

Southeast Asia Trade Exposure Index



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Executive Summary

As ASEAN's combined trade exceeds US\$3 trillion, the region faces increasing exposure to tariff escalations, supply-chain disruptions, and geopolitical tensions. Existing metrics—trade-to-GDP ratios, export growth figures, balance-of-payments data—measure the scale of trade integration but not geoeconomic vulnerability. They cannot distinguish between healthy, diversified integration and structural fragility. The Southeast Asia Trade Exposure Index addresses this gap by establishing a 2025 baseline that measures how exposed ASEAN economies are to external shocks.

What does the Index Measure?

- **Trade Dependence** measures export/import ratio, market concentration, and product concentration. Higher scores indicated greater exposure to external shocks.
- **Global Supply Chain Dependence** assesses supply chain depth, foreign input dependence, capital structure, and labor-market exposure. Higher scores amplifies external shocks.

Scores range from 0 to 100, with higher scores indicating greater vulnerability.



Key Findings

The Index scores reveal more than relative exposure levels—they reflect fundamentally different integration models. By analyzing export composition, supply-chain positions, and domestic capabilities, four distinct archetypes emerge that experience shocks in systematically different ways:

High Exposure	Middle Exposure	Lower Exposure
Singapore (67.30)	Brunei (51.50)	Philippines (32.70)
Vietnam (62.21)	Malaysia (50.36)	Indonesia (22.11)
Cambodia (55.12)	Thailand (44.48)	
	Laos (42.65)	

Four structural archetypes emerge:



Hyper-Global Hubs (Singapore): High international exposure but sophisticated industrial ecosystems, and high domestic value-added. Benefit significantly under stable geopolitical conditions but vulnerable when global systems fragment.



Export-Led Manufacturing Pivots (Vietnam, Malaysia, Thailand, Cambodia): High exposure relying heavily on concentrated export baskets. Most exposed to renewed U.S. tariffs on electronics and machinery, and to China-centric slowdowns disrupting upstream inputs.



Commodity-Anchored Economies (Brunei, Laos): Narrow export bases in hydrocarbons, energy exports, or mining. Highly vulnerable to China-centric slowdowns affecting commodity demand and infrastructure financing.



Domestic-Market Anchors (Indonesia, Philippines): Low external exposure reduces sensitivity to tariff escalation and global demand shocks, but limits ability to attract manufacturing investment during supply-chain reconfigurations.

Policy Recommendations for ASEAN

- **Strengthen Domestic Supply Chain Depth:** Reduce imported intermediate dependence through supplier development, industrial upgrading, logistics, energy reliability, workforce skills, and linkages between foreign investors and local firms to enhance competitiveness within global production networks.
- **Diversify Export Markets and Products:** Reduce concentration in markets or narrow product baskets when tariff regimes shift or specific sectors weaken. Strategic diversification reduces asymmetric exposure without undermining existing strengths.
- **Build Adaptive Regional Frameworks:** Build shared ASEAN frameworks for investment facilitation, regulatory transparency, digital and sustainability standards, and supply-chain security would reduce fragmentation and strengthen the region's position.

The index establishes a data-driven baseline that reveals structural vulnerabilities traditional metric miss: concentration risks, supply chain dependencies, and internal weaknesses that amplify external shocks. It provides policymakers, investors, and analysts with a tool to assess vulnerabilities lie and inform strategic interventions. The 2025 baseline will be updated annually, enabling longitudinal tracking of how ASEAN's integration evolves and how effectively the region adapts to structural shifts in global production networks.

Introduction

Southeast Asia has become an increasingly integral node in global value chains. ASEAN economies collectively serve as manufacturing, logistics, and services hubs linking East Asia, Europe, and North America. The structure of that integration is rapidly evolving. The gradual diversification of production away from China, the rise of “China + 1” supply-chain strategies, and the expansion of regional capabilities in electronics, electric vehicles (EVs), garments, agrifood, and digital services are reshaping the region’s economic landscape. At the same time, differences across ASEAN economies are widening: economies such as Vietnam are becoming highly export-driven and deeply embedded in global value chains, while Indonesia and the Philippines remain more domestically oriented and less trade-exposed. As a result, ASEAN’s trade profile is becoming simultaneously broader and more complex—offering new opportunities for growth, but also new forms of dependence on external markets and suppliers.

Understanding ASEAN’s trade profile matters because it helps explain how global shocks can affect the region’s economies. Tariff escalations, export controls, and sanctions have blurred the boundary between economic and security policy. Demand contractions from global recessions or pandemics can reverberate across highly open economies, while climate-related disruptions and energy transitions add new layers of risk. For ASEAN members, these shocks are not abstract—they translate directly into employment, fiscal stability, and investment flows. The impact is especially acute for countries whose export structures are highly concentrated or whose manufacturing sectors rely heavily on imported intermediates. Dependence also has a social dimension: when export downturns hit, they affect the livelihoods of millions of SMEs and workers embedded in global value chains, often amplifying social and political pressures during periods of economic stress.

Existing metrics capture only part of the picture. The IMF, ADB, and ASEAN Statistics Division routinely monitor trade openness, balance-of-payments indicators, and export concentration ratios, but there is no longitudinal, partner-specific index that quantifies dependence alongside resilience. Traditional indicators such as trade-to-GDP or export growth measure the scale of integration, not its vulnerability. They do not account for how dependence varies by trading partner or product, nor how domestic factors—SME participation, labor intensity, and domestic value-added—shape an economy’s ability to withstand shocks.

Moreover, ASEAN’s structural diversity means that the same shock—such as a U.S. tariff increase or a downturn in Chinese demand—does not affect all economies equally. Some economies function as hyper-global hubs, others as export platforms, commodity-anchored exporters, or domestic market-led systems, each facing distinct exposure channels and amplifiers of risk. These dimensions are central to the ASEAN Economic Community (AEC) Blueprint 2025 and the emerging post-2025 vision, which emphasize inclusive, resilient, and sustainable regional integration.

This report addresses that gap by introducing the Southeast Asia Trade Exposure Index, which establishes a 2025 baseline for ASEAN member states and benchmarks them against major global economies. It will be updated annually. The Index benchmarks economies across two dimensions: Trade Dependence (how concentrated and partner-dependent trade is) and Global Supply Chain Dependence (how well domestic structures can absorb or adapt to disruptions). This two-pillar structure offers a clearer lens for understanding how global shocks—whether geopolitical, technological, or macroeconomic—propagate across highly diverse ASEAN economies.

The following section outlines the methodology used to construct the Index, detailing the indicators, data sources, and normalization process that together form a consistent baseline for measuring ASEAN’s evolving integration and for stress-testing exposure under future global trade and geopolitical scenarios.



Index Framework

The Southeast Asia Trade Exposure Index measures how exposed countries in the region are to global shocks and disruptions, particularly those arising from changes in the trade regime shaped by major powers. It is designed to assess how different Southeast Asian economies may be affected by external pressure, and whether they are more vulnerable to disruption or better able to withstand it.

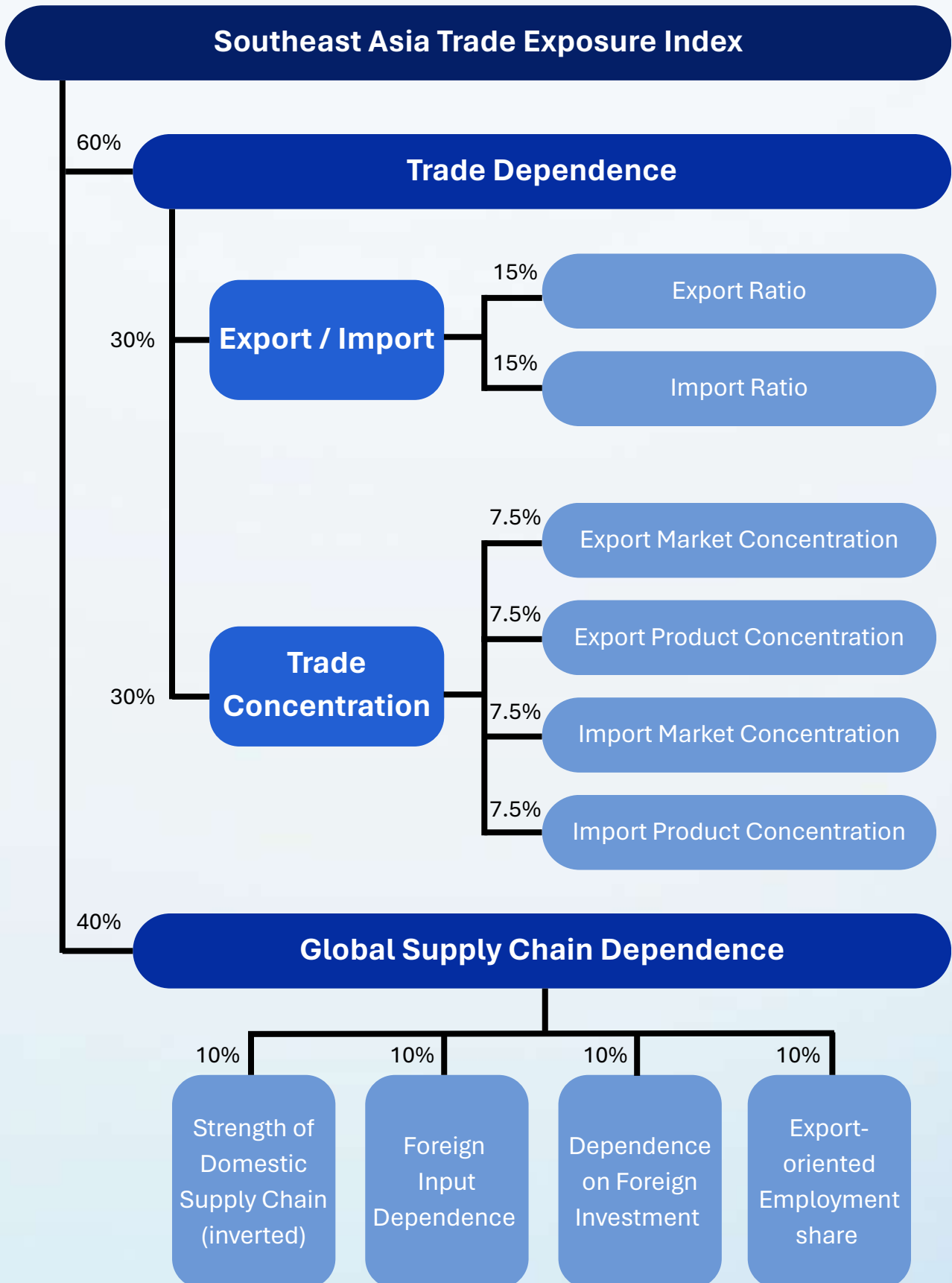
Rather than measuring only the openness of an economy, the index defines exposure in terms of how deeply a country is integrated into the global economy and how diversified that integration is. This means exposure is understood not simply as the volume of trade, but also as the structure of its engagement. This allows the index to move beyond conventional openness indicators and provide a more meaningful view of vulnerability.

The index covers nine Southeast Asian countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, Vietnam. By comparing countries within the same regional context, it provides a clearer picture of how different landscape of economies shape exposure to global disruption.

To capture this, the index defines exposure through two complementary measures: **Trade Dependence** and **Global Supply Chain Dependence**. Trade Dependence reflects the extent and concentration of cross-border trade, while Global Supply Chain Dependence captures the degree to which domestic production structures link to foreign inputs or activities. Together, these two dimensions provide a more comprehensive view of the country's exposure.



Index Structure



The **Trade Dependence** dimension is built around six sub-indicators including:

Export ratio: measures exports relative to the size of the economy

Import ratio: measures imports relative to the domestic economy

Export market concentration: captures how concentrated exports are across destination markets

Export product concentration: shows whether exports are diversified or concentrated in a few products

Import market concentration: measures reliance on a narrow set of supplier countries

Import product concentration: reflects how concentrated imports are across product categories

The **Global Supply Chain Dependence** dimension is constructed from four sub-indicators including:

Strength of domestic supply chain (inverted): captures the domestic value-added share in exports

Foreign input dependence: measures reliance on imported intermediate goods and services in production

Dependence on foreign investment: reflects the extent to which the investment base depends on inbound foreign direct investment

Export-oriented employment share: estimates the share of jobs linked directly or indirectly to global supply chains

The Index is measured on a scale from 0 to 100, with higher scores indicating greater exposure. This scoring approach makes it possible to compare countries consistently and assess how far each economy is exposed to external shocks relative to others in the region.

The results help group ASEAN economies into broad archetypes of exposure, including hyper-global hubs, fragile exporters, commodity-anchored economies, and domestic-market-driven systems. These categories provide a more intuitive way to interpret the findings and highlight that countries may face different types of risks even when they are part of the same regional economy.

Results

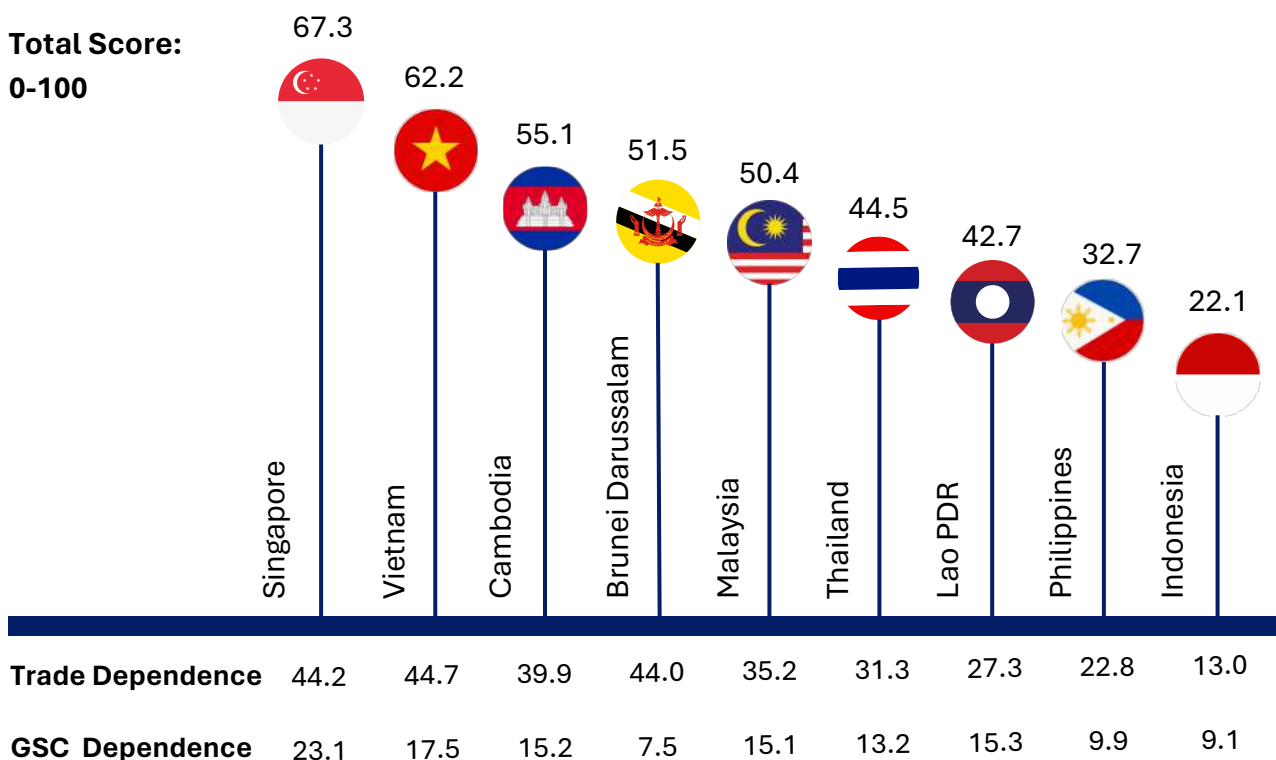
How to Read the Index

The Southeast Asia Trade Exposure Index maps each economy across two dimensions: Trade Exposure and Global Supply Chain Dependence. Together, these dimensions classify countries into structural “archetypes” that experience global shocks in systematically different ways.

What the Scores Represent?

- **Higher scores** indicate greater exposure to international markets, meaning the economy is more likely to be sensitive to external shocks.
- **Lower scores** indicate lower external exposure, meaning the economy is less likely to experience severe effects from external shocks.

The Index does not rank countries as “better” or “worse.” Economies may choose high exposure because it aligns with their development model (e.g., Singapore) or maintain lower exposure because of their domestic-market scale (e.g., Indonesia). The purpose is to show how the structure of integration shapes vulnerability, not to score performance.



ASEAN's Four Integration Archetypes

Based on scores across trade dependence and global supply chain dependence, four distinct integration archetypes emerge. These archetypes reflect fundamentally different pathways through which ASEAN economies participate in global trade—each with characteristic exposure patterns, structural vulnerabilities, and strategic positions.

1

Hyper-Global Hubs

(Singapore 67.30)

Singapore's 67.30 score—the highest in ASEAN—reflects extreme reliance on cross-border flows across shipping, finance, advanced manufacturing, and re-exports. The city-state combines very high trade dependence with substantial global supply chain integration, functioning as the region's logistics nerve center, financial hub, and gateway for capital and technology. Singapore possesses a sophisticated services and manufacturing ecosystem with high domestic value-added capabilities, but its economic performance is uniquely coupled to global system stability. The score indicates that Singapore benefits enormously when international trade expands but faces systemic exposure when geopolitical or technological disruptions fragment global networks.

2

Export-Led Manufacturing Pivots

(Cambodia 55.12, Malaysia 50.36, Thailand 44.48, Vietnam 62.21)

These economies exhibit high exposure and moderate resilience, relying heavily on external demand, concentrated export baskets, and imported intermediate goods. Their sensitivity to shocks varies by sector but generally follows a similar pattern: they experience significant gains in the stabilization scenario, where supply-chain expansion and investment confidence return, benefiting Vietnam and Thailand most strongly. Conversely, they are among the most exposed to renewed US tariff escalation, given their concentration in electronics, machinery, garments, and ICT hardware destined for the US market. They are also highly vulnerable in a China-centric slowdown due to their dependence on Chinese inputs and, in Cambodia's case, on Chinese textile imports.

3

**Commodity-
Anchored Economies**
(Brunei 51.50, Laos 42.65)

These economies show moderate overall scores but extreme concentration in narrow commodity export bases. Brunei's 51.50 reflects overwhelming dependence on oil and gas exports with minimal sectoral diversification. Laos's 42.65 is driven by hydropower, mining, and limited agricultural exports concentrated in neighboring markets, particularly China. Both exhibit low domestic supply chain depth and heavy reliance on a small number of external partners for demand and infrastructure financing. Their exposure is not to manufacturing cycles but to commodity price volatility, Chinese infrastructure investment flows, and energy purchase agreements.

4

Domestic-Market Anchors
(Indonesia 22.11,
Philippines 32.70)

These economies maintain the lowest trade exposure scores in ASEAN, reflecting development models anchored in large domestic markets rather than export-led industrialization. Indonesia's 22.11—the lowest in the region—reflects that exports constitute just 2.3% of GDP, with growth driven by internal consumption and natural resources. The Philippines' 32.70 similarly indicates limited manufacturing integration despite hosting some electronics assembly operations, with economic growth propelled by domestic consumption, remittances, and services (particularly BPO). Both show low dependence on global supply chains and limited export-oriented employment, providing structural insulation from external trade shocks but also limiting participation in productivity gains associated with deeper global value chain integration.

Stress Test Scenarios

To illustrate how these archetypes respond to different external conditions, the Index applies three stress-test scenarios. These are not forecasts but structural simulations showing how exposure patterns interact with different geopolitical and economic environments. Each scenario reveals which archetypes face greatest vulnerability and which are positioned to capture opportunities.

● *Scenario 1: US–China Stabilization and Supply-Chain Expansion*

A period of easing tensions between the United States and China—marked by fewer tariff threats, clearer technology controls, and a more stable diplomatic environment—creates a renewed sense of predictability for global manufacturers. Rather than reversing diversification, multinational firms continue spreading production risk, but with greater clarity and lower political volatility. In this more stable setting, supply-chain expansion accelerates across Asia, benefiting manufacturing economies with established export ecosystems and strong logistics connectivity.

Export-Led Manufacturing Pivots benefit most. Vietnam attracts significant additional investment in electronics, ICT, and consumer goods as firms consolidate operations in locations with proven supplier networks and competitive costs. Malaysia captures renewed semiconductor investment in testing, packaging, and advanced processing, benefiting from established electronics infrastructure and technical workforce. Thailand gains from renewed automotive and EV investment, leveraging its established Tier 1 and Tier 2 supplier base. Cambodia sees modest improvement in garment exports, though limited domestic capabilities constrain deeper participation in supply-chain upgrading.

Hyper-Global Hubs amplify gains. Singapore experiences rising shipping volumes, financial flows, and advanced manufacturing activity as global trade stabilizes, with the city-state's logistics and financial infrastructure facilitating supply-chain expansion across neighboring economies.

Commodity-Anchored economies see limited change. Brunei and Laos remain largely unaffected, as their narrow export structures (hydrocarbons, hydropower, mining) do not shift substantially with changes in manufacturing supply-chain patterns.

Domestic-Market Anchors benefit selectively. Indonesia gains through firmer commodity demand and investor interest in EV minerals and battery production, but limited manufacturing diversification constrains broader export expansion. The Philippines sees minimal impact, as its services-oriented model and shallow manufacturing integration mean supply-chain reconfigurations largely bypass the economy.

Key insight: High exposure becomes an advantage under stable conditions. Countries deeply embedded in global value chains—provided they have competitive domestic systems—capture investment and growth that bypasses more insulated economies.

● *Scenario 2: Renewed US Tariff Escalation on Electronics, Machinery, and Labor-Intensive Goods*

A second scenario envisions renewed tariff escalation by the United States on electronics, ICT hardware, auto parts, and labor-intensive goods such as garments and footwear. Such a move—motivated by domestic political pressures, concerns about strategic dependence, or widening industrial policy competition—would create an immediate, partner-specific demand shock. Because these tariff measures target precisely the sectors and product lines that anchor several ASEAN export economies, the effects would be felt unevenly across the region.

Export-Led Manufacturing Pivots experience sharpest impacts. Vietnam faces severe disruption given its concentration in electronics and ICT exports to the U.S. market, with limited ability to rapidly redirect production to alternative destinations. Production slowdowns transmit quickly into employment effects given high share of jobs tied to export manufacturing. Malaysia's electronics concentration in U.S.-bound semiconductors and ICT products creates significant exposure, particularly in testing and packaging segments serving American technology firms. Cambodia's garment sector—heavily concentrated in U.S. and EU markets with low domestic value-added—experiences acute impacts with limited capacity to pivot. Thailand faces disruptions across automotive parts, electronics, and machinery supply chains closely linked to U.S. demand, though broader sectoral diversification provides some buffer compared to Vietnam.

Hyper-Global Hub feels shocks through indirect channels. Singapore experiences impacts primarily through re-exports, logistics volumes, and global electronics cycles rather than direct merchandise exports. The city-state's role as regional financial and distribution center means U.S. tariff-induced uncertainty affects trade finance and supply-chain coordination across Southeast Asia, moderating but not eliminating macroeconomic effects.

Commodity-Anchored economies remain insulated. Brunei and Laos face minimal direct exposure given limited manufacturing exports to the U.S., though Laos may experience indirect pressure if regional manufacturing slowdowns reduce demand for electricity exports.

Domestic-Market Anchors remain comparatively insulated. Indonesia relies less on China for manufactured exports and benefits from large domestic market, limiting direct transmission of Chinese demand shocks. The Philippines' services-oriented model provides structural protection from merchandise trade downturns, though reduced remittances from China-linked industries could create secondary effects.

Key insight: Even with diversified export markets, reliance on Chinese intermediate goods, capital equipment, and investment creates hidden vulnerabilities. Manufacturing pivots face the most acute compound exposure—both supply and demand disruptions simultaneously.

● *Scenario 3: China-Centric Shock — Input Disruptions, Demand Weakness, and FDI Retrenchment*

The third scenario models a shock originating from within China: a prolonged economic slowdown accompanied by weaker import demand, tightening industrial policy, and reduced outward investment. Such a slowdown reverberates across ASEAN through three channels simultaneously—lower demand for intermediate and final goods, supply-chain disruptions in key upstream inputs, and a retrenchment of Chinese foreign direct investment. Because many ASEAN manufacturing systems depend on Chinese inputs, this scenario tests the region's underlying structural reliance on China-linked supply networks.

Export-Led Manufacturing Pivots face compounding pressures. Vietnam's electronics and machinery operations experience immediate bottlenecks from disrupted Chinese components, chemicals, and capital equipment while simultaneously facing reduced Chinese demand for exports. Malaysia's semiconductor and electronics production—heavily dependent on Chinese inputs and serving global technology firms with exposure to Chinese demand—faces both supply and demand shocks. Thailand encounters similar dual exposure—automotive and electronics production relies on Chinese inputs while machinery exports depend on Chinese construction and investment cycles. Cambodia faces severe constraints as garment production depends on Chinese textiles and materials while Chinese infrastructure financing slows.

Hyper-Global Hub experiences regional transmission. Singapore feels effects through declining regional shipping volumes, reduced petrochemical demand linked to Chinese manufacturing, and weaker financial flows as Chinese investment across Southeast Asia contracts. However, the city-state's highly diversified economy and strong institutional capacity moderate overall impact compared to manufacturing-specialized peers.

Commodity-Anchored economies face fiscal pressure. Brunei experiences reduced Chinese demand for oil and gas, though fiscal reserves provide buffer. Laos faces acute vulnerability—reduced Chinese electricity purchases, slower mineral demand, and delayed infrastructure financing create fiscal and growth stress with limited alternative revenue sources.

Domestic-Market Anchors remain comparatively insulated. Indonesia relies less on China for manufactured exports and benefits from large domestic market, limiting direct transmission of Chinese demand shocks. The Philippines' services-oriented model provides structural protection from merchandise trade downturns, though reduced remittances from China-linked industries could create secondary effects.

Key insight: Even with diversified export markets, reliance on Chinese intermediate goods, capital equipment, and investment creates hidden vulnerabilities. Manufacturing pivots face the most acute compound exposure—both supply and demand disruptions simultaneously.

Cross-Cutting Analysis

The stress-test scenarios reveal three recurring patterns that transcend individual country experiences, offering insights into how ASEAN's trade structure shapes regional vulnerability.

1. Asymmetry of Shocks

A central finding is that identical external shocks produce profoundly unequal impacts across ASEAN. U.S. tariff escalation creates crisis conditions for Export-Led Manufacturing Pivots (Vietnam, Malaysia, Cambodia, Thailand) while leaving Domestic-Market Anchors (Indonesia, Philippines) and Commodity-Anchored economies (Brunei, Laos) largely unaffected. Conversely, China-centric slowdowns devastate Commodity-Anchored economies and Manufacturing Pivots dependent on Chinese inputs while bypassing Domestic-Market Anchors. This asymmetry complicates regional coordination. When Vietnam and Malaysia face manufacturing crisis from U.S. tariffs while Indonesia maintains steady growth, ASEAN struggles to present unified policy responses. The same external shock that requires urgent intervention in one capital may be barely noticed in another. This structural divergence—embedded in fundamentally different integration models—means ASEAN increasingly experiences global events through incompatible national lenses.

2. Diversification Masks and Exposure Realities

Geographic diversification does not automatically confer resilience. Malaysia and Singapore display broad market diversification across the U.S., China, EU, and ASEAN, reflected in lower market concentration scores. Yet both remain highly vulnerable to sector-specific and input-specific shocks. Malaysia's semiconductor concentration means technology cycles transmit directly despite diversified destinations. Singapore's role as regional logistics hub means systemic shocks affect the economy even when no single market dominates.

Similarly, growing intra-ASEAN trade cannot be assumed to provide insulation. Much regional trade consists of China-dependent supply-chain inputs—Chinese components assembled in Vietnam and exported to the U.S., Chinese materials processed in Thailand and Malaysia and shipped to ASEAN neighbors. This means apparent regional integration may conceal upstream concentration in Chinese supply networks. The diversification visible in headline trade statistics masks embedded dependencies that become apparent only when upstream shocks materialize.



3. Strategic Exposure in an Era of Great-Power Rivalry

As global trade becomes increasingly politicized through technology controls, investment screening, and strategic decoupling, ASEAN's economic integration becomes a geopolitical vulnerability. The Hyper-Global Hub (Singapore) and Export-Led Manufacturing Pivots (Vietnam, Malaysia, Thailand) face greatest sensitivity to:

- U.S.–China technology competition and export controls
- Supply-chain weaponization and forced diversification
- Investment screening based on national security
- Standards fragmentation (data governance, carbon accounting, technology protocols)

These economies cannot easily insulate from geopolitical pressures because their growth models assume seamless cross-border flows. When the U.S. restricts technology exports or China leverages supply-chain dependencies for strategic purposes, highly integrated economies face binary choices that domestic-market anchors can avoid.

Conversely, Domestic-Market Anchors (Indonesia, Philippines) sacrifice opportunity for strategic autonomy. Their low scores reflect limited exposure to coercive economic statecraft but also reduced access to technology transfer, productivity spillovers, and investment flows that reward deeper integration. As supply chains reconfigure, these economies risk remaining peripheral unless they develop capabilities to integrate selectively on favorable terms.

The Index reveals that ASEAN's diversity—historically a diplomatic asset enabling consensus across different political and economic systems—has become an economic vulnerability. Divergent exposure profiles prevent effective collective responses to shocks, create opportunities for external powers to divide the region through targeted measures, and strain the credibility of ASEAN as a unified economic bloc.



Country Profiles

Archetype 1: Hyper-Global Hubs

● *Singapore*



Singapore's score of 67.30—the highest in ASEAN—reflects its position as the region's quintessential hyper-global hub, an economy whose performance is uniquely dependent on global system stability and the free flow of goods, capital, data, and talent.

Built on openness, specialization, and deep functional integration into global networks, Singapore is one of the most globally exposed and globally embedded economies in the world. This model delivers exceptional productivity, innovation, and high-value activity, but it also leaves Singapore structurally sensitive to fluctuations in global demand, supply-chain disruptions, financial cycles, and geopolitical realignment. No other ASEAN member's growth model is as tightly coupled to the stability of the external environment.

Trade Openness and Concentration Dynamics

Singapore sits at the extreme end of global trade openness. With a small domestic market, the economy's viability depends on maintaining seamless access to international flows. Market diversification is exceptionally broad—spanning the U.S., China, the EU, ASEAN, and beyond—reducing the impact of partner-specific shocks. Yet product concentration is elevated in high-value segments such as electronics, petrochemicals, pharmaceuticals, precision engineering, and transport services. This structure makes Singapore resilient to disruptions in any single region, but highly susceptible to systemic shocks affecting global technology cycles, maritime logistics, or energy markets. Singapore's role as a re-export, logistics, and distribution hub amplifies the transmission of global trade fluctuations into domestic economic activity.

Singapore in Global Supply Chains

Singapore participates at advanced stages of global value chains, engaging in semiconductor equipment manufacturing, chip design services, precision engineering, biomedical production, and hosting central nodes in global shipping, aviation, digital infrastructure, and financial networks.

Its integration brings high value-added activity and strong productivity, but also deep reliance on imported intermediates, energy inputs, and raw materials. A large share of the workforce is employed in globally oriented sectors, making the labor market highly responsive—positively during global upturns and negatively during downturns—to shifts in international trade, technology cycles, and financial conditions.

Investment and Structural Positioning

Singapore's investment ecosystem is characterized by exceptionally high foreign direct investment inflows and its role as a regional and global headquarters hub, which strengthen technological capabilities, innovation capacity, and integration into advanced manufacturing and services. However, this dependence on cross-border capital also exposes the economy to global financial volatility, evolving tax regimes, and geopolitical realignments that influence corporate strategies and supply-chain configuration. Singapore's policy responses—from infrastructure and energy diversification to regulatory upgrades and frontier-technology investment—aim to maintain its indispensability within a fragmenting global economy, though no domestic strategy can fully offset risks inherent to its hyper-globalized model.



Archetype 2: Export-Led Manufacturing Pivots

● *Vietnam*



Vietnam's overall score of 62.21 reflects its position as an export-led manufacturing pivot—a highly exposed, high-growth manufacturing hub whose development model is deeply dependent on external demand, foreign investment, and imported intermediates.

With export- and import-to-GDP ratios of 86.47% and 78.35%, Vietnam is one of the region's most trade-dependent economies, and its rapid industrialization has been propelled by multinational-led expansion in electronics, ICT equipment, textiles, and machinery. This openness has delivered extraordinary gains in employment, technology adoption, and export growth, but it also amplifies vulnerability to global demand cycles, supply-chain disruptions, and geopolitical fragmentation. Vietnam's score captures this structural duality: strong momentum and integration benefits on one side, and exposure rooted in concentrated products, foreign-driven production decisions, and reliance on upstream inputs from China, Korea, and Japan on the other. Sustaining Vietnam's ascent will depend on its ability to deepen domestic industrial capabilities, reduce overreliance on assembly-driven growth, and navigate intensifying competition and geopolitical realignment.



Trade Openness and Concentration Patterns

Vietnam has become one of ASEAN's most globally exposed economies, with its export basket shifting rapidly from garments and agriculture to higher-technology products such as phones, computers, and electronics components. This upgrade, however, has produced structural concentration: a large share of export value is tied to a small number of multinational corporations, particularly in electronics and ICT, making Vietnam highly sensitive not only to global technology cycles but also to corporate production decisions in Korea, Japan, the U.S., and increasingly China. While Vietnam's market diversification is broad—spanning the U.S., China, the EU, and ASEAN—product concentration remains high, heightening the impact of global electronics downturns, standards shifts, and geopolitical tensions.

The combination of extreme openness and narrow sectoral reliance magnifies volatility: shocks in global tech cycles disproportionately reverberate through Vietnam’s industrial base.

Vietnam in Global Supply Chains

Vietnam’s integration into global value chains is deep but marked by heavy dependence on foreign-owned firms. It has become a premier destination for “China+1” diversification in electronics, machinery, and consumer technology, with multinationals operating extensive assembly and midstream production facilities across key industrial zones from Bac Ninh and Hai Phong to Binh Duong and Dong Nai. Despite strong employment effects and rapid export growth, domestic value-added remains limited; production relies heavily on imported components, machinery, and capital equipment sourced from regional technological hubs. Although supplier networks are expanding, they remain shallow compared with Malaysia or Thailand, leaving Vietnam exposed whenever upstream inputs face disruption. High employment concentration in export-oriented manufacturing means global shocks quickly translate into labor-market adjustments, reinforcing Vietnam’s status as a deeply integrated but value-capture–constrained manufacturing hub.

Investment Exposure

Vietnam is one of the most FDI-dependent economies in ASEAN, with foreign direct investment driving manufacturing expansion, technology transfer, and export capacity. This reliance has been a comparative strength—anchoring Vietnam’s role in global production networks—but it also exposes the economy to shifts in geopolitical alignments, corporate restructuring, and rising competition from economies such as India, Indonesia, and the Philippines (in services). While Vietnam continues to attract significant investment, sustaining competitiveness will require addressing implementation gaps, land and regulatory complexity, logistics bottlenecks, and persistent energy reliability challenges. Infrastructure and workforce improvements have progressed, but upgrading into higher-value manufacturing will demand deeper reforms and more robust technological and innovation capabilities. As global firms diversify away from China, Vietnam has gained substantially; the question ahead is whether it can move beyond assembly to secure a larger share of value in the next phase of regional industrial restructuring.

● *Malaysia*



Malaysia’s score of 50.36 reflects its position as a partial hyper-global hub—one of ASEAN’s most globally integrated and trade-dependent economies, with deep ties to global electronics, machinery, and precision manufacturing.

Decades of export-led industrialization and sustained foreign investment have built a sophisticated midstream production ecosystem, especially in electronics and electrical (E&E) manufacturing. This integration delivers significant benefits but also exposes Malaysia to global industrial and technology cycles, particularly the volatility of the semiconductor sector. The score captures this duality: Malaysia is highly exposed, yet more resilient than many regional peers due to its diversified markets, mature industrial capabilities, and strong domestic value-added. Its long-term challenge is not openness but sustaining competitiveness within rapidly evolving value chains.

Trade Openness and Concentration Dynamics

With export-to-GDP at 71.35% and import-to-GDP at 66.01%, Malaysia is one of Southeast Asia's most open economies. This openness underpins its manufacturing scale and access to global markets. Market diversification is broad—across the U.S., China, ASEAN, and Europe—reducing reliance on any single partner. However, product concentration is high because integrated circuits, semiconductors, and electrical machinery dominate exports. This creates a “broad markets, narrow products” configuration: Malaysia is well-insulated from partner-specific shocks but highly sensitive to turbulence in global technology cycles. When the semiconductor industry contracts, Malaysia experiences early and pronounced impacts.

Position in Global Supply Chains

Malaysia occupies a central role in global value chains, particularly in electronics and electrical industry (E&E). Domestic value-added in exports is significant, reflecting local depth in assembly, testing, packaging, and increasingly design and engineering. This distinguishes Malaysia from economies whose exports rely predominantly on imported intermediates. Still, Malaysia's competitiveness depends on substantial foreign input use—imported machinery, components, and precision tools are essential to high-end manufacturing. Employment exposure to global value chains is high, with major clusters in Penang, Selangor, and Johor. This embeddedness accelerates both the transmission of global shocks and the benefits of global upturns.



Investment Exposure and Economic Model

Malaysia's industrial ecosystem is anchored by foreign direct investment, reflected in an FDI-to-capital-formation ratio of 3.01. Foreign investors drive technological upgrading, R&D-intensive production, and integration into advanced manufacturing networks. This is a structural strength but also a source of volatility: investment surges during periods of global tech expansion often give way to slowdowns during semiconductor downturns. Malaysia also faces rising competition—from Vietnam in midstream manufacturing and from Singapore and China in advanced packaging and design. Maintaining investor confidence will require streamlined regulation, deeper talent development, and infrastructure improvements, especially in energy reliability and logistics.

● *Thailand*



Thailand's overall score of 44.48 reflects its position as an export-led manufacturing pivot: a highly integrated industrial economy that has built substantial capabilities in automotive, electronics, machinery, and agro-industrial exports, but is increasingly exposed to structural shifts in global production.

With export- and import-to-GDP ratios of 70.06% and 66.71%, Thailand is among ASEAN's more trade-dependent economies—less hyper-open than Singapore or Malaysia, yet far more exposed than Indonesia or the Philippines. Its diversified export markets across the U.S., China, Japan, the EU, and ASEAN reduce reliance on any single partner, but heavy dependence on a few cyclical sectors leaves it vulnerable to global automotive, semiconductor, and machinery downturns. Thailand's score captures this dual reality: strong industrial foundations and moderate resilience, paired with rising risks as supply chains are reshaped by electrification, technology shifts, sustainability demands, and geopolitical competition.

Trade Openness and Concentration Patterns

Thailand's trade structure combines broad geographic diversification with concentrated exposure in a few key industrial sectors. Automotive and electronics account for a large share of export value, alongside processed foods and agricultural products, creating a pattern where shocks in global car demand, semiconductor cycles, or capital-goods investment quickly translate into domestic production and employment effects. While the breadth of export markets limits dependence on any single buyer, the narrowness of sectoral strengths means that cyclical and technological shocks in these industries have outsized macroeconomic consequences.

This reflects an industrialization trajectory anchored in multinational-led value chains, where Thailand is deeply embedded but still exposed to shifts in trade policy, technology, and firms' global footprint decisions.

Thailand in Global Supply Chains

Thailand holds a mature midstream position in regional automotive and electronics supply chains, with strong capabilities in auto parts, vehicle assembly, electrical components, and household appliances. Its domestic value-added share in exports is relatively high by ASEAN standards, indicating deeper supplier networks and industrial ecosystems than in newer manufacturing hubs such as Vietnam or the Philippines. Many Thai firms are integrated directly into regional production networks, contributing local inputs and services that increase domestic value capture. At the same time, Thailand remains heavily reliant on imported intermediates—particularly precision machinery, electronics components, and specialized industrial inputs—demonstrating that its role, while entrenched, is not fully self-sufficient. Employment exposure to global value chains is substantial, particularly in the Eastern Economic Corridor, which amplifies both the gains from export growth and the risks when global shocks disrupt upstream inputs or downstream demand.



Investment Exposure and Production Structure

Thailand's industrial base has been shaped by decades of foreign direct investment, especially from Japanese automakers and machinery producers, whose strategies strongly influence the country's production structure. This has delivered technology transfer, supply-chain depth, and export competitiveness, but also creates dependence on decisions taken abroad as global automakers shift toward electric vehicles, rationalize platforms, and explore alternative locations such as Vietnam and India. Policy initiatives centered on the Eastern Economic Corridor, targeted incentives for EV and high-tech industries, and broader efforts to upgrade infrastructure and skills are intended to reposition Thailand within next-generation supply chains. However, regulatory uncertainty, uneven digital readiness, skills shortages, and slower productivity growth have constrained the pace of upgrading. Thailand's ability to sustain its role as a key industrial hub will hinge on how quickly it can reduce these frictions, deepen innovation capacity, and align its investment climate with the demands of rapidly evolving global manufacturing networks.

● *Cambodia*



Cambodia's score of 55.12 reflects its status as an export-led manufacturing pivot—an economy deeply integrated into global demand but structurally fragile due to a narrow industrial base and heavy reliance on a few key markets and foreign investors.

Its export-led growth has generated employment and rapid industrialization, but it rests on an exceptionally narrow base—dominated by garments, footwear, and travel goods—and relies heavily on preferential access to U.S. and EU markets as well as foreign-owned production. This creates an economy that is highly integrated but also precarious: deeply dependent on a small set of products, partners, and investors, and therefore highly sensitive to shifts in global demand, changes in tariff regimes, and evolving compliance requirements linked to labor, sustainability, and traceability. Cambodia's exposure is amplified by limited domestic industrial depth, making resilience fragile in the face of geopolitical fragmentation or supply-chain restructuring.

Trade Openness and Concentration Dynamics

With export-to-GDP at 71.36% and import-to-GDP at 72.08%, Cambodia is among Southeast Asia's most trade-dependent economies. Yet this openness is highly concentrated. A narrow set of low-value, labor-intensive goods dominates the export basket, and heavy reliance on U.S. and EU markets magnifies vulnerability to fluctuations in retail demand, preferential-access reviews, and compliance tightening. The challenge is not the volume of trade but its structure: a narrow industrial base offers little capacity to absorb shocks or pivot into alternative products when global conditions shift.

Position in Global Supply Chains

Cambodia occupies one of the least resilient positions in regional supply chains. Although domestic value added is higher than in some labor-intensive economies, production depends heavily on imported textiles, fabrics, machinery, and design inputs, reflecting shallow domestic linkages.



This dependence limits upgrading into higher-value segments and leaves the economy exposed to upstream disruptions. The labor market is tightly bound to export manufacturing; a large share of the workforce is directly employed in garment and footwear production. As a result, global shocks—order cancellations, logistics delays, or regulatory changes—transmit quickly and widely, with limited alternative sectors to absorb displaced workers.

Investment Exposure and Economic Model

Cambodia's industrialization model is driven by foreign investors, with one of the region's highest FDI-to-capital-formation ratios. Much of this investment is concentrated in low-margin manufacturing and Chinese-funded construction. While FDI has fueled export growth, it has also created dependence on external capital and contributed to weak domestic supplier networks. Foreign-owned factories dominate production, limiting technology transfer and slowing the emergence of local manufacturing capabilities. Without stronger domestic linkages and greater sectoral diversification, Cambodia risks remaining at the lower end of global value chains, a vulnerability that will become more acute as wages rise and competitor countries enter the same export segments.

Archetype 3: Commodity-Anchored Economies

● *Brunei*



Brunei's score of 51.50 reflects its position as a commodity-anchored economy, characterized by deep but extremely narrow integration into the global system. Although its export-to-GDP (74.30%) and import-to-GDP (58.92%) ratios place it among ASEAN's more outward-oriented economies, this openness is overwhelmingly driven by a single sector: hydrocarbons.

Oil and gas dominate export earnings, fiscal revenues, and external linkages, creating an exposure profile tied directly to global energy cycles rather than diversified demand. This structure means Brunei is highly sensitive to price swings, shifts in global energy systems, and geopolitical disruptions in energy markets, while remaining comparatively insulated from manufacturing supply-chain shocks that affect other ASEAN members. The core challenge reflected in the score is not excessive openness, but extreme concentration: without a broader economic base, volatility in the energy sector translates quickly into macroeconomic vulnerability despite substantial fiscal buffers.

Trade Openness and Concentration Dynamics

Brunei's export structure is among the most concentrated in ASEAN. Product concentration is exceptionally high due to the dominance of crude and refined petroleum, while market concentration is moderate but still shaped by a narrow set of buyers. This configuration amplifies vulnerability to fluctuations in global energy demand, long-term decarbonization trends, and changing geopolitical dynamics. Unlike Malaysia or Thailand, Brunei has not diversified into multi-sector manufacturing or tradable services, leaving few alternative export engines that could buffer shocks or anchor a future shift away from hydrocarbons.

Position in Global Supply Chains

Brunei's place in global value chains remains highly limited. Domestic value-added in exports is low relative to the scale of the hydrocarbon sector, reflecting a model centered on extraction with limited downstream industrial activity. While oil and gas production depends on imported machinery, engineering, and specialized inputs, these linkages do not translate into participation in broader regional production networks. Only a small portion of the workforce is employed in GVC-linked industries, which shields labor markets from external downturns but constrains productivity gains typically associated with export-oriented manufacturing.

Investment Exposure and Economic Model

Brunei's FDI-to-capital-formation ratio is among the lowest in ASEAN, indicating a development model dominated by state-led investment and the self-contained structure of the energy industry. Although the government is promoting diversification into petrochemicals, halal industries, and digital sectors, these initiatives remain modest compared to the scale of hydrocarbons and have yet to materially alter Brunei's structural exposure. Without deeper openness to foreign capital, expanded technological capability, and stronger domestic industrial linkages, diversification efforts will continue to face structural limits.



● Laos



Lao PDR's score of 42.65 reflects its position as a commodity-anchored economy—one that is globally exposed through hydropower, mining, and foreign-financed infrastructure, yet structurally limited in its ability to absorb shocks.

Despite modest trade-to-GDP ratios, Laos is highly dependent on a narrow set of products and a small group of neighboring markets, with China playing an outsized role in financing, demand, and infrastructure development. This creates an external exposure profile that is high relative to Laos's domestic economic capacity. Its vulnerabilities stem from concentrated exports, heavy import dependence, limited domestic value capture, and significant reliance on foreign capital for both growth and connectivity. The country is integrated into global markets—but in ways that amplify fragility rather than resilience.

Trade Openness and Concentration Dynamics

Laos's export-to-GDP (33.21%) and import-to-GDP (41.88%) figures understate how narrowly the economy is tied to external demand. Hydropower accounts for a large share of export revenue, supplemented by mining outputs such as copper and gold. Export destinations are concentrated in Thailand, China, and Vietnam, making Laos highly sensitive to fluctuations in regional energy demand, commodity prices, and cross-border purchasing agreements. With no diversified manufacturing base, Laos lacks alternative export engines capable of absorbing shocks or generating countercyclical growth.

Position in Global Supply Chains

Laos participates only peripherally in global value chains. Special Economic Zones near its borders host limited assembly activities, but these operations rely almost entirely on imported inputs and foreign labor, generating minimal domestic spillovers. The broader economy captures little value added from exports, reflecting the absence of an indigenous industrial ecosystem. Laos is also heavily dependent on imported intermediate goods, machinery, and consumer products, making it vulnerable to input price volatility and logistics disruptions. Employment in GVC-linked sectors is low; most workers remain in informal agriculture and services, limiting opportunities for productivity gains associated with export-oriented industrialization.

Investment Exposure and Economic Model

Laos's development model is deeply tied to foreign financing, particularly from China. Hydropower projects, mining concessions, and major infrastructure—such as the China–Laos Railway—have expanded connectivity but created substantial fiscal and external debt burdens. Reliance on a narrow set of investors reduces policy flexibility and increases exposure to geopolitical shifts in regional financing conditions. In key sectors such as hydropower and mining, foreign investment generates limited employment and weak linkages to domestic firms. Without broader diversification and stronger domestic capabilities, Laos remains dependent on volatile external earnings and external partners for growth.

Archetype 4: Domestic-Market Anchors / Under-Integrated Economies

● *Indonesia*



Indonesia's score of 22.11 reflects its position as a domestic-market anchor—an economy with low exposure to global trade but also limited integration into global value chains. With export-to-GDP at just 22.18% and import-to-GDP at 20.39%, Indonesia is structurally insulated from many external shocks that disproportionately affect export-dependent neighbors.

This insulation provides stability but also limits Indonesia's ability to benefit from supply-chain diversification and “China+1” shifts. The low score therefore captures a dual reality: Indonesia is protected from volatility but remains under-integrated, missing opportunities for productivity gains, technology transfer, and industrial upgrading. The country sits at an inflection point—its scale and resource endowment offer strategic advantages, but structural bottlenecks continue to constrain its ability to translate these into higher-value industrial competitiveness.

Trade Openness and Concentration Dynamics

Indonesia's low trade openness reflects the structure of its economy—a large domestic market supported by natural resources and policies that historically favored import substitution over export-led industrialization. Export concentration is moderate, but the export basket is dominated by commodities such as coal, palm oil, rubber, and copper. This composition limits value capture and places Indonesia's external earnings at the mercy of global price cycles. While export markets are diverse, demand is increasingly shaped by China and other emerging economies, underscoring Indonesia's limited participation in high-value manufacturing networks.

Position in Global Supply Chains

Indonesia's integration into global value chains remains shallow relative to regional manufacturing hubs. Domestic value-added in exports appears high largely because the country exports raw and lightly processed commodities rather than participating in midstream or downstream manufacturing. At the same time, Indonesia depends heavily on imported intermediates—machinery, electronics components, and industrial equipment—for sectors ranging from energy to transport. This reliance exposes industries to upstream supply disruptions while highlighting gaps in domestic supplier networks, workforce capabilities, logistics, and technology adoption.



The labor market is similarly detached from global value chains, with employment concentrated in domestic services, construction, and resource extraction rather than export-oriented manufacturing.

Investment Exposure and Economic Model

Indonesia's economic model is anchored in domestic investment, with an FDI-to-capital-formation ratio of just 0.98—well below regional peers. This reduces vulnerability to global capital cycles but limits technology transfer and the emergence of globally competitive manufacturing sectors. Regulatory complexity, infrastructure constraints, and policy unpredictability have historically dampened investor interest. Recent industrial policies—especially mineral downstreaming in nickel—have begun to attract investment from China, Korea, and global EV manufacturers, positioning Indonesia as an important upstream player in the EV battery supply chain. Yet persistent challenges in logistics, energy pricing, skills, and environmental governance continue to constrain deeper integration. Reforms under the Omnibus Law aim to address these issues, but uneven implementation remains a barrier.

● *Philippines*



The Philippines' score of 32.70 reflects its position as a domestic-market anchor—an economy structurally insulated from global trade volatility yet constrained by limited integration into regional supply chains. Growth is driven primarily by household consumption, remittances, and a globally competitive services sector—not by export-led manufacturing.

With export-to-GDP at 25.77% and import-to-GDP at 40.11%, the Philippines is less exposed to external demand fluctuations than most ASEAN peers. However, this insulation comes at the cost of missed opportunities: the country has struggled to scale a competitive industrial base capable of capturing productivity gains, wage growth, and foreign investment linked to deeper global value chain participation. Its low score therefore embodies a dual condition—stability in the short term, but limited structural transformation over the long term.

Trade Openness and Concentration Dynamics

The Philippines participates only modestly in goods trade, with a narrow export basket dominated by electronics components and semiconductors. These exports originate largely from enclave-style production zones rather than from a broad, domestically embedded manufacturing ecosystem.

As a result, the country is exposed to global technology cycles without benefiting from upstream suppliers, engineering depth, or strong industrial linkages. Market diversification is moderate, but the overall scale of exports is too small relative to GDP to mitigate vulnerability through diversification alone. The Philippines remains a specialized node in global electronics rather than a diversified manufacturing economy—limiting its ability to respond to global demand shifts or capitalize on supply-chain reconfiguration.

Position in Global Supply Chains

The Philippines' integration into global value chains is bifurcated: it is highly connected through world-class services exports (BPO and IT-enabled services) but only weakly embedded in manufacturing chains. The services sector links millions of workers to global firms, yet this integration does not generate the industrial spillovers associated with manufacturing-led growth. Domestic manufacturing remains small, fragmented, and heavily reliant on imported intermediates, particularly in electronics assembly. Local supply chains are thin, and foreign-owned firms capture most of the value within GVCs. Employment in export-oriented manufacturing is limited, meaning global shocks have modest labor-market effects—but this also signals that the economy does not reap the productivity and wage gains typical of export-led industrialization.

Investment Exposure and Economic Model

The Philippines relies more on domestic investment and consumption than on FDI. A moderate FDI-to-capital-formation ratio reflects long-standing structural barriers: regulatory complexity, infrastructure gaps, high logistics costs, and inconsistent policy execution. These constraints have limited foreign investment in manufacturing and prevented the Philippines from positioning itself as an attractive “China+1” destination. Recent reforms—liberalizing sectors such as public services, renewable energy, and telecommunications—represent progress, but manufacturing investment continues to lag regional competitors. Without improvements in industrial policy capability, logistics and transport infrastructure, human capital, and energy reliability, the country will struggle to build the supply-chain depth required for large-scale export diversification.



Policy Recommendations

The Index and accompanying stress tests highlight that ASEAN's vulnerabilities arise not only from high exposure but from how economies are exposed—through concentrated export baskets, reliance on imported intermediates, limited domestic supply-chain depth, and dependence on a few external investors. Addressing these structural weaknesses will require targeted national reforms combined with a more coherent regional approach to investment, standards, and supply-chain coordination. Three priority areas emerge.

1. Strengthen Domestic Supply-Chain Depth and Value-Added Capabilities

A recurring challenge across ASEAN is the limited depth of domestic supply chains, even in economies with strong export sectors. High dependence on imported intermediates, narrow industrial ecosystems, and uneven technological capabilities magnify exposure to global disruptions—whether in the form of renewed U.S. tariffs or a China-centric slowdown. Improving resilience therefore requires deliberate investment in domestic supplier development, industrial upgrading, and technological capability—not as a push for self-sufficiency, but as a strategy to enhance competitiveness within global production networks. This includes improving logistics and energy reliability, scaling workforce skills, incentivizing digitalization and technology adoption among SMEs, and strengthening linkages between foreign investors and local firms. Deepening domestic value added allows economies to retain more of the benefits of global trade while cushioning against volatility in upstream inputs and external demand.

2. Diversify Export Markets and Product Bases to Reduce Asymmetric Exposure

The Index shows that countries with concentrated export markets or narrow product baskets face sharper shocks when tariff regimes shift, major partners contract, or specific sectors weaken. Strategic diversification—whether into new geographies, new industries, or higher-value segments—helps reduce this asymmetric exposure. For highly concentrated exporters, diversification may involve targeted support for non-traditional sectors or incentives for firms to expand their market reach. For less trade-exposed economies, it may take the form of selective participation in emerging value chains where ASEAN has comparative advantages, such as EV components, agritech, and digital services. The objective is not diversification for its own sake but strategic broadening: reducing dependency risks without undermining existing strengths, and ensuring that export portfolios remain robust under both positive scenarios (supply-chain expansion) and adverse ones (tariff escalation or demand contraction).

3. Build a More Adaptive Regional Framework for Investment, Standards, and Supply-Chain Coordination

ASEAN economies vary widely in their reliance on foreign investment, but all are affected by the changing landscape of global capital flows, export controls, sustainability requirements, and technology standards. A more adaptive and coordinated regional approach—covering investment facilitation, regulatory transparency, digital and sustainability standards, and supply-chain security—would reduce fragmentation and strengthen ASEAN’s position in a more contested global environment. The aim is not full harmonization but a set of shared principles and interoperable platforms that help economies respond more effectively to shifts in U.S.–China rivalry, emerging protectionist measures, and new global requirements around traceability, carbon accounting, and data governance. Enhanced coordination would diversify risk, reduce compliance burdens (particularly for SMEs), attract higher-quality investment, and reinforce ASEAN’s credibility as a coherent and resilient production base.

Appendix I: Methodology

Conceptual Framework

The Southeast Asia Trade Exposure Index is designed to capture how far the economies of the region are exposed to shocks and shifts originating in the global trading system, and how far they have the internal strength to absorb and adapt to these shocks. It does not treat participation in global trade as inherently good or bad. Instead, it functions as a diagnostic tool that distinguishes between healthy, diversified integration and forms of exposure that create structural vulnerability.

At its core, the Index asks two related questions. First, how dependent is a country on external markets in ways that could expose it to disruption when the global environment changes. Second, how resilient is its domestic economic structure in cushioning or amplifying such external shocks.

To answer these questions, the Index brings together two complementary dimensions: **Trade Dependence** and **Global Supply Chain Dependence**. All indicators are ultimately transformed so that higher scores consistently reflect greater vulnerability or dependence, enabling coherent aggregation across dimensions.

Together, these dimensions provide a more nuanced picture than simple measures of “openness”. An economy can be highly open yet relatively resilient if it has diversified partners and products, deep domestic supply chains and broad-based participation in trade. Conversely, a less open economy can still be fragile if its limited international linkages are heavily concentrated or if domestic structures are weak. This dual-structure also underpins the archetypes that appear in the results—hyper-global hubs, fragile exporters, commodity-anchored economies, and domestic-market-driven systems.

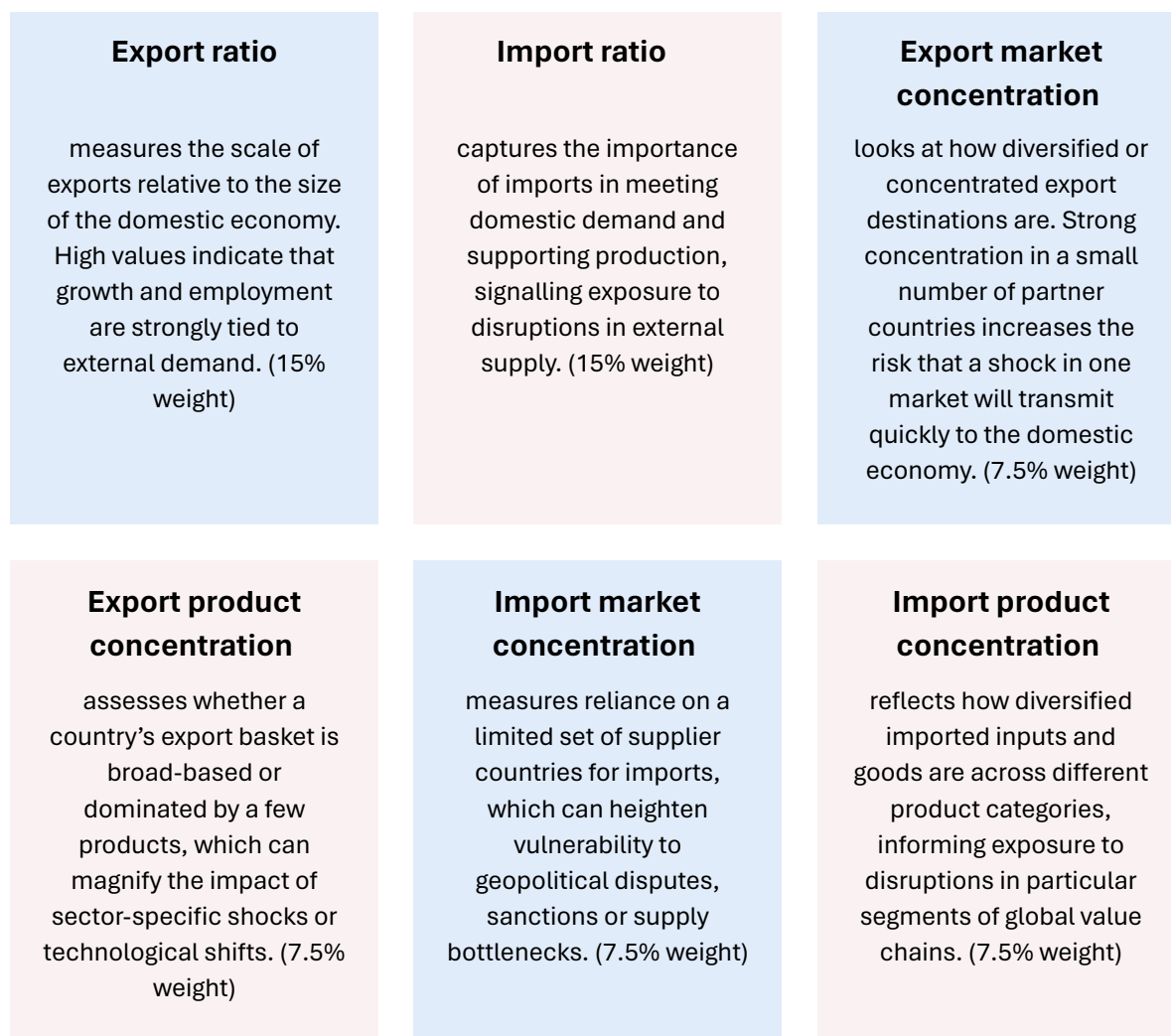
● *Trade Dependence*

The first dimension, Trade Exposure, reflects the external side of vulnerability. It captures the extent to which a country relies on cross-border trade, how concentrated that trade is across partners and products, and where this might create potential points of fragility.

High trade ratios by themselves are not necessarily a problem. For many small and medium-sized economies, strong integration with global markets is a key engine of growth.

However, heavy reliance on exports and imports, combined with narrow concentration in a few markets or product lines, significantly increases exposure to external shocks.

The Trade Dependence dimension is therefore built around six sub-indicators that together describe both the intensity and the concentration of external linkages:



Taken together, these sub-indicators provide a structured view of how deeply, and how narrowly, each economy is tied into global trade flows. Economies that combine high trade ratios with high concentration are likely to be more sensitive to changes in the global environment than those with more diversified patterns of engagement.

● *Global Supply Chain Dependence*

The second dimension, Global Supply Chain Dependence, captures the extent to which a country's supply chain is shaped by external dependence versus supported by domestic capacity. It considers the depth and resilience of domestic supply chains, the balance between domestic and foreign capital, the availability of local industrial inputs, and the degree to which employment is tied directly to international trade.

In general, trade is one important indicator of how exposed a country may be to external shocks, but it is not the only one. A country's level of exposure is also shaped by how deeply it is integrated into global supply chains. In other words, the exposure is not determined simply by only the volume of trade, but by the wider structure of economic dependence connecting a country to the global system.

This becomes especially important when trade dependence and supply chain dependence exist at the same time. When a country is heavily reliant on external trade while also depending strongly on globally connected supply chains, the risk of being affected by disruption becomes greater. In such cases, shocks can spread through multiple channels at once, making their impact more severe and more difficult to absorb.

The Global Supply Chain Dependence dimension is constructed from four sub-indicators that focus on these indicators:

Strength of domestic supply chain

captures the domestic value-added share in gross exports. Higher domestic value-added indicates that export earnings are more firmly grounded in local production capabilities and linkages, rather than being driven mainly by the assembly or processing of imported inputs. (10% weight)

Dependence on foreign investment

measures the extent to which the investment base is driven by inbound foreign direct investment rather than domestic sources, highlighting potential vulnerabilities if cross-border capital flows slow or reverse. (10% weight)

Foreign input dependence

reflects how much production relies on imported intermediate goods and services, which can become a critical pressure point when global supply chains are disrupted. (10% weight)

Export-oriented employment share

estimates the share of jobs that are directly or indirectly tied to global supply chains, indicating how deeply the labour market is exposed to changes in international trade conditions. (10% weight)

Indicators were selected according to three criteria:

1. **Relevance:** Each reflects a meaningful channel of exposure or resilience within ASEAN's trade structure.
2. **Comparability:** Data are available for most ASEAN Member States across multiple years, enabling longitudinal tracking.
3. **Complementarity:** Indicators capture distinct aspects of vulnerability; correlation checks are conducted to prevent double-counting similar effects (e.g., between market concentration and top-partner share).

Methodological Caveats and Robustness

The weighting of sub-indicators is theory-informed rather than presented as uniquely optimal. Indicators capturing the intensity of external linkages (export and import dependence) are weighted more heavily to reflect their role as first-order channels of macroeconomic exposure, while indicators capturing concentration (by market and product) are weighted to reflect second-order amplification and resilience effects conditional on exposure. Sensitivity testing indicates that relative country rankings and clustering remain stable across reasonable alternative weighting schemes, including equal-weighting of all six indicators, though differentiation is weaker in that case. The selected weights should therefore be read as a structured analytical lens balancing economic intuition, transparency, and cross-country comparability, rather than a precise attribution of causal impact.

Indicators and Data Sources

For each indicator in the Index, a specific data series or proxy has been selected to capture the underlying concept as consistently as possible across countries. Preference is given to internationally recognised datasets that provide harmonized, cross-country comparable statistics and regular updates.

Core macroeconomic and trade statistics are taken primarily from the World Bank and the International Trade Centre (Trade Map), complemented by specialised sources such as the OECD's Trade in Value Added (TiVA) database and the International Labour Organization (ILO). Where necessary, additional reputable providers such as CEIC are used to fill gaps or cross-check figures.

Across all indicators, the Index uses the most recent year of data that offers broad coverage for Southeast Asian economies and comparator countries, ideally in 2024. Where multiple sources exist, those with the widest coverage and most transparent methodology have been chosen.

Index Construction

The Southeast Asia Trade Exposure Index is constructed in three main stages including 1) Normalization 2) Setting minimum and maximum values and 3) Weighting and aggregation

● *Normalizing indicators to a common 0–100 scale*

All indicators in the Southeast Asia Trade Exposure Index are converted to a common 0–100 scale using min–max normalization. This allows variables with different units and ranges to be combined into a single composite measure.

For indicators where a **higher raw value implies higher exposure** (for example, export ratio, import ratio, concentration indices, foreign input dependence), the score for country i is calculated as:

$$Score_i = \frac{x_i - x_{min}}{x_{max} - x_{min}} \times 100$$

For indicators where a **higher raw value implies lower exposure** (for example, domestic value-added share in exports), the transformation is reversed:

$$Score_i = \frac{x_{max} - x_i}{x_{max} - x_{min}} \times 100$$

In both cases, the resulting indicator scores range from 0 (least vulnerable or most resilient) to 100 (most vulnerable or least resilient). To avoid extreme values distorting the distribution of scores, any country with an indicator value above the chosen maximum bound is capped at 100, and any country with a value below the chosen minimum bound is floored at 0 after the appropriate transformation.

● *Setting minimum and maximum values*

A critical step in min–max normalization is the choice of minimum and maximum values used to rescale each indicator. The Index applies two approaches, depending on the nature of the indicator and the availability of conceptual benchmarks.

Policy-sensible bounds

For some indicators, there are well-established theoretical or policy benchmarks that provide meaningful thresholds. In such cases, the Index uses these policy-sensible bounds. The Herfindahl–Hirschman Index (HHI) is a clear example. Competition policy commonly interprets HHI values below 100 as indicating low concentration and values above 2,500 as indicating high concentration. These thresholds are therefore used as the minimum and maximum bounds for market and product concentration indicators, regardless of the observed minima and maxima in the data. This approach anchors the scoring in economic logic and facilitates interpretation across time and country samples.

Statistical cut-offs

Statistical cut-offs are used where the data contain clear outliers that would otherwise compress the scores of most countries into a very narrow band. In these cases, the upper and lower bounds are set at the 95th and 5th percentiles of the distribution respectively. These percentiles are calculated over the full sample of countries for which data are available, not only ASEAN economies, to ensure that the bounds reflect the broader global context. For example, Singapore's export-to-GDP ratio is around 178.8 per cent, far higher than other ASEAN economies. Using this extreme value as the maximum would push most other countries' export dependence scores very close to zero. Applying percentile cut-offs avoids this clustering and preserves differentiation across the region.

● *Weighting and aggregation*

Once each indicator has been normalised, scores are aggregated using a weighted average. The Index is organised around two main components: Trade Dependence and Global Supply Chain Dependence.

For each country, the final Index score is calculated as the sum of all indicator scores multiplied by their respective weights. This produces a single value between 0 and 100 that summarizes both the degree of international economic dependence and the strength of domestic structures that shape resilience to external shocks.

● *Limitations of the Index*

While the Index offers a structured and comparable measure of trade dependence and global supply chain dependence across ASEAN, several limitations should be acknowledged.

First, data availability varies across indicators and countries, particularly for domestic value-added, intermediate input flows, and export-oriented employment. In such cases, the Index relies on internationally recognized proxies that approximate but do not fully capture country-specific realities. In some cases, 2024 data were not available, so the most recent country-specific data accessible from available databases is used. For example, for Lao PDR, the latest export and import data in the World Bank database are from 2016, which means these figures may not fully reflect current conditions.

Second, the Index focuses primarily on goods trade and therefore does not fully reflect economies—such as the Philippines and Singapore—where services exports play a major structural role.

Third, FDI indicators capture total inflows rather than sector-specific exposure, which may mask concentrated vulnerabilities in industries such as electronics, garments, or mining. Finally, because the Index uses standardized bounds and percentile-based normalization, extreme outliers can compress variation across the mid-range of economies.

These limitations do not undermine comparative insights but highlight the need for continuous refinement as new data become available and as ASEAN economies deepen their participation in global value chains.

Appendix II:

Source and Definitions of Indicators

Trade Dependence

Export Ratio	
Proxy:	Exports of goods and services as a percentage of GDP, capturing the scale of an economy's export activity relative to overall output.
Relevance:	A higher share indicates that growth and employment rely more heavily on external demand, raising exposure to changes in global markets and trade conditions.
Data Source:	World Bank, World Development Indicators, "Exports of goods and services (% of GDP)", latest available year.

Import Ratio	
Proxy:	Imports of goods and services as a percentage of GDP, measuring the extent to which domestic demand and production are met by foreign supply.
Relevance:	A higher ratio signals stronger reliance on external sources for consumption and production inputs, increasing vulnerability to supply disruptions, price shocks and trade restrictions.
Data Source:	World Bank, World Development Indicators, "Imports of goods and services (% of GDP)", latest available year.

Export Market Concentration	
Proxy:	Herfindahl–Hirschman Index (HHI) of export destinations, calculated from the shares of each partner country in total exports.
Relevance:	A higher HHI reflects concentration of exports in a small number of destination markets, which heightens the risk that shocks or policy changes in those markets will transmit directly to the domestic economy.
Data Source:	International Trade Centre (ITC), Trade Map, country exports by destination, 2024 or latest available year.

Export Product Concentration

Proxy:	Herfindahl–Hirschman Index (HHI) of export products, based on the distribution of export values across product categories.
Relevance:	A higher HHI indicates reliance on a narrow set of export products, making the economy more sensitive to sector-specific shocks, technological change or shifts in global demand.
Data Source:	International Trade Centre (ITC), Trade Map, country exports by product type, 2024 or latest available year.

Import Market Concentration

Proxy:	Herfindahl–Hirschman Index (HHI) of import destinations, derived from the shares of each supplier country in total imports.
Relevance:	A higher HHI signals dependence on a limited group of foreign suppliers, raising exposure to geopolitical tensions, supply chain disruptions or policy changes affecting those partners.
Data Source:	International Trade Centre (ITC), Trade Map, country imports by destination, 2024 or latest available year.

Import Product Concentration

Proxy:	Herfindahl–Hirschman Index (HHI) of import products, based on the distribution of import values across product categories.
Relevance:	A higher HHI means that critical inputs and goods are concentrated in a few product groups, which can create bottlenecks and amplify vulnerability when disruptions affect those segments of global value chains.
Data Source:	International Trade Centre (ITC), Trade Map, country imports by product type, 2024 or latest available year.

Global Supply Chain Dependence

Strength of Domestic Supply Chain

Proxy:	Domestic value-added share in gross exports, measuring the proportion of export value that is generated by domestic production rather than imported inputs.
Relevance:	A higher domestic value-added share suggests stronger local production capabilities and denser supply-chain linkages, which can buffer the economy against external shocks by retaining more value and capabilities at home.
Data Source:	OECD Trade in Value Added (TiVA) database, “Domestic value added embodied in gross exports”, 2020 or latest available year.

Dependence on Foreign Investment

Proxy:	Share of inbound foreign direct investment (FDI) in total investment, proxied by FDI inflows relative to gross capital formation or total investment.
Relevance:	A higher share indicates that capital formation is more dependent on foreign investors, which may increase vulnerability to sudden stops or reversals in cross-border capital flows; a more balanced mix of domestic and foreign investment supports resilience.
Data Source:	World Bank, World Development Indicators and related databases, “Foreign direct investment” and “Gross capital formation”, 2024 or latest available year.

Foreign Input Dependence

Proxy:	Share of intermediate goods in total imports, capturing the degree to which domestic production relies on foreign-sourced intermediate inputs.
Relevance:	A higher share points to stronger dependence on imported components and materials, which can weaken resilience if global supply chains are disrupted; lower reliance suggests greater scope to substitute or source inputs domestically.
Data Source:	World Bank and other international trade statistics, “Intermediate goods imports”, 2022 or latest available year.

Export-oriented Employment Share

Proxy:	Share of jobs associated with global supply chains in total employment, estimated by combining sector-level global supply chain job shares with each country’s employment by sector.
Relevance:	A higher proportion of export- and GSC-related jobs indicates that the labor market is more exposed to fluctuations in global trade and investment; this can magnify the social impact of external shocks when adjustment mechanisms are weak.
Data Source:	International Labor Organization (ILO) estimates of global supply chain employment shares, combined with World Bank or ILO data on employment by sector and total employment, primarily 2021–2023.

