Port Economics & Policy

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III.
Ports, Growth, Geopolitics and Maritime Supply Chains

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Themes

- The Ongoing Growth of International Trade
- Geopolitics and Trade
- Ports and Maritime Supply Chains

Reading list:

Chapter 1.1 – Ports, Maritime Shipping and International Trade

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

Chapter 1.2 – Ports and Maritime Supply Chains

https://porteconomicsmanagement.org/pemp/contents/part1/ports-and-maritime-supply-chains/

ONGOING GROWTH OF INTERNATIONAL TRADE

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1. The Expansion of International Trade

- World trade expanded dramatically after the 1950s
- International trade exceeded 50% of global GDP in 2007
- Trade-to-GDP ratio remained around 45%–52% afterwards
- Historical comparison:
  - 19th century: ~10%
  - First half of 20th century: ~20%–25%
- Main drivers of growth:
  - Income growth
  - Falling transport costs
  - Trade liberalization
  - Expansion of intermediate goods trade and global supply chains

Key Insight

- Globalization increased the interdependence between economies and intensified the strategic importance of ports and maritime transport.

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2. What Drove the Growth of Trade?

- Relative contribution to real trade growth (1958–1988)
  - Income growth: ~67%
  - Tariff reductions: ~26%
  - Transport cost reductions: ~8%

Different Roles Across Economies

Economy Type	Main Trade Characteristics
Low-income economies	Resource exports and low value-added goods
Middle-income economies	Manufacturing-oriented exports
High-income economies	Net importers of goods and services

Ports Perspective

•Different economies generate different port functions

•Export-oriented economies require: industrial ports, container terminals, logistics infrastructure

•Advanced economies depend heavily on: import gateways,distribution hubs, sophisticated logistics services

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3. Trade Expansion and Global Business Networks

Effects on Firms

- International trade encouraged firms to become multinational corporations through: Access to new markets, resources and production locations, economies of scale and increased competitiveness

Growth of Trade-Related Services

- Expansion of international trade increased demand for: carriers and shipping companies, terminal operators, freight forwarders, Third-party logistics providers (3PL) and cargo owners and insurers
- **Maritime transport** handles approximately:
  - 80% of world trade volume
  - 70% of world trade value
- Ports became strategic platforms connecting: production, transportation, logistics, and global supply chains.

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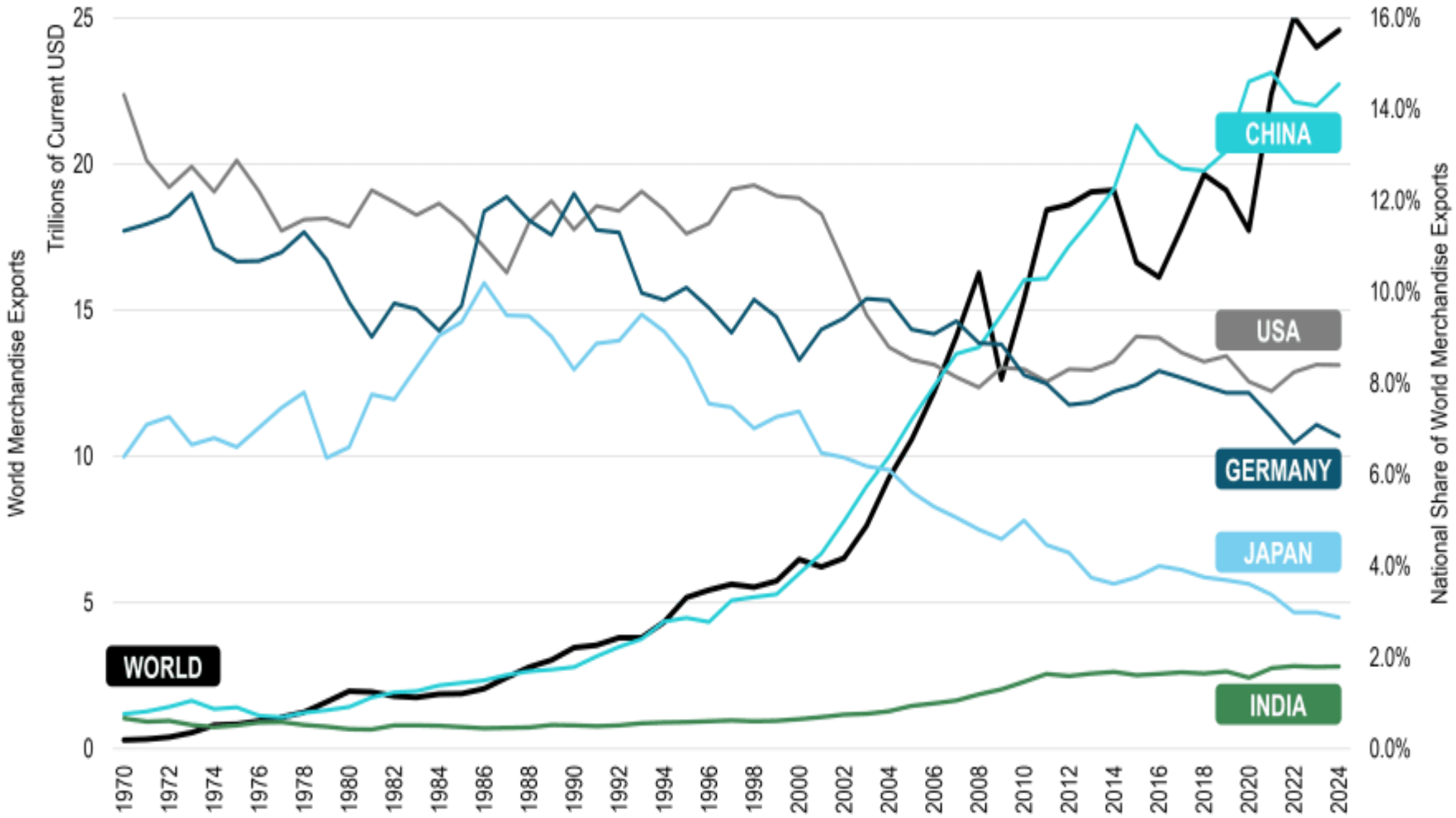
4. Merchandise Exports, World and Selected Countries 1970-2024



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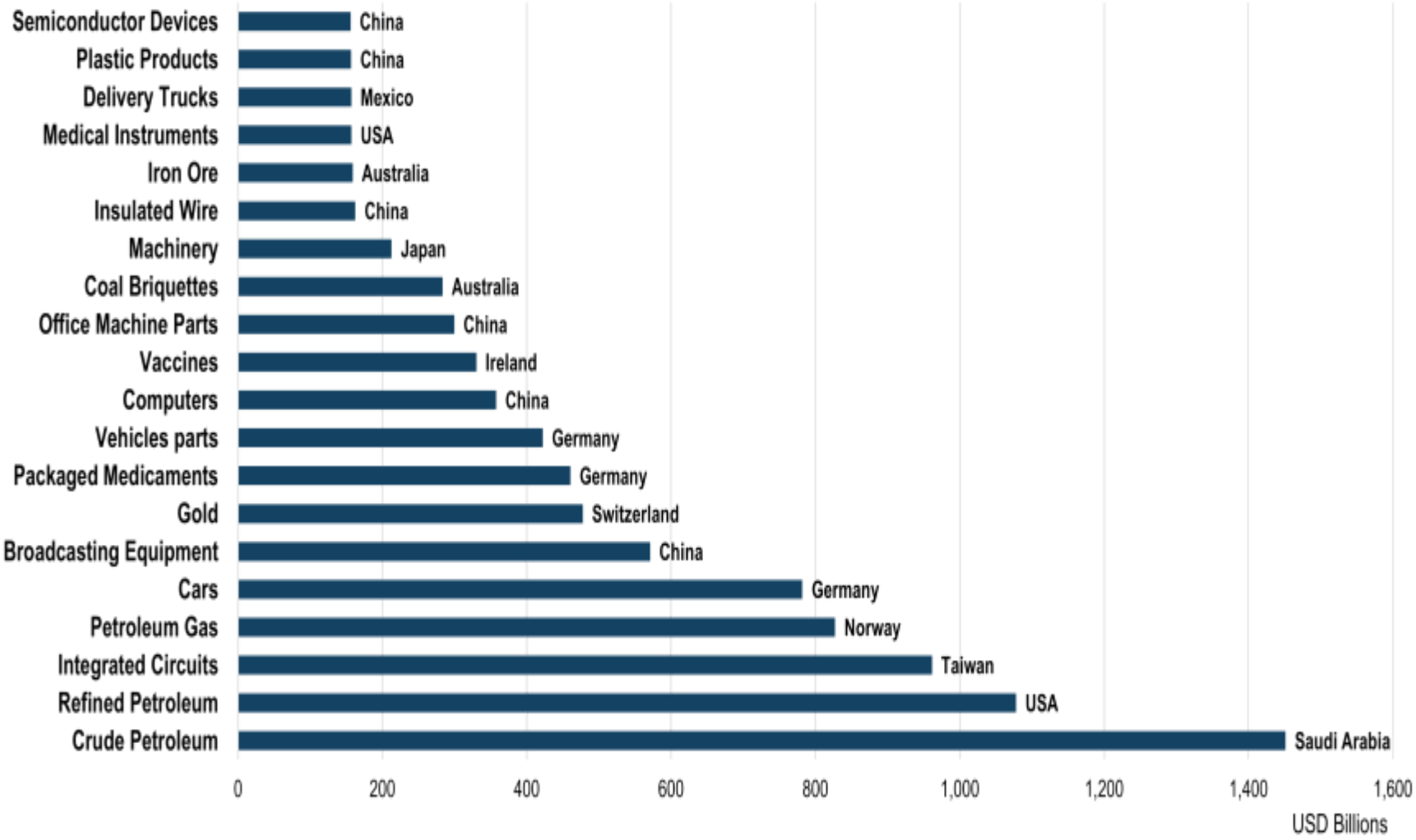
5. World's Most Traded Goods and Lead Exporter, 2022



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GEOPOLITICS AND TRADE

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6. Geopolitics and the Transformation of Global Trade

- Geopolitics examines how: geography, territory, resources, and spatial constraints influence political and economic decisions.

Classical Geopolitics	Contemporary Geopolitics
State-centered	Multiple actors involved
Focus on territorial control	Focus on trade, logistics, supply chains
Military and political rivalry	Economic security and strategic industries

- Contemporary Geopolitical Actors: states and governments, multinational corporations, port operators, logistics firms, NGOs and international organizations
- Ports are strategic geopolitical assets because they: connect global trade flows, secure access to resources, support industrial production, and influence economic sovereignty.

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7. From Globalization to Fragmentation?

- Post 2008–09 Financial Crisis the consensus supporting globalization weakened because: benefits and costs became unevenly distributed, economic inequalities increased, dependence on foreign suppliers created vulnerabilities.
- Countries increasingly prioritize: national sovereignty, economic security, domestic production, supply chain resilience.

Emerging Production Strategies

Strategy	Meaning
Onshoring	Bringing production back home
Nearshoring	Moving production to nearby countries
Friendshoring	Trading with geopolitically aligned countries

Key Drivers: U.S.–China tensions, trade wars and tariffs, COVID-19 disruptions Energy and semiconductor security concerns

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8. Trade Decoupling and Strategic Autonomy

- **Trade Decoupling**: Countries reduce dependence on geopolitical rivals.
  - Most sensitive sectors: energy, semiconductors, rare earth minerals, pharmaceuticals, military technologies.
- **Strategic Autonomy**
  - Goal: maintain independent decision-making capacity and reduce external vulnerabilities
  - Policies include: diversification of suppliers, development of domestic industries, inventory expansion, resilient supply chains.
- **Limits of Full Decoupling**

  Complete separation from China is extremely difficult because:
  - supply chains are deeply interconnected
  - Asia dominates manufacturing ecosystems,
  - production networks remain regionally concentrated.

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9. Ports in a Multipolar World

Emerging Trends

- Rise of geopolitical competition
- Expansion of state-owned port operators
- Increased defense and infrastructure spending
- Greater scrutiny of strategic ports and terminals

Asian economies remain:

- leading manufacturing hubs,
- central actors in maritime trade,
- highly connected through liner shipping networks.
- Future Dynamic Regions: Asia, Africa

Key Implication

- Even with geopolitical fragmentation, maritime trade is expected to continue growing, ports will remain strategic economic and geopolitical infrastructures.

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GROWING COMPLEXITY IN SUPPLY CHAIN MANAGEMENT

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10. Supply Chain Management and Ports

Supply Chain Management (SCM)

- Coordination of activities from production to final delivery
- Includes: sourcing and manufacturing, storage and inventory, transportation and distribution, order tracking and customer delivery

Ports in Global Supply Chains

- Ports connect: global production networks, regional markets, inland transport systems. Support: trade flows, intermodal transport, logistics and distribution activities.

Challenges in Modern Supply Chains

- Need for: lower costs, faster and reliable deliveries, resilience to disruptions
- Traditional logistics services face increasing competition and lower margins

Main Drivers of SCM: Globalization, Technology, Customer expectations,,Regulation and sustainability, Competition

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11. Customer Expectations and Supply Chain Transformation

Evolving Customer Expectations

- Demand for: higher flexibility, faster delivery, reliability and precision, lower logistics costs
- Growth of: customized and make-to-order products, smaller shipment sizes, more frequent deliveries

Implications for Supply Chains and Ports

- Shorter: product life cycles, lead times, supply chain cycles
- Firms compete through: innovation, speed to market, supply chain efficiency
- Ports must support: fast cargo handling, reliable logistics services, supply chain integration

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12. Logistics Performance and Skills Challenges

Measuring Supply Chain Performance

- Customer expectations evaluated through indicators such as: Logistics Performance Index (LPI)
- Key dimensions: efficiency, reliability, infrastructure, shipment tracking, delivery performance

Skills Shortages in Logistics and Ports

- Growing need for: digital skills, logistics coordination, advanced supply chain management
- Challenges: labor shortages, training requirements, competition for talent
- Ports and logistics firms face difficulties attracting skilled workers

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13. Globalization and the Transformation of Supply Chains

Globalization as a Driver of Change

- Globalization transformed: trade patterns, production systems, logistics, networksport activities

From Supply-Driven to Demand-Driven Economies

- Traditional Supply-Driven Model
  - Mass production
  - Standardized products
  - Economies of scale
  - Focus on production efficiency
- Demand-Driven Model
  - Diverse consumer preferences
  - Product differentiation
  - Flexibility and responsiveness
  - Global production networks

Implications for Ports

- Higher cargo flows and trade integration
- Greater supply chain complexity
- Increased importance of logistics efficiency and connectivity

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14. MNEs and Global Production Networks

The Role of Multinational Enterprises (MNEs)

- MNEs are major drivers of globalization
- Shift from: ownership of production facilities,vertically integrated structures
- Toward: branding and innovation, outsourcing production, global supplier networks

Global Supply Chain Organization

- Long-term partnerships with logistics providers
- Flexible multi-firm global structures
- Global sourcing of inputs and components

Geographic Patterns of Globalization

- Production and sourcing: globally dispersed
- Sales and markets: mainly regional, concentrated in:North America,European Union,Asia

Implications for Shipping and Ports

- Increased maritime transport demand
- More complex shipping and logistics requirements
- Greater importance of hub ports and regional gateways

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15. Technological Innovation in Supply Chains

Technological Innovation in Supply Chains

- Use of: data analytics, digital visibility systems, data-driven decision making
- Adoption of: standardized practices, digitalized logistics operations

Digitalization and Supply Chain Integration

- Greater synchronization between: physical flows,digital processes
- Focus on: operational efficiency, lower transport costs, environmental sustainability

Emerging Technologies and Logistics Transformation

- Growth of: additive manufacturing (3D printing), postponed manufacturing, regionalized production systems
- Logistics providers increasingly combine: transport storage, distribution, production-related services

Implications for Ports

- Smart ports and digital platforms become increasingly important
- Ports evolve into integrated logistics and information hubs

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16. Regulation, Competition, and the Restructuring of Global Supply Chains

Shifting Global Production Patterns

- Rising costs in China affect manufacturing competitiveness
- Emergence of the:“China +1” strategy
- Firms diversify production toward other regions

Drivers of Supply Chain Relocation

- Manufacturing risks and responsiveness
- Import duties and trade regulations
- Labor availability and energy costs
- Automation and technological change

Implications for Ports and Shipping

- Reconfiguration of trade routes and cargo flows
- Growth of regional production networks
- Increased importance of flexible and resilient logistics systems

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17. Collaboration, Consolidation, and Supply Chain Resilience

Collaboration and Consolidation in Logistics

- Greater cooperation between: transport firms, logistics providers, supply chain partners
- Growth of: outsourcing, digital collaboration platforms, advanced ICT systems

Supply Chain Resilience and Security

- Increasing focus on: supply security, resilience to disruptions, redundancy in supply chains
- Greater: data sharing, supply chain visibility,coordination among stakeholders

Implications for Ports

- Ports become integrated coordination hubs
- Importance of: digital connectivity, information sharing, operational resilience

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18. Sustainability and Green Supply Chain Management (GSCM)

Sustainability in Supply Chains and Ports

- Increasing environmental pressure from:regulations, climate concerns, changing consumer behavior
- Supply chains and ports adopt: greener logistics solutions, more sustainable operations

Green Supply Chain Management (GSCM)

- Integration of environmental concerns into SCM practices
- Focus on reducing environmental impacts across: production, procurement, transportation, logistics operations

The Five "Rs" of GSCM

- Reduce, Re-use
- Recycle
- Remanufacture
- Reverse logistics

Implications for Ports

- Development of green corridors and logistics hubs
- Ports increasingly support sustainable transport networks

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19. Circular Economy and Logistics

Circular Economy and Logistics

- Circular economy aims to: minimize waste, extend product life cycles, maximize resource efficiency
- Requires: integrated supply chain coordination, transparency and information sharing

Role of Logistics and Shipping

- Logistics enables: material recovery, recycling flows, reverse logistics systems, circular supply chain integration

New Challenges and Opportunities for Ports

- Ports evolve into: sustainability hubs, circular logistics platforms, integrated coordination centers
- Greater collaboration among: ports, logistics providers, industries, governments

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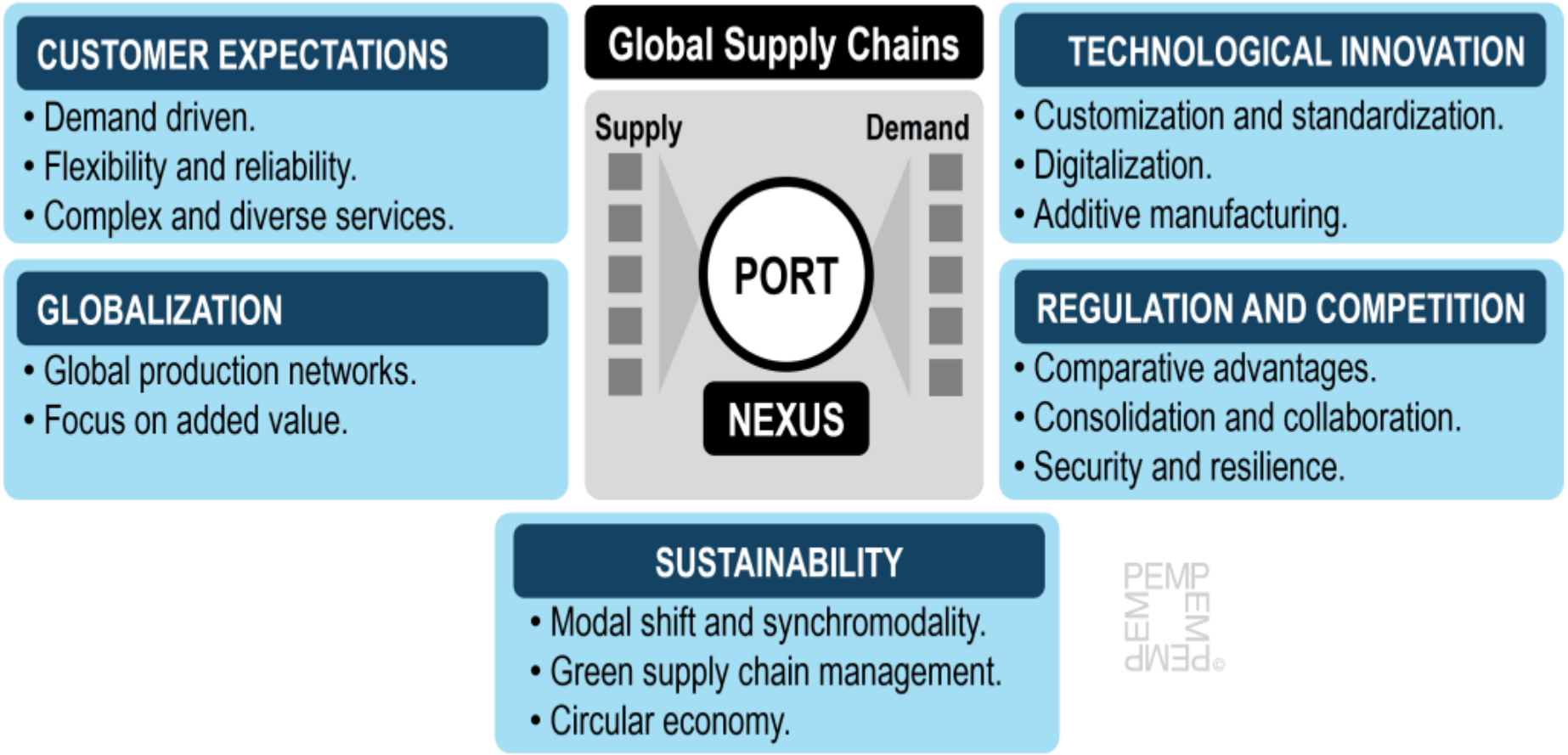
20. The Port as a Nexus in Global Supply Chains



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IMPROVING COMPETITIVENESS

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21. Operating Margins and Cost Pressures in Logistics

Low-Margin Logistics Market

- Logistics markets often operate with: low profit margins, intense price competition
- Market structure resembles a: buyers' market
- Shippers and cargo owners possess: stronger bargaining power, influence over pricing

Sources of Cost Pressure

- Transportation costs, Labor costs, Storage and inventory costs, Administrative costs, Fuel and resource price volatility
- Delays from: regulations, weather, technical disruptions,

Implications for Ports and Logistics Firms

- Strong emphasis on: cost control, operational efficiency, productivity improvements

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22. Main Cost Control Strategies

Operational Efficiency: optimal asset utilization consolidated shipments and cargo bundling, economies of scale and scope

Digitalization and Visibility: integrated IT platforms, supply chain visibility, real-time dashboards and data monitoring

Labor and Automation: labor Management Software and KPIs, asset and process automation, automated warehouse and yard operations

Implications for Ports: higher terminal productivity, faster cargo flows, lower operational costs, improved service reliability

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23. Organizational Strategies in Logistics

Outsourcing

- External providers manage logistics functions
- Potential benefits: lower costs, greater flexibility

Vertical Integration

- Firms expand control across supply chain activities
- Potential benefits: higher margins, stronger coordination

Collaboration and Partnerships

- Cooperation with suppliers and logistics partners
- Focus on: comparative advantages, shared efficiencies, cost reduction

Risks and Challenges

- Dependence on external providers
- Loss of control over strategic activities
- Data-sharing and coordination complexities

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24. Competitive Strategies in Logistics and Port Industries

Strategic Approaches to Competitiveness

- Logistics firms compete through: cost leadership, differentiation strategies

Cost Leadership Strategy

- Competitive advantage through: lower operating costs, lower service prices
- Requires: efficient operations, economies of scale, strong cost control

Differentiation Strategy

- Competitive advantage through: unique services, higher added value, specialized market niches
- Focus on: customer needs, innovation, service quality

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25. Sources of Competitive Advantage and Differentiation

Sources of Cost Advantages

- Economies of scale and scope, Operational experience , Market and buying power, Outsourcing lower-value activities , Efficient asset utilization

Forms of Differentiation

Service Differentiation

- Customized and integrated services
- Innovation and R&D

Marketing Differentiation

- Brand reputation
- Customer relationships

Competency-Based Differentiation

- Specialized capabilities difficult to imitate
- Organizational knowledge and expertise

Implications for Ports

- Ports increasingly compete through: logistics integration, reliability, digital services, tailored customer solutions

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26. Customer Loyalty, Hybrid Strategies, and Long-Term Competitiveness

Differentiation and Customer Loyalty

- Tailor-made services increase: customer dependence, switching costs, long-term relationships
- Integrated logistics services strengthen: customer retention, competitive position

Strategic Choices

- **Broad Differentiation:** Competing across wider markets
- **Focused Differentiation:** Specialized niche markets
- **Hybrid Strategies**
- Combination of: competitive pricing, differentiating features

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27. Outsourcing and the Evolution of Logistics Services

Outsourcing in Supply Chain Management

- Firms outsource logistics functions to: reduce costs, increase flexibility , focus on core activities
- Fixed costs → variable costs

Main Forms of Outsourcing

Production Outsourcing

- Global and local sourcing networks
- Long-term supplier partnerships

Value-Added Logistics (VAL)

- Integration of production and distribution
- Logistics providers perform: assembly, testing, software installation

Logistics Outsourcing

- Transportation
- Warehousing
- Distribution services

Supply Chain Re-engineering

- Collaborative planning and coordination
- Integration with logistics partners

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28. Third-Party Logistics (3PL) Services

What is a 3PL?

- Third-Party Logistics (3PL): asset-based logistics provider, offers logistics and SCM services

Typical 3PL Assets

- Warehouses and distribution centers
- Trucks, vessels, and transport equipment
- Logistics infrastructure and networks

Services Provided by 3PLs

- Transportation
- Warehousing
- Distribution
- Inventory management
- Integrated logistics solutions

Drivers of 3PL Growth

- Increasing customer demands
- Global supply chain complexity
- Need for integrated logistics services

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29. Fourth-Party Logistics (4PL) and Supply Chain Integration

What is a 4PL?

- Fourth-Party Logistics (4PL): supply chain integrator, coordinates logistics networks and partners
- Focus on: IT systems, supply chain design, coordination and optimization

3PL vs 4PL

3PL

- Asset-based
- Owns transport and warehousing infrastructure

4PL

- Non-asset-based
- Manages and integrates service providers

Strategic Trends

- Digitalization and IT integration
- Full-service logistics solutions
- Firms often keep strategic supply chain control in-house

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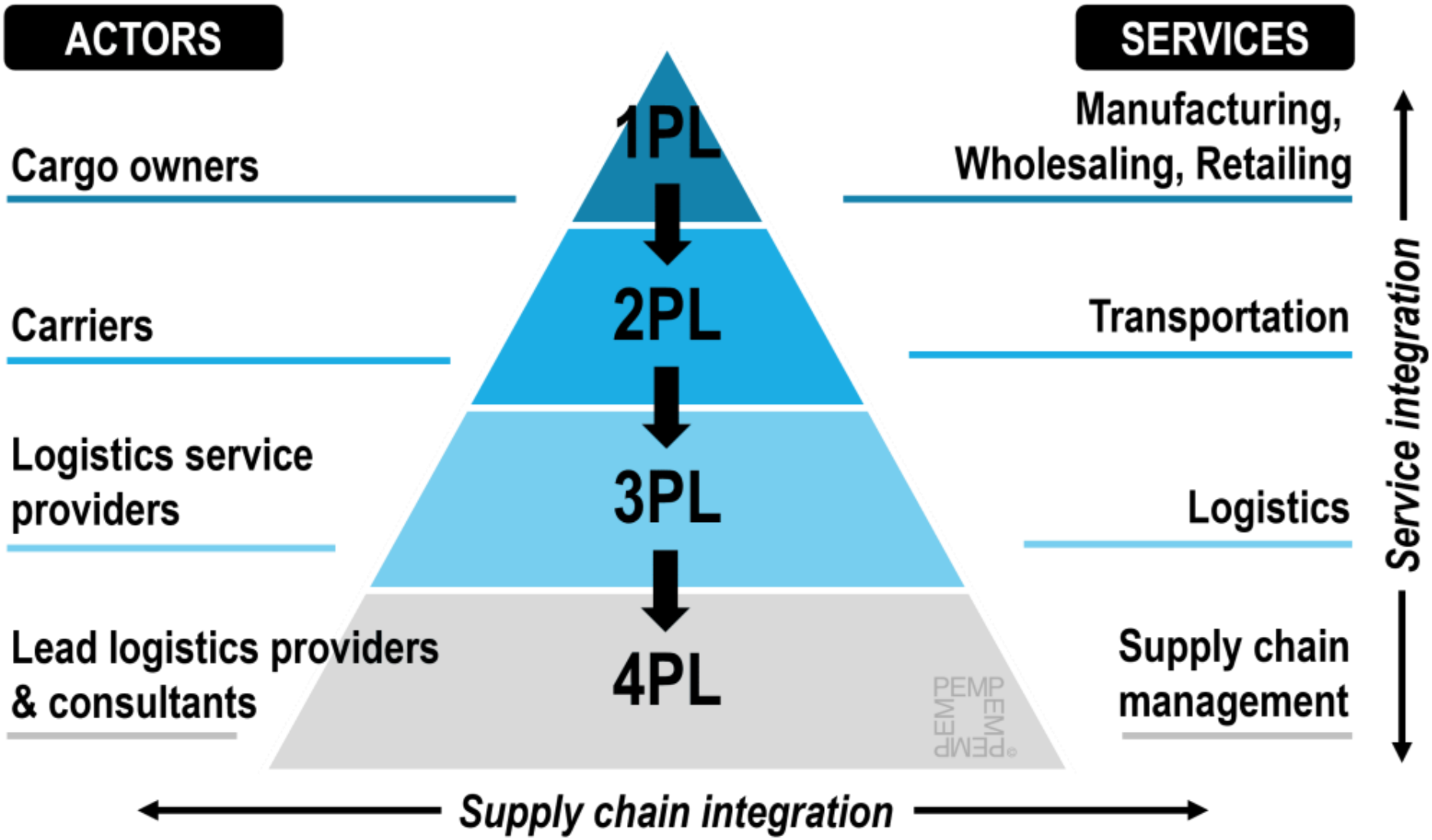
30. Layers to Maritime Logistics Services



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