

This framework evaluates countries's structural position within globalization through three distinct dimensions:

- **Axis A:** structural dependence on globalization;
- **Axis B:** capacity to capture value from globalization;
- **Axis V:** vulnerability within globalization networks.

All data were drawn from the [World Development Indicators database](#). Variables were selected according to three criteria:

1. conceptual relevance to the underlying dimension;
2. broad cross-country availability;
3. longitudinal comparability.

Where necessary, logarithmic transformations and caps were applied to reduce distortion from extreme outliers and preserve comparability across heterogeneous economies.

Axis A — Structural Dependence on Globalization

Axis A measures the degree to which a country's economic model structurally relies on international economic integration.

A1. Trade openness

(exports + imports)/GDP

This variable measures the overall importance of external trade relative to domestic production. A logarithmic transformation was applied to reduce the disproportionate influence of highly open small economies.

Weight: **30%**

A2. Strategic import dependence

Food imports as % of imports + energy dependency as % of imports

This variable captures dependence on externally supplied strategic goods necessary for domestic economic reproduction. Energy dependency values above 100% were capped to avoid distortions from statistical outliers.

Weight: **20%**

A3. Domestic market insufficiency

Exports of goods and services/Internal market size.

Internal market size calculated as: Household consumption of goods and services as share of GDP $\times$ GDP

This variable estimates the extent to which domestic demand could substitute for external demand in the event of trade disruption. High values indicate a production structure strongly dependent on foreign markets. A logarithmic transformation was applied because the variable is unbounded.

Weight: **25%**

A4. External financing dependence

External debt stock/GDP

This variable measures reliance on external financing flows. A logarithmic transformation was applied to reduce skewness caused by highly indebted economies.

Weight: **10%**

A5. Manufactured imports dependence

Manufactured imports as % of merchandise imports

This variable captures the extent to which domestic consumption and production chains rely on internationally supplied manufactured inputs.

Weight: **15%**

Aggregation and penalty function

Axis A variables were aggregated through a weighted sum. Because all variables are expressed as percentages or percentage-derived ratios, no relative normalization procedure was applied.

A quadratic penalty function was introduced to increase the aggregate score whenever a single dependency variable exceeds 60%, reflecting the assumption that extreme dependence in one critical dimension increases overall structural dependence disproportionately.

Axis B — Surplus Capture from Globalization

Axis B measures the extent to which countries capture economic value, rents, and productive gains from participation in globalization.

B1. Manufacturing productive capacity

Manufacturing value added as % of GDP

This variable measures the domestic share of value generated within exported production chains.

Weight: **27%**

B2. Technological sophistication

High-tech value added as % of manufacturing value added

This variable acts as a proxy for productive sophistication, technological capabilities, and embedded intangible know-how.
Weight: **18%**

B3. Net international income

Net primary income from abroad as % GDP

This variable captures net income derived from foreign assets and international investment positions.
Weight: **15%**

B4. Productivity gains

GDP per person employed

This variable estimates the efficiency with which economies convert global integration into productive output. Values were logarithmically transformed and normalized to the median to reduce scale distortions.

Weight: **10%**

B5. Global financial integration

This variable approximates financial integration and monetary credibility through the interaction of:

- market capitalization of listed domestic companies as a percentage of GDP;
- five-year cumulative inflation.

Market capitalization acts as a proxy for financial depth and integration into global capital markets. Inflation acts as an inverse proxy for monetary credibility and currency stability.

Inflation values were logarithmically transformed and capped at 300% cumulative inflation over five years to limit distortion from hyperinflationary outliers.

Weight: **10%**

B6. Supply-chain centrality

This variable combines:

- trade as a percentage of GDP;
- container port traffic as a percentage of global container traffic.

Container traffic was weighted upward to maintain comparable magnitudes between the two subcomponents.

This variable measures integration into global logistical and supply-chain networks.

Weight: **20%**

Aggregation

Axis B variables were aggregated through a weighted sum without nonlinear penalties. Low performance on one component was not assumed to invalidate gains obtained through other channels of globalization.

Axis V — Vulnerability within Globalization

Axis V measures the fragility of a country's position within globalization networks. Vulnerability is treated as distinct from dependence: highly globalized economies may nonetheless possess strong resilience, bargaining power, or systemic indispensability.

V1. Dependency asymmetry

High-technology exports as share of world high-tech exports

This variable estimates the degree to which a country occupies a difficult-to-replace position within global production networks. The measure combines technological specialization with export scale in order to approximate systemic relevance.

The resulting value was multiplied by 10 to maintain comparable magnitudes with the other vulnerability components.

Weight: **40%**

V2. External shock resilience

This variable combines:

- reserves measured in years of imports;
- domestic savings as a percentage of GDP.

Reserves approximate short-term external shock absorption capacity, while domestic savings approximate longer-term internal financing resilience.

The combined variable was capped at 250%, corresponding approximately to a two-year resilience horizon, taking into account domestic saving erosion during the stabilization period.

Weight: **35%**

V3. External coercion exposure

This variable combines:

- net ODA received as a percentage of GNI;
- logarithmically transformed external debt stocks x logarithmically transformed short-term debt as a percentage of reserves.

The variable estimates exposure to external financial and political leverage through dependence on external financing and liquidity vulnerability.

Weight: **25%**

Aggregation

As the index V3 is directionally opposite to the other two, the vulnerability index was constructed as:

$$V=0.4(1-V1)+0.35(1-V2)+0.25V3$$

Higher values indicate greater vulnerability within globalization networks.

Country groupings

The allotment of every country into one of the predefined family must not be treated as hard taxonomy. Recurring structural configurations were observed, and each country was heuristically placed into the best fitting category.

The framework necessarily relies on proxy variables to partially capture multidimensional and informal structural phenomena that cannot be directly observed. As a result, the model should be interpreted as a heuristic mapping of relative structural positions rather than a definitive measurement of geopolitical-economic power.

The temporal instability of geopolitical positioning should be taken into account, as the positioning of each country within globalization are not to be meant as fixed.