Classification - Internal / Interne

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Digital Trade Restrictiveness and the Integration–Resilience Trade-Off

The Role of Foreign Direct Investment in ASEAN Global Value Chains

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Asian Think Tanks Network (ATTN) · Asian Development Bank (ADB) · ADBI

GUIDING QUESTION 1 · THE ECONOMIC PROBLEM

Can ASEAN Strengthen Resilience Without Sacrificing GVC Integration?

Digital governance now sits at the intersection of openness, strategic control and FDI-led production integration.

01 DIGITAL OPENNESS

Cross-border data, cloud systems and digital coordination reduce friction in fragmented production.

02 STRATEGIC CONTROL

Localization, cybersecurity and digital rules can reduce external dependence and protect sensitive systems.

03 FDI-LED INTEGRATION

Foreign investment connects technology, suppliers and production networks across ASEAN.

THE POLICY DILEMMA

What happens when these objectives collide?

Higher coordination + transaction costs
→ weaker GVC integration

Greater strategic autonomy
→ possible resilience gains

FDI as a transmission channel
→ who benefits, under which rules?

THREE EMPIRICAL QUESTIONS

Q1 Does DSTRI reduce GVC participation while strengthening resilience?

Q2 Does digital restrictiveness condition the GVC payoff from FDI?

Q3 Did the pandemic alter these relationships?

CORE QUESTION Can ASEAN reconcile digital openness, strategic resilience and FDI-led integration — rather than choose one at the expense of another?

Dr. Vighneswara Swamy | IFHE

GUIDING QUESTION 2 · WHY IT MATTERS

Why It Matters — The Stakes and the Value for Policymakers

Geopolitical Fragmentation

Reshoring and friendshoring are steering FDI toward politically aligned corridors — not the most cost-efficient ones.

Digital Integration

Cross-border data and cloud coordination now underpin production — prompting new localization and cybersecurity rules.

US$230 BILLION

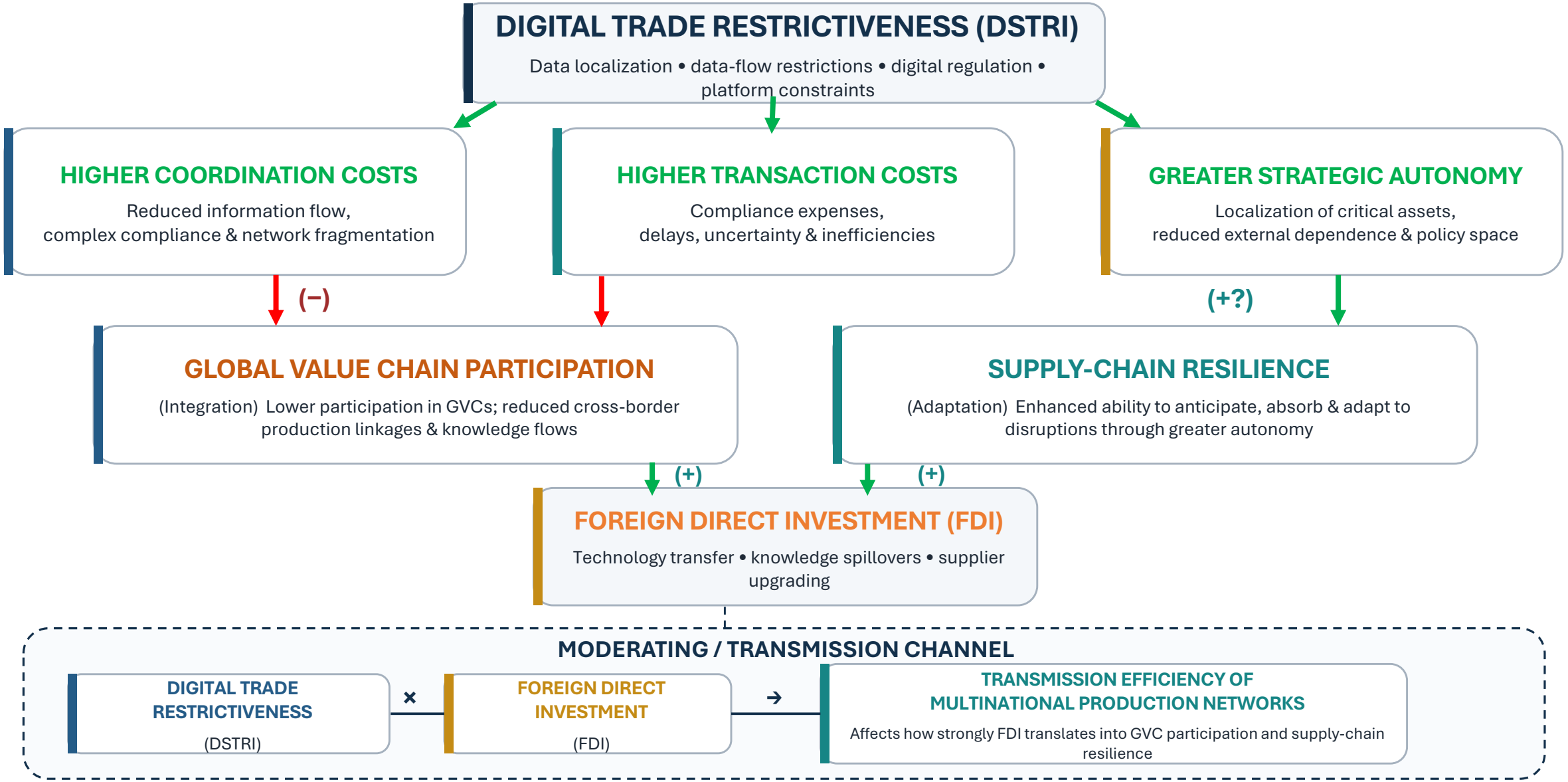
FDI into ASEAN in 2023 — even as global capital flows weakened (UNCTAD)

WHAT THIS PAPER ADDS FOR POLICYMAKERS?

- Tests GVC integration and supply-chain resilience as two distinct outcomes, not one
- First evidence specific to ASEAN — existing studies are largely global or generic
- Tests whether FDI's payoff is conditional on digital regulation, stress-tested across five estimators

Conceptual Framework:

Digital governance can simultaneously raise coordination costs and strengthen strategic autonomy



GUIDING QUESTION 3 · APPROACH & METHODOLOGY

Methodology: A Five-Step Empirical Strategy

9 ASEAN ECONOMIES | 2014–2024 | 99 COUNTRY-YEAR OBSERVATIONS

KEY VARIABLES

GVC Participation
OECD TiVA · ADB MRIO

Supply-Chain Resilience (SCRI)
PCA: diversification + stability + logistics

DSTRI
OECD Digital Services Trade Restrictiveness Index

FDI Intensity
FDI stock ÷ GDP (UNCTAD / WDI)

Source: Author's estimates based on OECD DSTRI, OECD TiVA, ADB MRIO and UNCTAD/WDI.

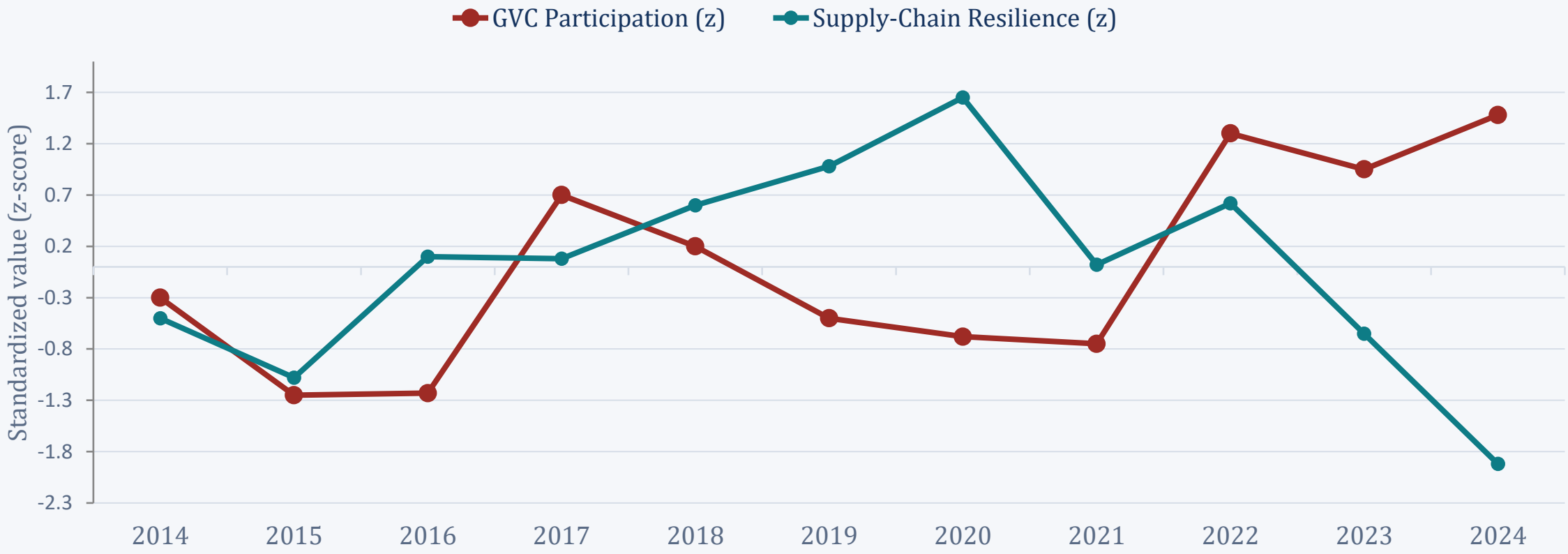
IDENTIFICATION LADDER — METHODOLOGY FLOWCHART



GUIDING QUESTION 4 · KEY FINDINGS & GAPS

Integration Recovered, Resilience Did Not

ASEAN annual averages, standardized indices (z-scores)



Since 2022, GVC integration has strengthened while resilience has fallen — the descriptive signature of a trade-off explored next.

GUIDING QUESTION 4 · KEY FINDINGS & GAPS

Finding 1 — DSTRI robustly weakens GVC integration

−0.307***

Effect of DSTRI on GVC Participation

Baseline TWFE, Driscoll–Kraay standard errors

Notes: TWFE with country/year FE; Driscoll–Kraay SEs.

+0.104***

Effect of FDI Intensity on GVC Participation

Multinational enterprises as a channel for upgrading

A one-SD rise in DSTRI (≈ 0.15) is associated with a ~0.05-point drop in GVC participation — about one-third of the within-country IQR.

HOLDS ACROSS SPECIFICATIONS

Excl. Singapore: −0.246**

IV-2SLS: −0.877**

Dynamic panel: −0.258**

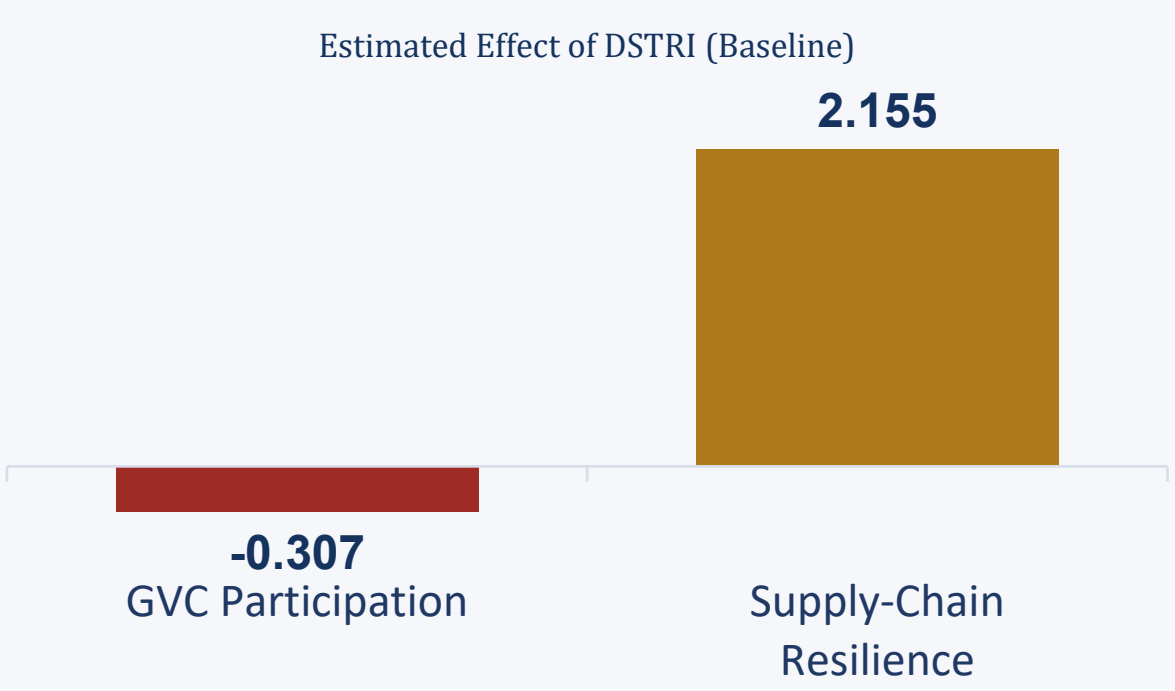
H1 ✓ SUPPORTED
FDI intensity positively influences GVC participation in ASEAN economies

H2 ✓ SUPPORTED
Digital trade restrictiveness negatively affects GVC participation in ASEAN economies.

H3 ✗ NOT SUPPORTED (baseline)
Digital trade restrictiveness conditions the relationship between FDI and GVC participation, specifically, higher restrictiveness weakens the integration-enhancing effect of FDI.

GUIDING QUESTION 4 · KEY FINDINGS & GAPS

Finding 2 — The apparent ‘Resilience Benefit’ is not robust



1 of 9

country-exclusion tests where DSTRI’s positive SCRI link stays significant

Leave-one-country-out checks show the coefficient is unstable in sign and magnitude across the other eight.

Restrictiveness reliably hurts integration. Its apparent resilience ‘benefit’ is fragile — not a stable ASEAN-wide relationship.

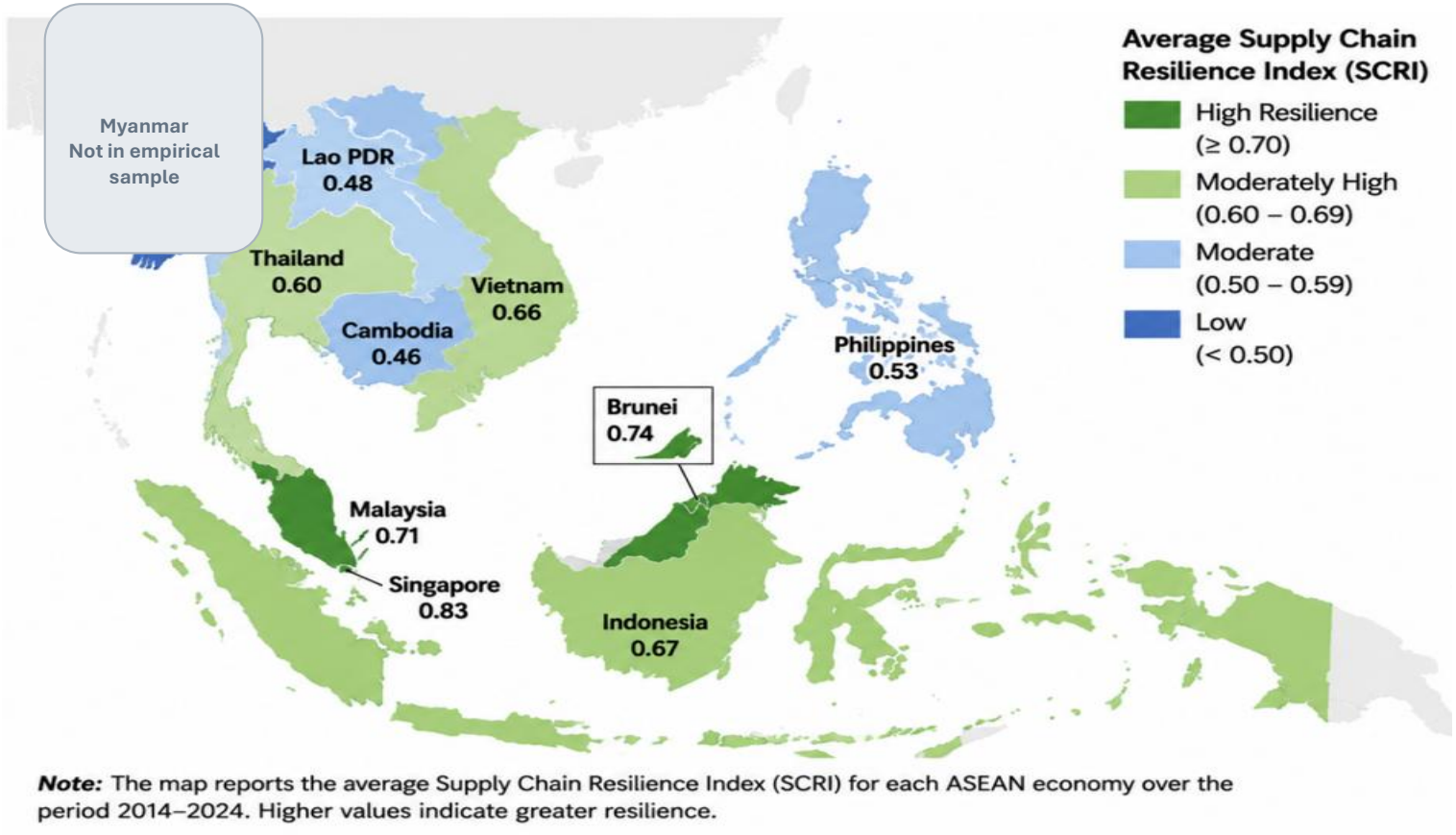
H4 — NOT ROBUSTLY SUPPORTED
Digital trade restrictiveness strengthens the positive relationship between FDI and supply-chain resilience in ASEAN economies.

DESCRIPTIVE EVIDENCE · ASEAN RESILIENCE

Resilience is highly heterogeneous across ASEAN

Average Supply-Chain Resilience Index (SCRI), 2014–2024

SPATIAL DISTRIBUTION



Map shows average SCRI; Myanmar is shown only for geographic context and is excluded from the 9-country empirical panel.

WHAT THE MAP SHOWS

Resilience performance is not uniform across ASEAN.

0.83	**Singapore**	Highest in the map
0.74	**Brunei**	High resilience
0.71	**Malaysia**	High resilience
0.46	**Cambodia**	Lower resilience

Why it matters: country heterogeneity motivates the leave-one-country-out robustness analysis.

TAKEAWAY → Strong differences in resilience make a uniform ASEAN-wide resilience effect unlikely; the empirical analysis therefore treats SCRI evidence cautiously.

Beyond the Baseline – Two forward-looking findings:

post-pandemic adaptation and regional spillovers

These results extend the paper beyond a purely domestic relationship.

POST-2020 STRUCTURAL SHIFT

+0.322**

FDI × DSTRI in combined post-pandemic model

Interpretation: MNEs may have adapted to regulatory fragmentation through compliance investment, data-hub strategies or selective routing of digital-intensive activities.

Research implication

Firm-level evidence is needed to distinguish true adaptation from compositional change.

SPATIAL DURBIN MODEL

−284.1***

W × DSTRI spillover coefficient

Restrictive digital policies in one ASEAN economy are associated with lower GVC integration in neighbouring economies — the costs can cross borders.

Policy implication

Regional regulatory coherence matters, not just national optimization.

GUIDING QUESTION 4 · KEY FINDINGS & GAPS

Where ASEAN Economies Sit on the Frontier

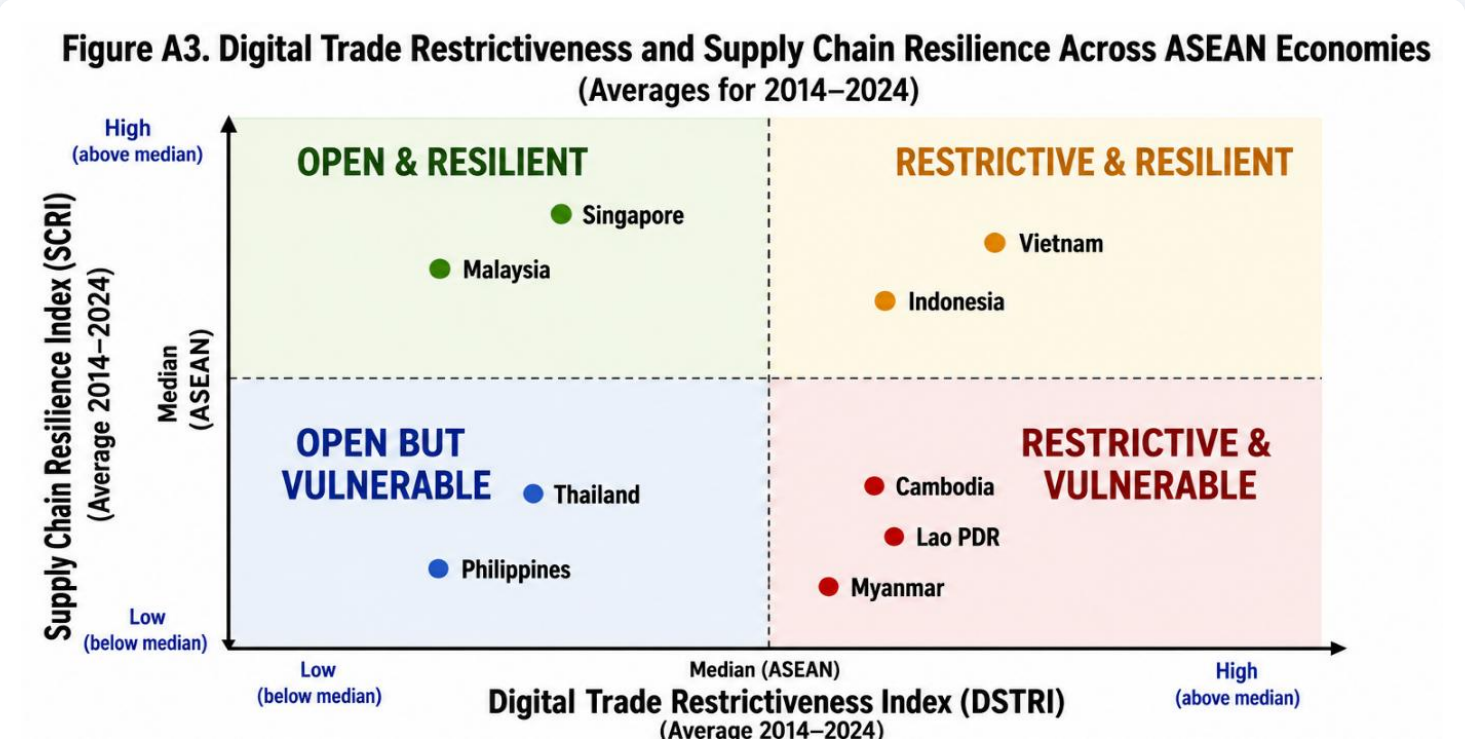


Figure A3 (Appendix): country averages, 2014–2024. Position is relative to the ASEAN median on each axis.

Open & Resilient

Singapore, Malaysia

Restrictive yet Resilient

Vietnam, Indonesia

Open but Vulnerable

Thailand, Philippines

Restrictive & Vulnerable

Cambodia, Lao PDR

No single strategy dominates — ASEAN economies occupy every quadrant of the integration–resilience frontier.

GUIDING QUESTION 4 · KEY FINDINGS & GAPS

Robustness Synthesis: Four Stress Tests, One Consistent Story

Endogeneity (IV-2SLS)

Bartik instrument from historical broadband access. DSTRI's effect on GVC participation grows to −0.877** (from −0.307***); first-stage F = 14.97, well above the conventional threshold.

Dynamic Persistence

GVC participation is path-dependent (ρ = 0.290***). Even after accounting for that persistence, DSTRI remains negative and significant: −0.258**.

Post-Pandemic Shift

The FDI × DSTRI interaction turns positive and significant after 2020 (β = 0.322**) — a sign multinationals are adapting to fragmented digital rules.

Spatial Spillovers

A Spatial Durbin Model shows restrictive policy in one country lowers GVC participation in its neighbours too (W × DSTRI = −284.1***) — a case for regional coordination.

GUIDING QUESTION 4 · GAPS & LIMITATIONS

What This Study Doesn't Yet Resolve

Boundaries of the Evidence

- Aggregate, not firm-level — DSTRI captures national policy, not how individual firms actually adapt
- Small cross-section — nine economies means resilience estimates are sensitive to country composition
- ASEAN-specific — findings may not generalize elsewhere without further testing

Where Research Should Go Next

- Which instruments matter most — test data localization, cybersecurity, and licensing rules separately
- Sectoral heterogeneity — digital-intensive industries may respond differently than traditional manufacturing
- Broader panels, alternative identification — extend beyond ASEAN with more countries and years

GUIDING QUESTION 5 · POLICY RECOMMENDATIONS

Concrete Policy Recommendations for ASEAN

Harmonize, Don’t Uniformize

Accelerate the ASEAN Digital Economy Framework Agreement (DEFA) to reduce regulatory fragmentation while preserving national policy space.

Regulate by Risk, Not by Default

Keep commercial data flows open. Reserve restrictions for national-security and critical-infrastructure data, with transparent criteria for when they apply.

Make Digital Readiness a Magnet

Broadband access, interoperability, cybersecurity, and regulatory predictability increasingly decide which economies attract higher-value, technologically sophisticated FDI.

Treat Digital Infrastructure as a Public Good

Cloud platforms, interoperable customs systems, and secure data-sharing need public investment — with ADB and development partners financing the build-out.

Classification - Internal / Interne

Key Takeaways

- **Digital restrictiveness carries a robust integration cost, confirmed across five-plus specifications.**
- **Its resilience 'benefit' is statistically fragile — not a dependable effect.**
- Openness with targeted safeguards, not blanket restriction, best serves ASEAN's GVC ambitions.

Thank You

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