

# Port Economics & Policy

Georgios Bampinas

bampinasg@uom.edu.gr

## II. Ports, Maritime Shipping and International Trade



# Themes

- Maritime Shipping as a Driver of Globalization
- The Economic Significance of Ports
- The Strategic Value of Ports

Reading list:

## Chapter 0.2 – Seaports and the Blue Economy

<https://porteconomicsmanagement.org/pemp/contents/introduction/seaports-economic-value/>

## Chapter 1.1 – Ports, Maritime Shipping and International Trade

<https://porteconomicsmanagement.org/pemp/contents/part1/maritime-shipping-and-international-trade/>

# MARITIME SHIPPING AS A DRIVER OF GLOBALIZATION

# S1. Maritime Shipping as a Driver of Globalization

## Key Topics:

- Trade and transport interdependence
- Global economic integration
- Maritime shipping networks
- Trade liberalization
- The role of ports in globalization

# S2. Derived Demand for Ports

## The demand for port traffic is:

- Derived from international trade
- Influenced by global production systems
- Affected by logistics and transport networks
- Dependent on shipping connectivity

## Important idea:

- No trade → No maritime shipping → No port activity

# S3. The Steamship Revolution

## Steamships:

- Increased speed and reliability
- Reduced transport costs
- Allowed larger cargo volumes
- Created economies of scale

## Consequence:

- Expansion of international trade networks

# S4. Trade Costs and Globalization

## Trade costs include:

- Freight costs
- Time costs
- Tariffs and policy barriers
- Information costs
- Legal and regulatory costs

## Key finding:

- A 10% reduction in transport costs can increase trade by around 20% in developing economies

# S5. Why Maritime Shipping Dominates Trade

## **Maritime shipping:**

- Carries around 80–90% of world trade by volume
- Is the cheapest mode for bulk international transport
- Supports global supply chains

## **Particularly important for:**

- Energy
- Raw materials
- Manufactured goods
- Containers

# S6. The Declining Importance of Distance

## **Improvements in:**

- Shipping technology
- Port efficiency
- Logistics systems
- Connectivity

## **Result:**

- Distance plays a smaller role in trade intensity

## **More important today:**

- Connectivity
- Frequency of services
- Network integration

# S7. Hierarchy of Shipping Networks

**Global shipping networks are hierarchical:**

- Major global hubs
- Regional hubs
- Feeder ports
- Peripheral ports

**Main shipping routes:**

- Asia–Europe
- Transpacific
- Transatlantic

# S8. The Liberalization of Global Trade

## **After World War II:**

- Tariffs gradually declined
- Trade barriers were reduced
- International cooperation increased

## **Important institutions::**

- GATT
- WTO
- World Bank
- UNCTAD

# S9. China and the Global Economy

## **Major turning point:**

- China's economic opening in the 1990s

## **Effects:**

- Massive expansion of manufacturing
- Global supply chain restructuring
- Huge increase in containerized trade

## **Ports benefited enormously**

# S10. Regional Economic Integration

## **Major trade blocs:**

- EU Single Market
- ASEAN
- Mercosur

## **Effects:**

- Increased regional trade
- Improved supply chain integration
- Growth in transport demand

# S11. Key Takeaways

## Maritime shipping:

- Is essential for globalization
- Reduces trade costs
- Connects production systems
- Supports global supply chains
- **Ports:**
- Are strategic economic nodes
- Depend on trade growth
- Compete through connectivity and efficiency

# THE ECONOMIC SIGNIFICANCE OF PORTS

# S12. Ports as Economic Catalysts

- Ports play a central role in transforming maritime space into economic value.
- Their importance has increased significantly due to: globalization, technological innovation, growth in international trade, and the expansion of maritime industries.
- Modern ports are no longer simple cargo handling locations.
- They function as: logistics platforms, industrial clusters, trade gateways, and interfaces between maritime and inland economies.
- Ports contribute directly and indirectly to regional and national development.
- *Key idea:* Ports are strategic infrastructures that support the broader ocean economy and blue economy.

# S13. Ports within the Ocean and Blue Economy

- **Ocean Economy** includes activities connected to: maritime transport and trade, fisheries and aquaculture, offshore energy and raw materials, maritime logistics and services.
- **Blue Economy** expands the ocean economy by emphasizing: sustainability, environmental protection, technological innovation, smart logistics and information systems.
- **Strategic Role of Ports:** interfaces between sea and land, facilitators of maritime economic activity, nodes connecting production, distribution, and consumption systems.
- **Important point:** Ports actively shape how maritime economic activities are organized and integrated into the global economy.

# S14. Core Port Functions as Economic Catalysts

- **Support for Living Marine Resources:** fishing industries, aquaculture, storage and freezing facilities, seafood processing and distribution.
- **Support for Non-Living Resources.** Ports act as: energy and petrochemical hubs, mineral and bulk export platforms, industrial and transformation clusters.
- **Increasing role in renewable energy:** offshore wind logistics, maintenance and procurement platforms.
- **Maritime Trade and Commerce.** Ports remain central to: cargo handling, container shipping, logistics, warehousing, manufacturing, and distribution activities.

# S15. Ports as Regional Economic Catalysts

- Ports are large-scale, capital-intensive infrastructures.
  - Significant public and private investments are required for: terminals, cranes, dredging, logistics infrastructure, and transport connectivity.
- **Evaluating the Economic Role of Ports**
  - **Quantitative Perspective**
    - Focuses on measurable economic outcomes: employment, trade flows, revenue generation, GDP contribution.
  - **Strategic Perspective**
    - Focuses on long-term development effects: regional competitiveness, investment attraction, integration into global trade networks, shaping trade and logistics patterns.

# S16. Measuring the Economic Contribution of Ports

## Economic Indicators

- **Gross Value Added:** measures the contribution of port-related activities to: GDP, regional output, and economic growth. Includes: direct effects, indirect effects.
- **Employment:** measured mainly Full-Time Equivalents (FTEs). Includes: direct port employment, indirect logistics and supply-chain employment.
- **Trade Volumes and Trade Values:** reveal the port's role in international trade, import/export specialization, cargo composition and economic structure.

## Financial Indicators

- Fiscal revenues and taxation, public and private investments, infrastructure financing

# S17. From Economic to Stakeholder Value

- A port creates value for its region and its stakeholders
  - Port value proposition refers to the benefits a port provides to its region.
- Stakeholder value combines three dimensions:
  - Economic value: trade, cargo handling, revenues, business activity
  - Social value: employment, taxation, community benefits
  - Environmental value: ecosystem protection, pollution control, sustainability

**Key point:** Modern ports are not evaluated only as commercial infrastructures, but as economic, social, and environmental actors.

# S18. Ports generate different types of value

Dimension	Port role	Main indicators / issues
Economic value	Commercial port	Cargo value, operating revenue, port-related transactions
Social value	Social port	Employment, tax revenue, community relations
Environmental value	Natural park port	Pollution, emissions, dredging, ecosystem impacts

## Important distinction:

- Economic value is usually easier to quantify.
- Social and environmental value are often more subjective and contested.

## Modern challenge:

Ports must prove their value beyond commercial performance

# THE STRATEGIC VALUE OF PORTS

# S19. Ports as Strategic Assets for Competitiveness

- Strategic Role of Seaports by providing:
  - cost-efficient transport,
  - reliable logistics,
  - and frequent market connections,seaports enhance:
  - trade facilitation,
  - regional competitiveness,
  - and firms' international integration.
- Competitive Advantages of Ports
  - Influence firms' location decisions
  - Reduce total logistics costs
  - Improve access to global markets
  - Support innovation and business networks

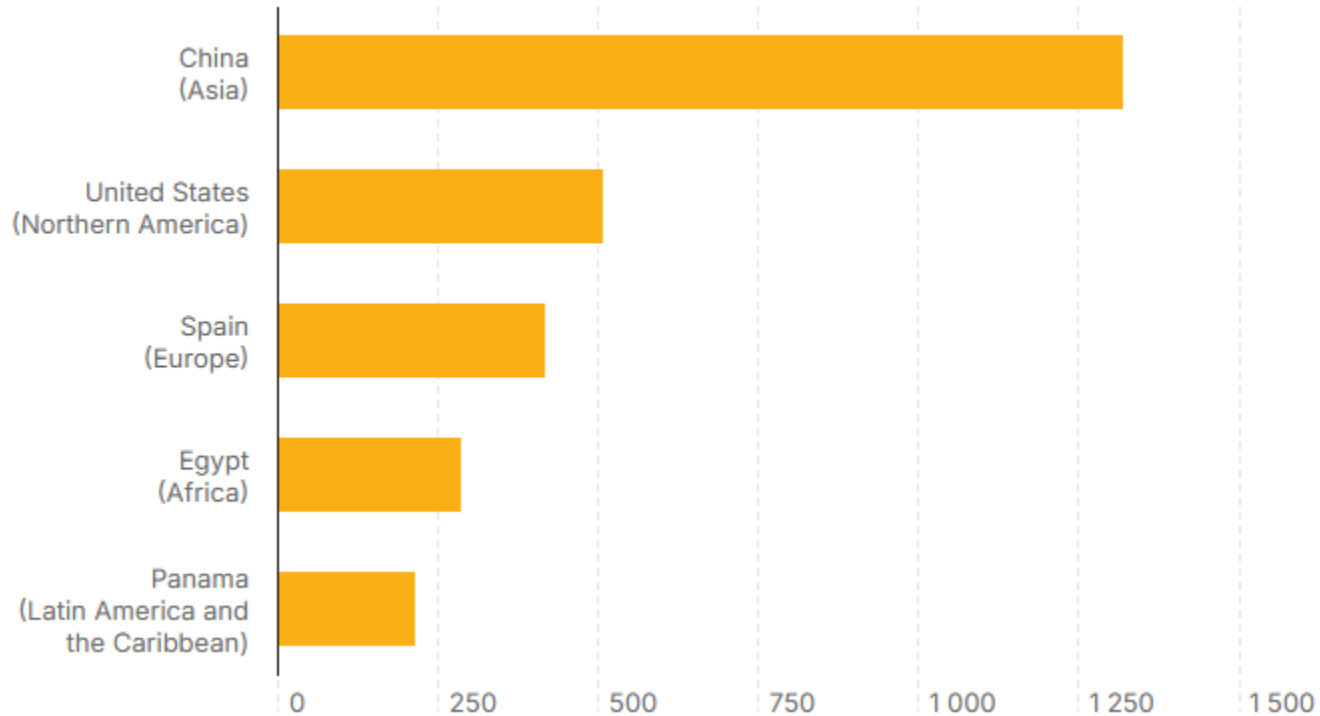
# S20. Ports, Economic Structure, and Connectivity Indicators

- The strategic role of ports is reflected indirectly in **national and international performance indicators**.
- The **Economic Complexity Index (ECI)** of the Observatory of Economic Complexity captures the diversity and sophistication of a country's exports.
  - Complex economies tend to generate **containerized trade**,
  - while less complex economies rely more on **bulk cargoes**.
- The **Logistics Performance Index (LPI)** of the World Bank highlights how efficient port infrastructure contributes to overall logistics quality.
- The **Liner Shipping Connectivity Index (LSCI)** of UNCTAD reflects how well national port systems are connected to global shipping networks.
- Together, these indicators show that **ports are deeply embedded in economic structure and connectivity**, not just transport capacity.

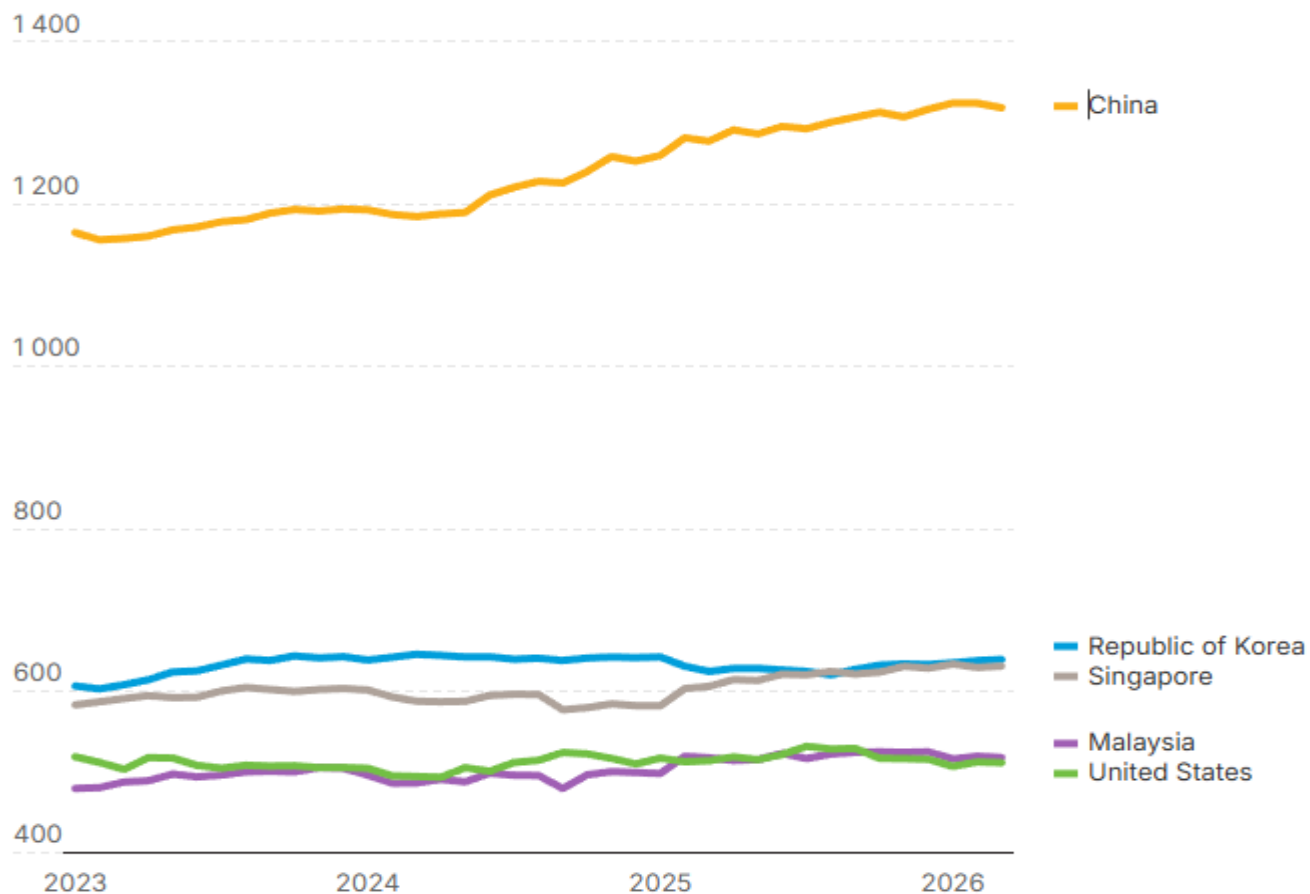
# S21. Indicators Databases

- Official and publicly available data from the following sources:
  - LSCI: UNCTADstat – <https://unctadstat.unctad.org>
  - LPI: World Bank – Logistics Performance Index  
<https://lpi.worldbank.org>
  - ECI: Observatory of Economic Complexity (OEC)  
<https://oec.world>
  - Trade data (outcome variable): World Bank – World Development Indicators <https://databank.worldbank.org>

## S22. Top maritime connectivity performer by region (Q1 2026)

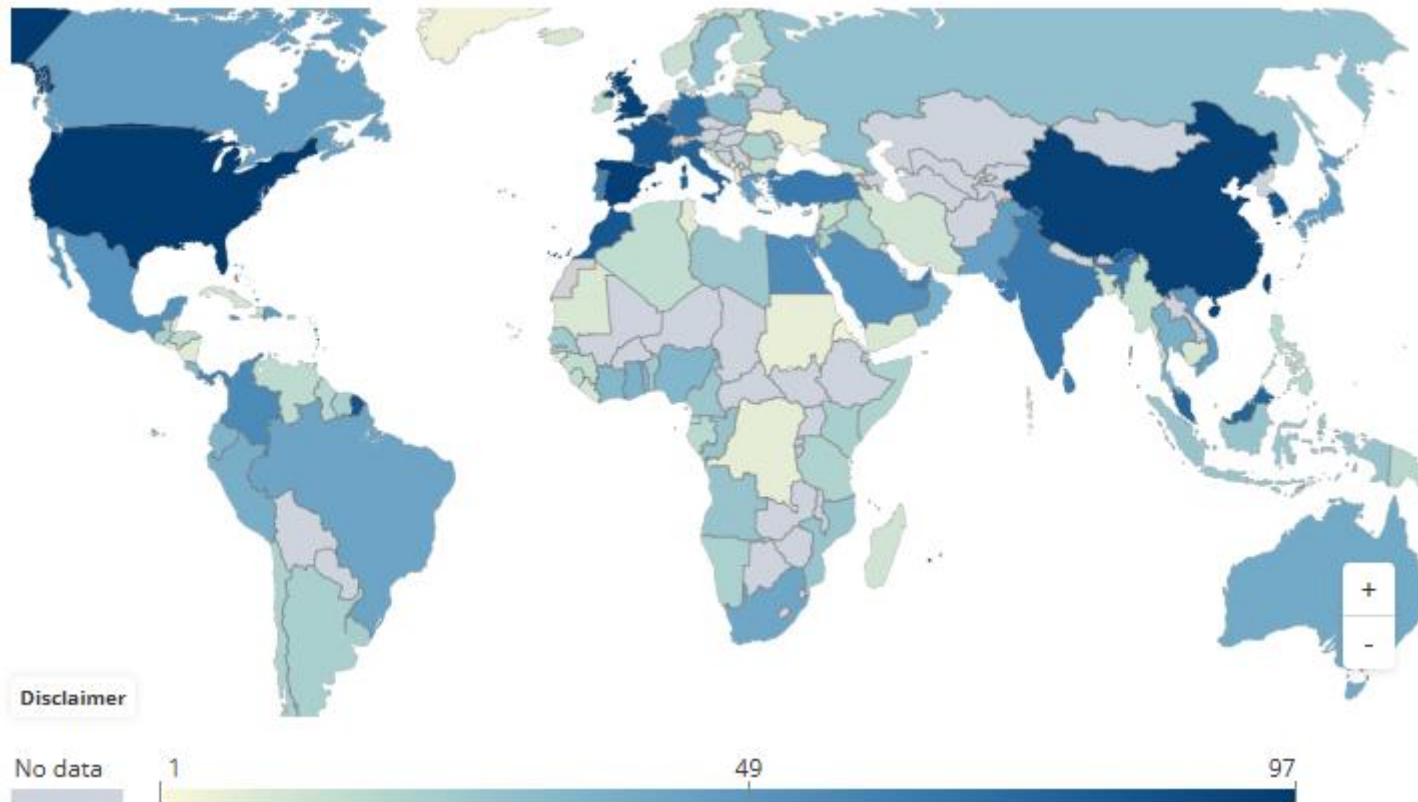


## S23. Top 5 economies with the highest LSCI (M03 2026)

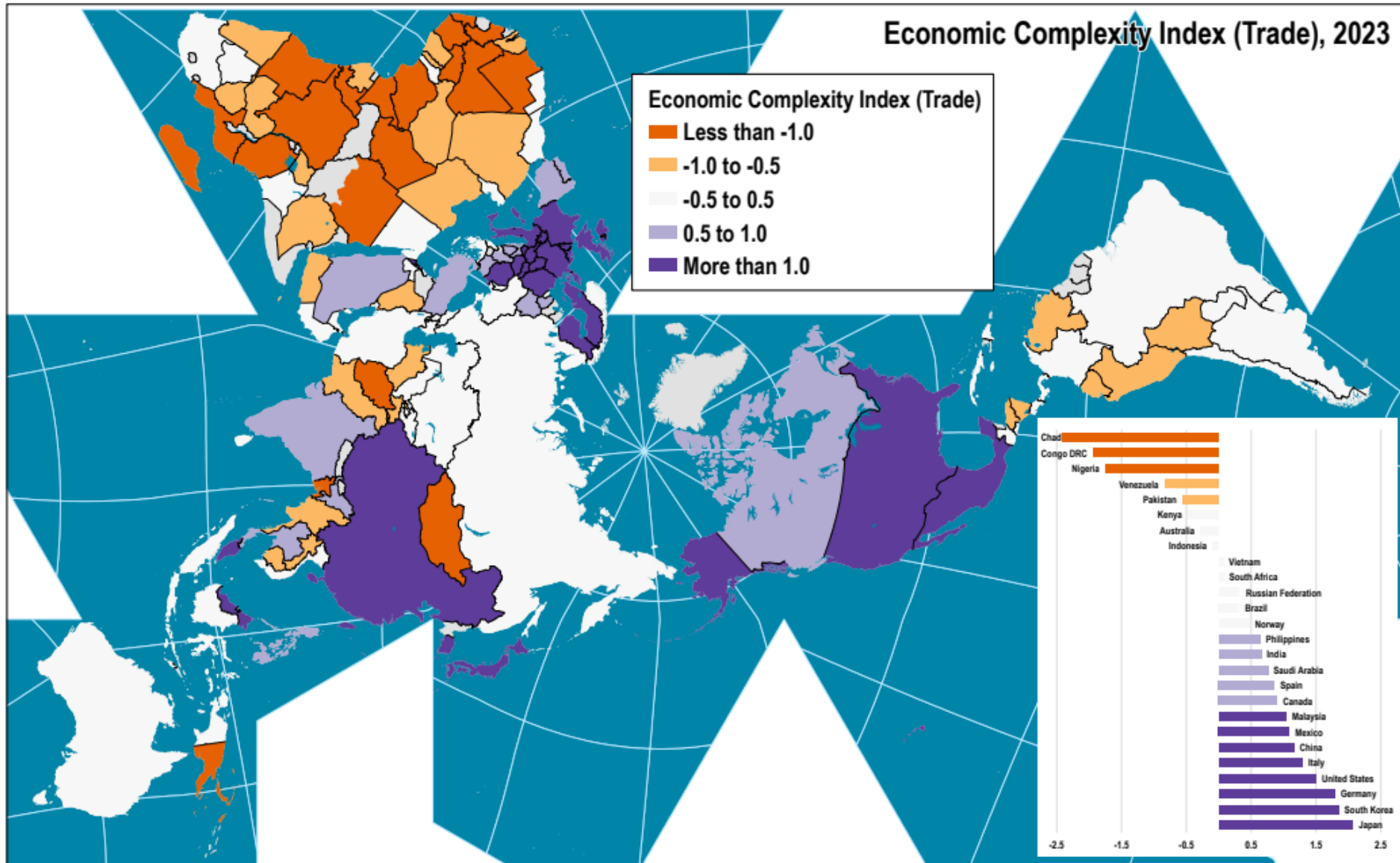


# S24. Trade logistics performance Map

**Number of maritime partner economies**  
Most recent values (2024)



# S25. Economic Complexity Index (ECI) Map



Source: Observatory of Economic Complexity (OEC)

Dr. Jean-Paul Rodrigue, Dept. of Maritime Business Administration, Texas A&M University

## 26. How do these indicators enter an empirical economic model?

- Three different roles:
  - as an explanatory variable (most common): the variable whose economic impact we want to estimate and interpret. For example, using LPI to explain export performance
  - as a control variable: it helps isolate the effect of the main explanatory variable. For example, including **LSCI** as a control when studying tariffs or trade agreements
  - as a channel variable linking infrastructure to trade or growth: used to uncover the mechanism through which an effect operates. For example, port infrastructure improves shipping connectivity, which in turn increases exports.

## 27. Empirical analysis using Economic Complexity Index (ECI)

- César Hidalgo & Ricardo Hausmann (2009) The Building Blocks of Economic Complexity, PNAS
- Research question: “Why do some countries grow faster than others, even when they have similar income levels?”
- Main empirical finding
  - Countries with higher ECI grow faster than predicted by income alone.
  - ECI has strong explanatory power even after controls.

## 28. Empirical analysis using Liner Shipping Connectivity Index (LSCI)

- Marco Fugazza & Jan Hoffmann (2017) Liner Shipping Connectivity as a Determinant of Trade, Maritime Economics & Logistics, Published with data from UNCTAD.
- **Research question:** “Does better maritime connectivity increase a country’s trade?”
- **Empirical setup:** Dependent variable: bilateral trade flows. Key variable: LSCI (exporter and/or importer). Controls: distance, GDP, common language, etc.
- Main results:
  - Higher LSCI is associated with: higher exports, higher imports, lower trade costs.
  - Connectivity matters independently of income and geography.

## 29. Ports as Innovation Platforms and Strategic Multipliers

- In advanced economies, port competitiveness depends not only on connectivity, but also on: innovation, knowledge networks, and strategic coordination.
- Modern ports increasingly function as: innovation platforms, business ecosystems, and strategic hubs within global supply chains.
- Through port clustering and cluster management, ports promote: knowledge exchange, cooperation among firms, logistics integration, and innovation spillovers.
- Key transition areas: digitalization and smart ports, energy transition and sustainability, resilience and security
- Strategic Importance of Ports
  - The value of ports extends beyond: direct employment, cargo volumes, and value-added statistics.
- Strategic and innovation effects can make the economic value of port systems much larger than conventional impact estimates suggest.

## 30. Key Takeaways

- **Ports are strategic economic assets**
  - Ports influence trade, logistics, and regional competitiveness
  - Their role extends beyond cargo handling and transport infrastructure
- **Ports reflect the structure of the economy**
  - Advanced economies are associated with: containerized trade, complex exports, and multifunctional port systems
  - Commodity-based economies rely more on bulk-oriented port activities
- **Connectivity and logistics matter**
  - Maritime connectivity and logistics performance reduce trade costs
  - Efficient port systems improve integration into global supply chains
  - Connectivity itself becomes a source of competitiveness
- **Modern ports are innovation ecosystems**
  - Ports increasingly support: digitalization, sustainability, innovation, and business clustering
  - Their strategic impact is often larger than traditional economic statistics suggest