defensible moderator range. The present model also demonstrates the importance of distinguishing direct-path moderation from moderated mediation. A more complex claim would require an interaction on at least one component of the indirect pathway and an appropriate conditional indirect-effect analysis.

Third, sustainable growth requires a measurement argument separate from a finance–growth argument. Physical climate constraints and the continuing gap between stated ambitions and emissions trajectories make it inappropriate to equate higher financial activity with environmental progress (Intergovernmental Panel on Climate Change, 2023; United Nations Environment Programme, 2023). Sustainable outcomes should therefore be operationalized through distinct and auditable indicators, including the durability of productive assets and environmental consequences, rather than inferred from favorable financing perceptions alone.

Policy and managerial implications

The empirical findings suggest that policy assessments of greater international financial integration should consider domestic capacity to appraise projects, manage currency and maturity exposures, and supervise intermediaries rather than evaluate openness in isolation. The IMF's institutional approach supports a contextual treatment of capital-flow management rather than a universal prescription (International Monetary Fund, 2022). The present estimates do not identify an optimal degree of openness or the causal benefits of any specific sequencing strategy.

For investment agencies and financial institutions, the associations motivate distinguishing the attraction of finance from its conversion into additional productive investment. Relevant operational questions include the availability of long-term funding, project preparation, transparent selection, and verification of environmental outcomes. Evidence on energy investment highlights the importance of financing conditions and differences in investment environments (International Energy Agency, 2024). These considerations support examining

project-level barriers without substituting aggregate financial inflows for direct measures of investment quality.

Managers should also avoid treating sustainable-finance labels as complete evidence of impact. Green bonds, responsible-investment mandates, and disclosure frameworks may improve information and incentives, yet differences in ratings and definitions can complicate comparison (Berg et al., 2022; Flammer, 2021). An institution using the study framework should therefore pair perceptions with independently verified indicators, disclose classification decisions, and monitor whether funded activities deliver promised outcomes. Implementation capacity and accountability should be assessed continuously rather than assumed from formal policy adoption.

Limitations and Future Research

The principal limitation is the cross-sectional, perception-based design. All path estimates, including the indirect and interaction terms, are associational; simultaneity, reverse association, and unmeasured confounding cannot be ruled out. The study therefore does not estimate the causal effect of financial liberalization on national economic growth, and its conclusions should be interpreted at the respondent-perception level.

Measurement limitations also remain. The survey items were developed from the conceptual literature rather than copied verbatim from a single validated scale, and broad constructs such as financial development and sustainable growth may admit multidimensional representations. Although the reliability, convergent-validity, and discriminant-validity diagnostics are favorable, independent replication and alternative measurement specifications would strengthen evidence about construct boundaries.

The analytical workflow centered on SmartPLS 4 and PLS-SEM, supplemented by additional model-fit, robustness, cross-validation, and sensitivity diagnostics. The structural estimates remain dependent on the specified measurement model and survey data, and no statistical procedure in the current design removes all endogeneity concerns. Cross-validation within the study sample supports internal predictive assessment but does not establish geographic, temporal, or organizational transportability.

The structural design also omits potentially important feedbacks and alternative pathways. Domestic financial development may attract international capital; growth expectations may influence both integration and governance assessments; institutions may evolve with financial change; and common shocks may affect all constructs. Longitudinal or quasi-experimental research should therefore specify temporal ordering and identification assumptions explicitly before interpreting indirect effects causally.

A further limitation is the reliance on perceptions rather than objective macroeconomic and environmental indicators. Subsequent research could triangulate international financial exposure, financial development, sustainable outcomes, and institutional implementation with independently observed indicators while preserving the distinction between perceptions and objective performance. Cross-country extensions would also require measurement-equivalence and contextual-heterogeneity assessments.

Finally, the Monte Carlo sensitivity analysis covers a limited design space. It uses 200 replications per cell and selected interaction magnitudes, so it should be interpreted as a design-specific diagnostic rather than as a comprehensive evaluation of estimator performance. Additional sensitivity work could examine missingness, weaker reliability, nonlinear relationships, clustered respondents, and alternative structural specifications.

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