

Global Trends in Supply Chains and Port Performance

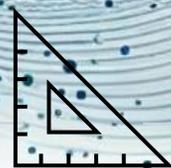
Jan Hoffmann, Global Lead Maritime Transport and Ports
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Transport Global Department



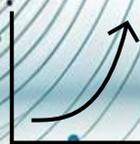
Global Trends in Supply Chains and Port Performance



Global Trends



Measuring Port Performance



Improving Port Performance

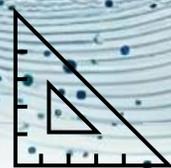


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The long term: Global Trends



**Global
Trends**



**Measuring Port
Performance**



**Improving Port
Performance**



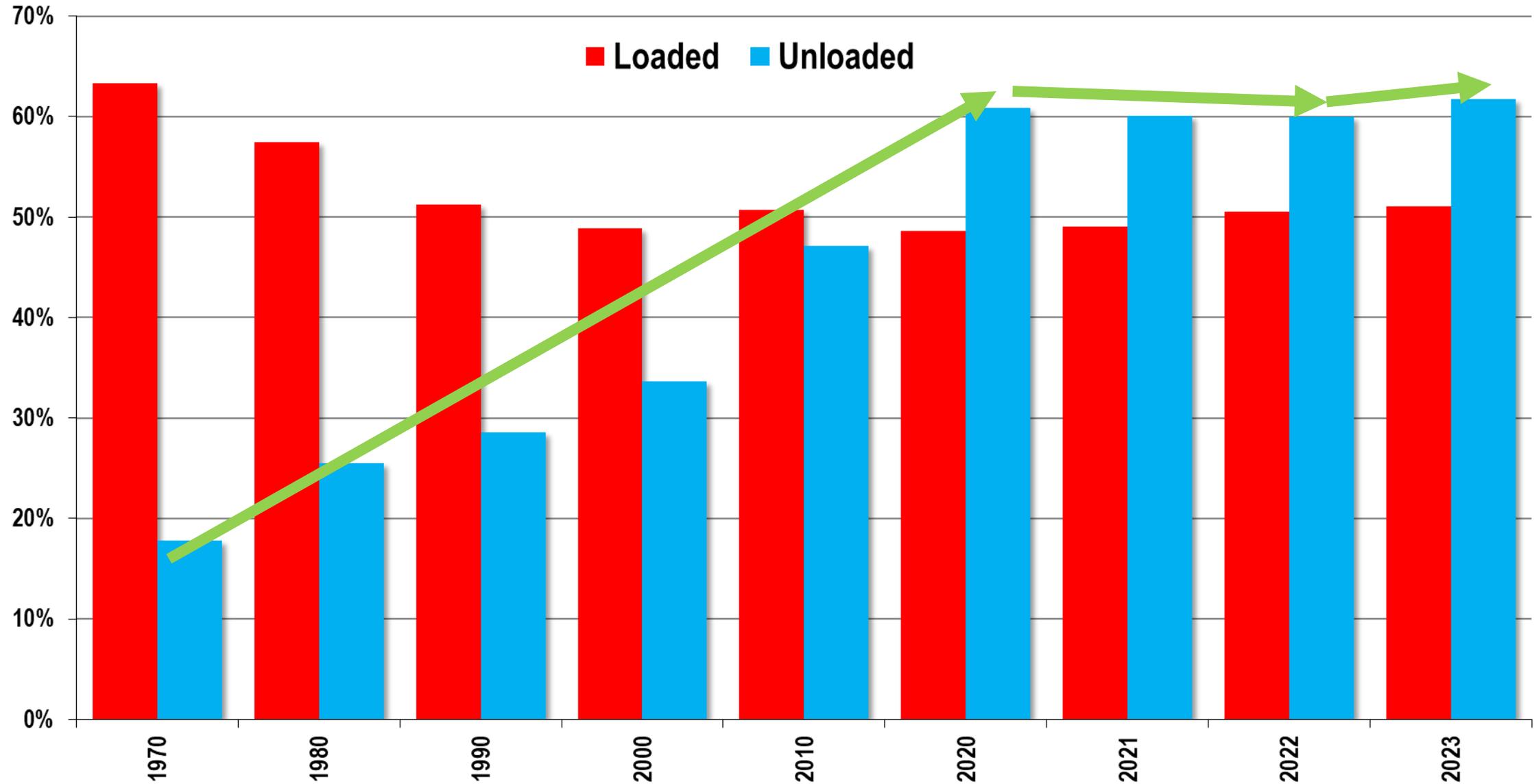
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SCFI (Shanghai Comprehensive Container Freight Rate Index)



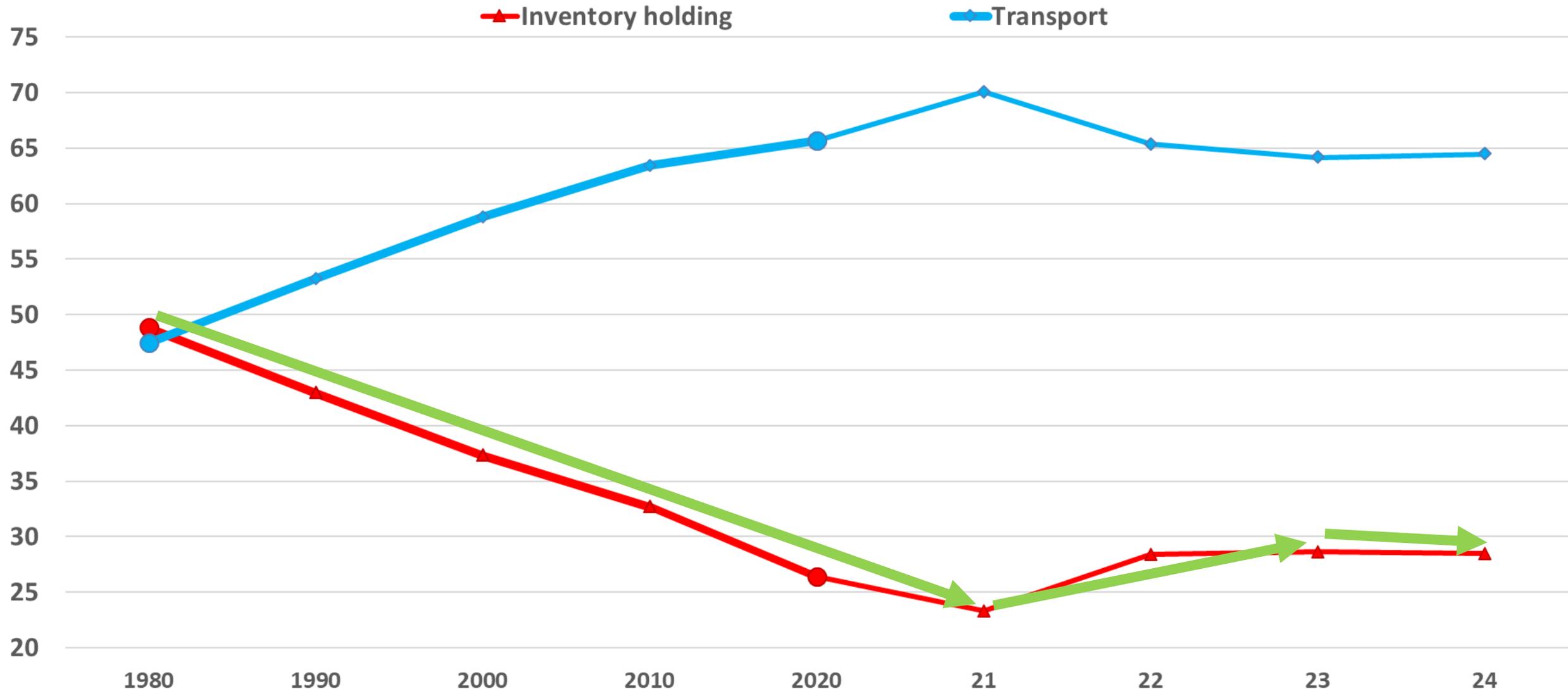
Source: JH, based on data from Clarksons SIN

Seaborne trade: share of developing countries, Tonnes



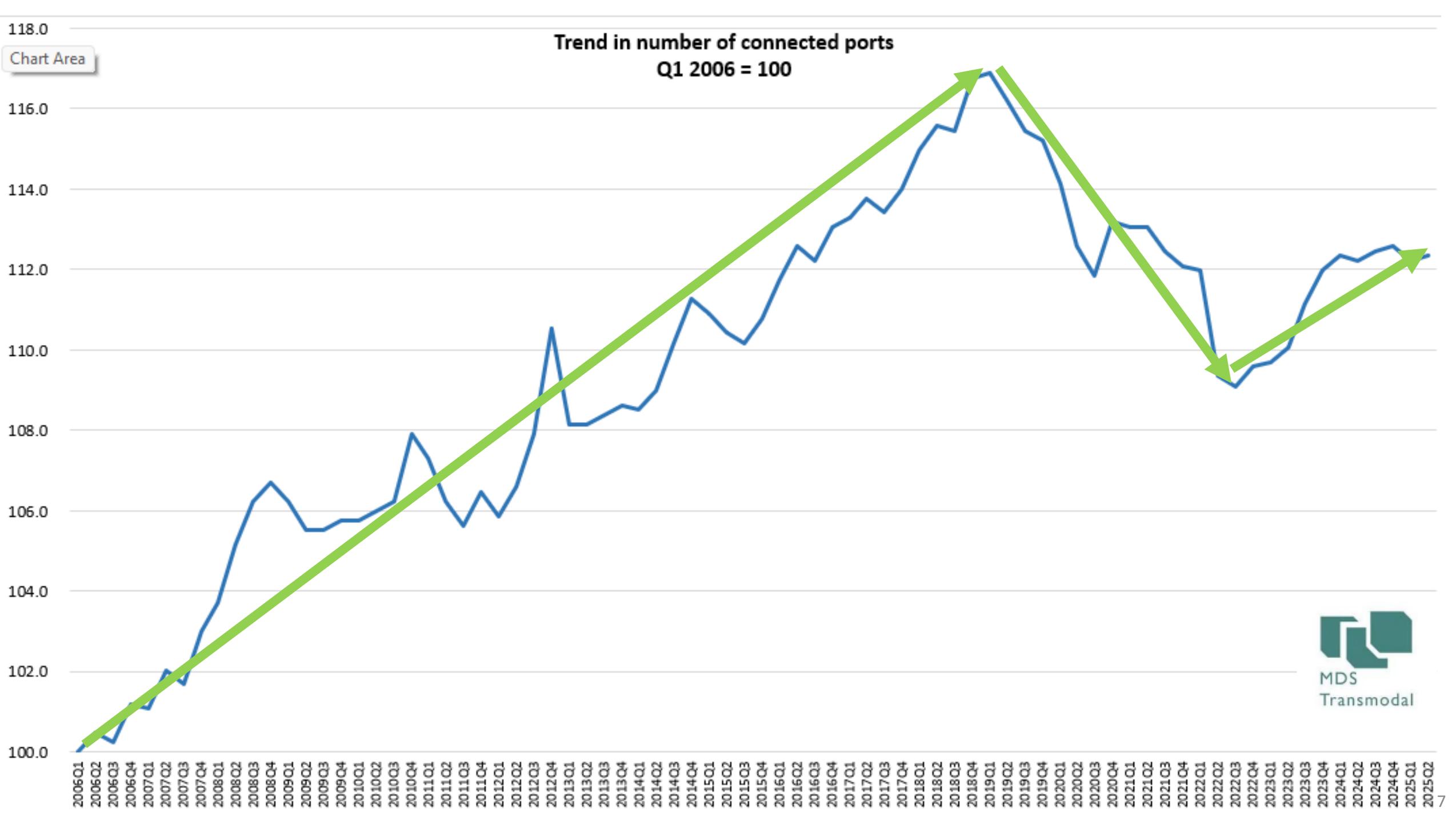
Source: JH based on *UNCTADSTAT*. Note: “developing countries” as of 1970

Share of transport and inventory holding expenditures within total logistics expenditures in the United States



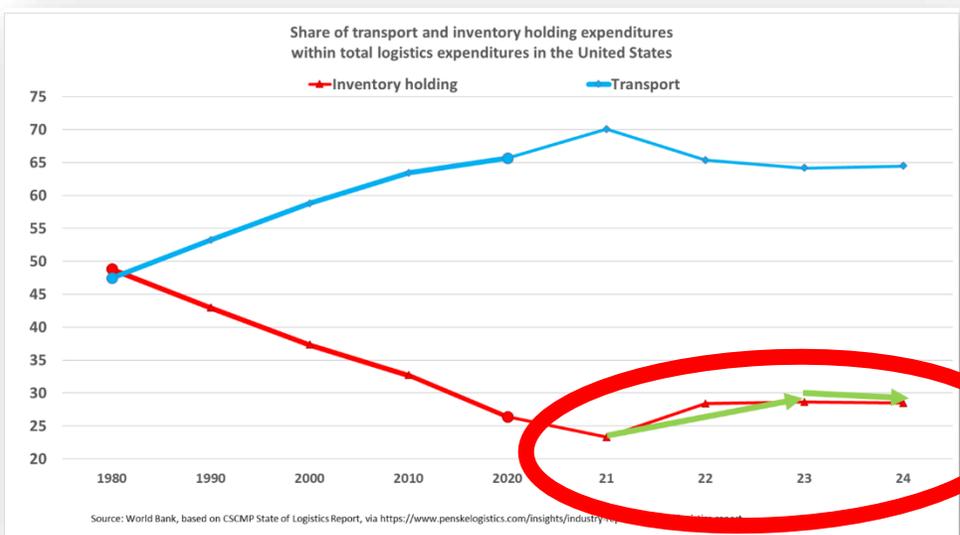
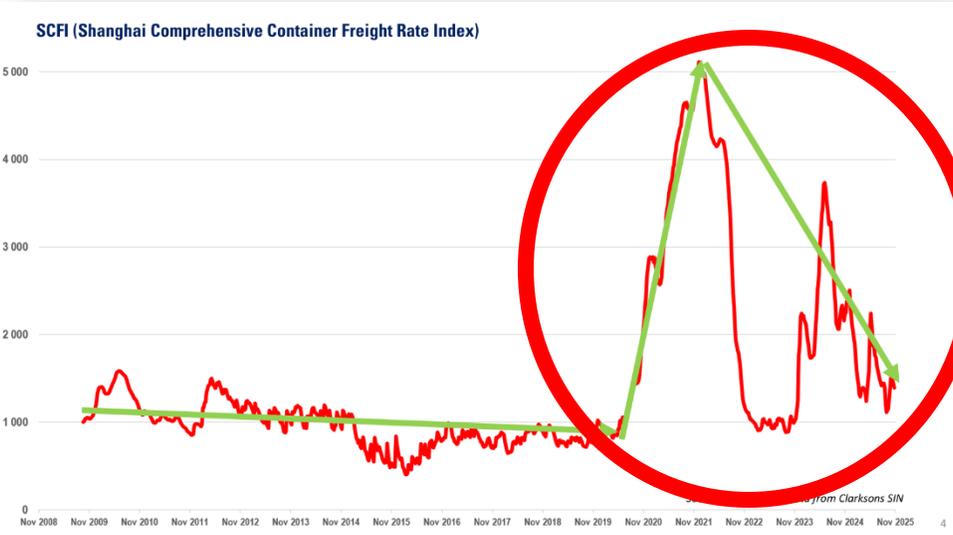
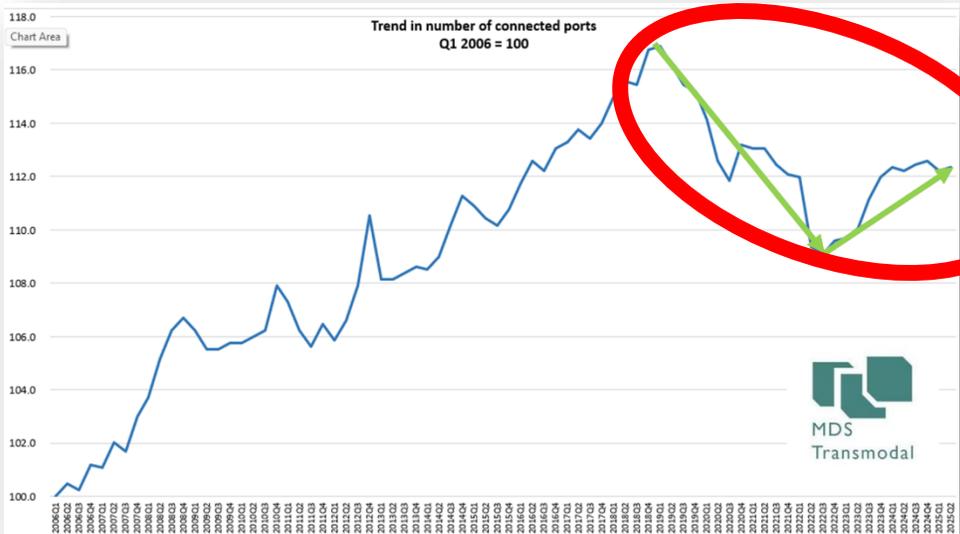
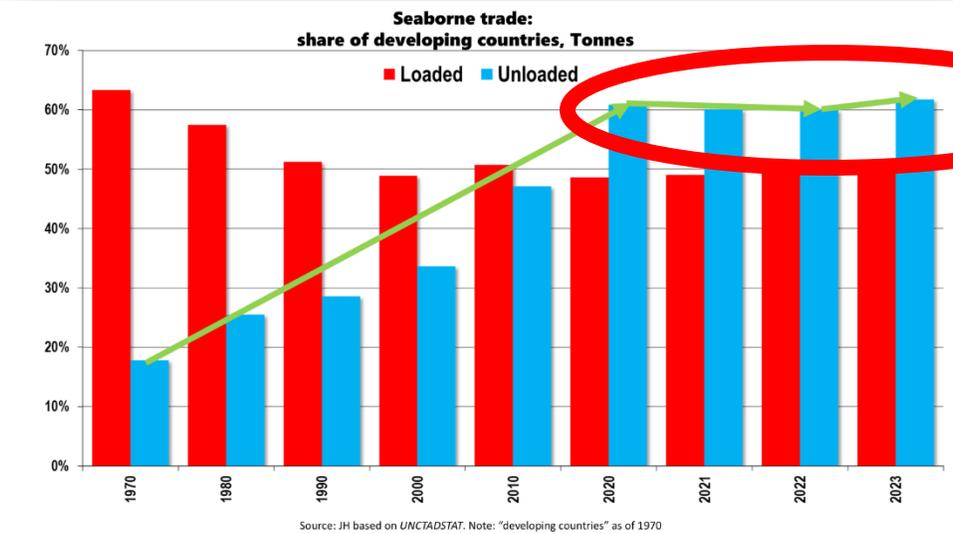
Source: World Bank, based on CSCMP State of Logistics Report, via <https://www.penskelogistics.com/insights/industry-reports/state-of-logistics-report>

Trend in number of connected ports
Q1 2006 = 100



Zooming in on Ports

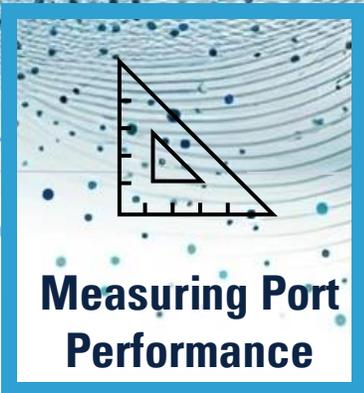
The CPPI covers the five years of global supply chain interruptions



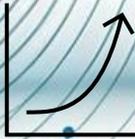
CPPI: Measuring Port Performance



Global Trends



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Port Performance (Time in port)

- Impacts *on* supply chains
- Is impacted *by* supply chain disruptions

Time in port

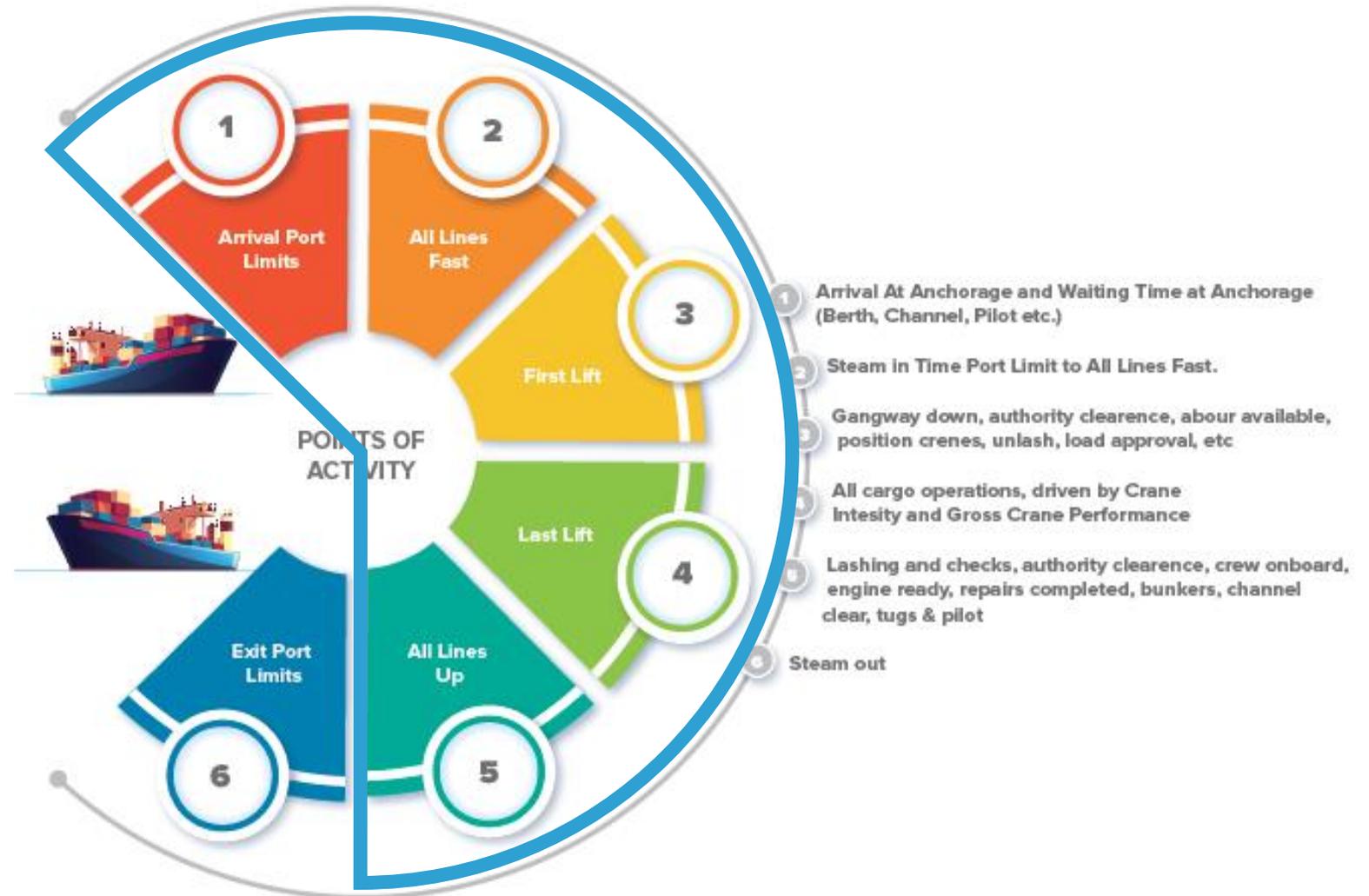
(of ships and of the cargo on the ships)
makes a difference:

- Costs for carriers
- Costs for shippers
- Consumer prices
- Global supply chain resilience
- Trade-driven development

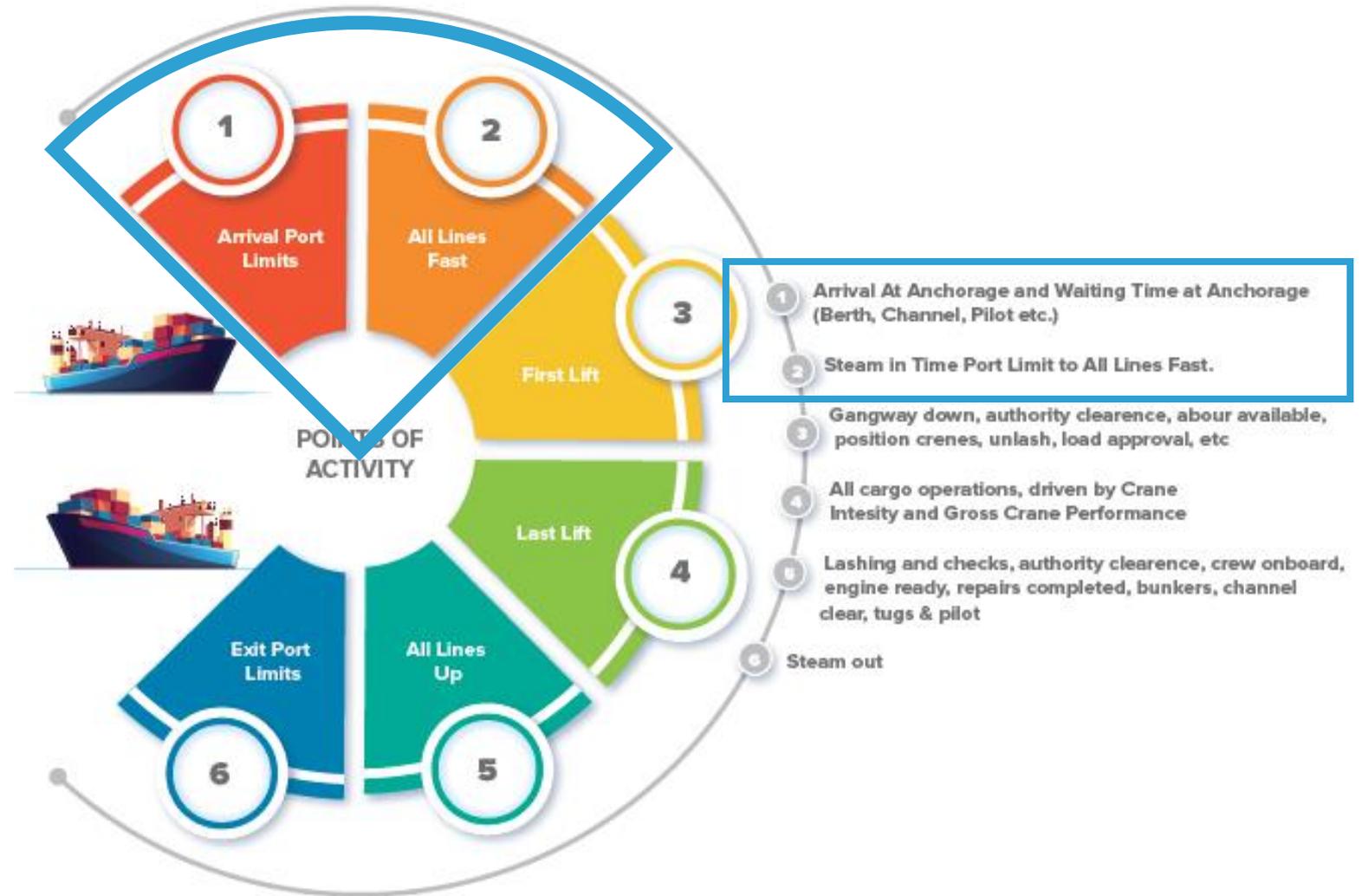
CPPI data combines

- Time in port of ships and cargo on ships.
Source: AIS

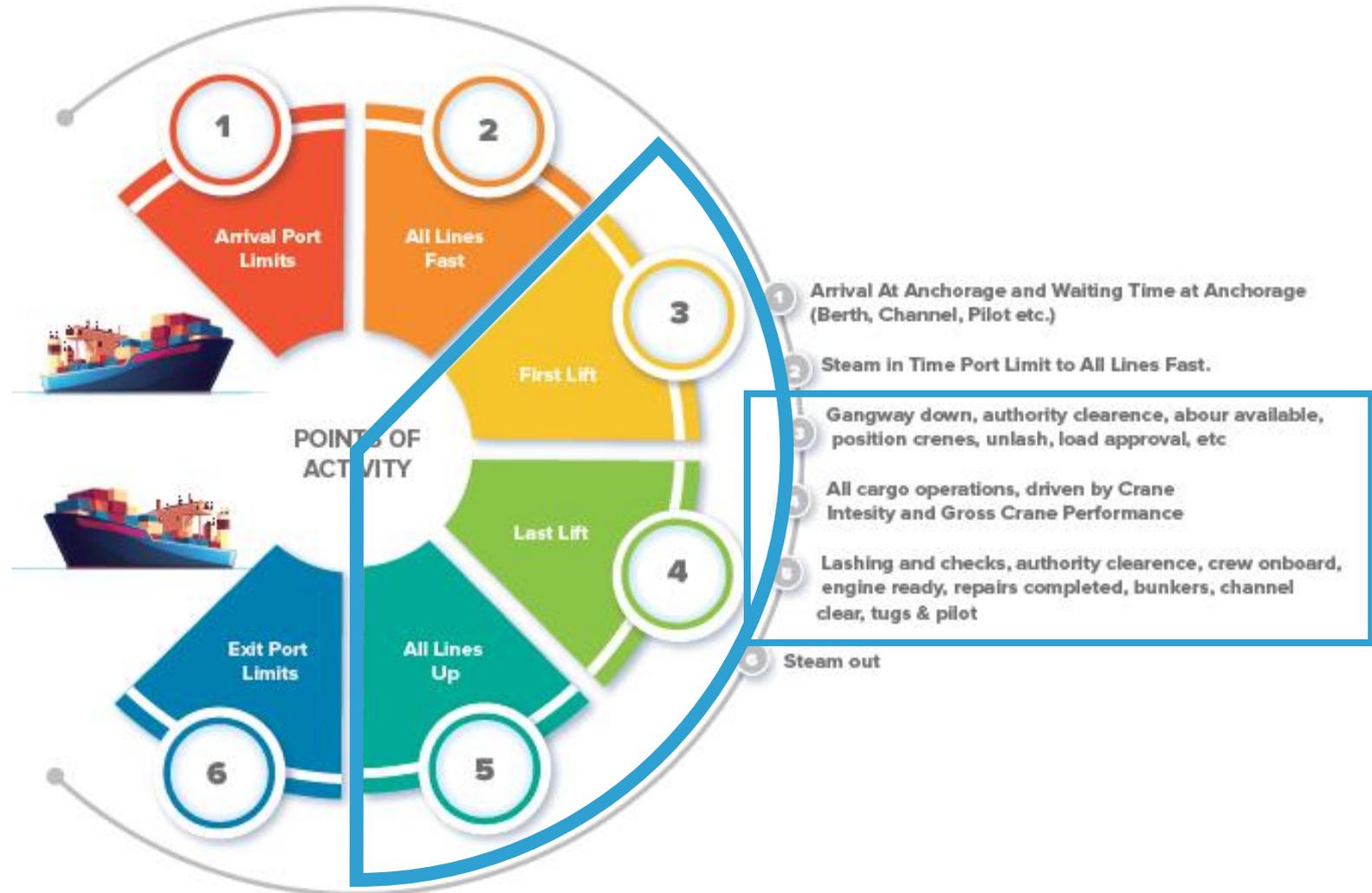
- Container moves
Source: Carriers



Time at anchor and arrival



Time at berth



The Container Port Performance Index 2020 to 2024

Trends and lessons learned

Global Trends

1

Developments
in the CPPI
in Different
Regions and
Countries

2

Components
of Port
Performance

3

Improving Port
Performance

4

Rationale and
Methodology of
the Container
Port Performance
Index

5

Average CPPI

5 year trend



Figure E.1 The global average CPPI, 2020 to 2024

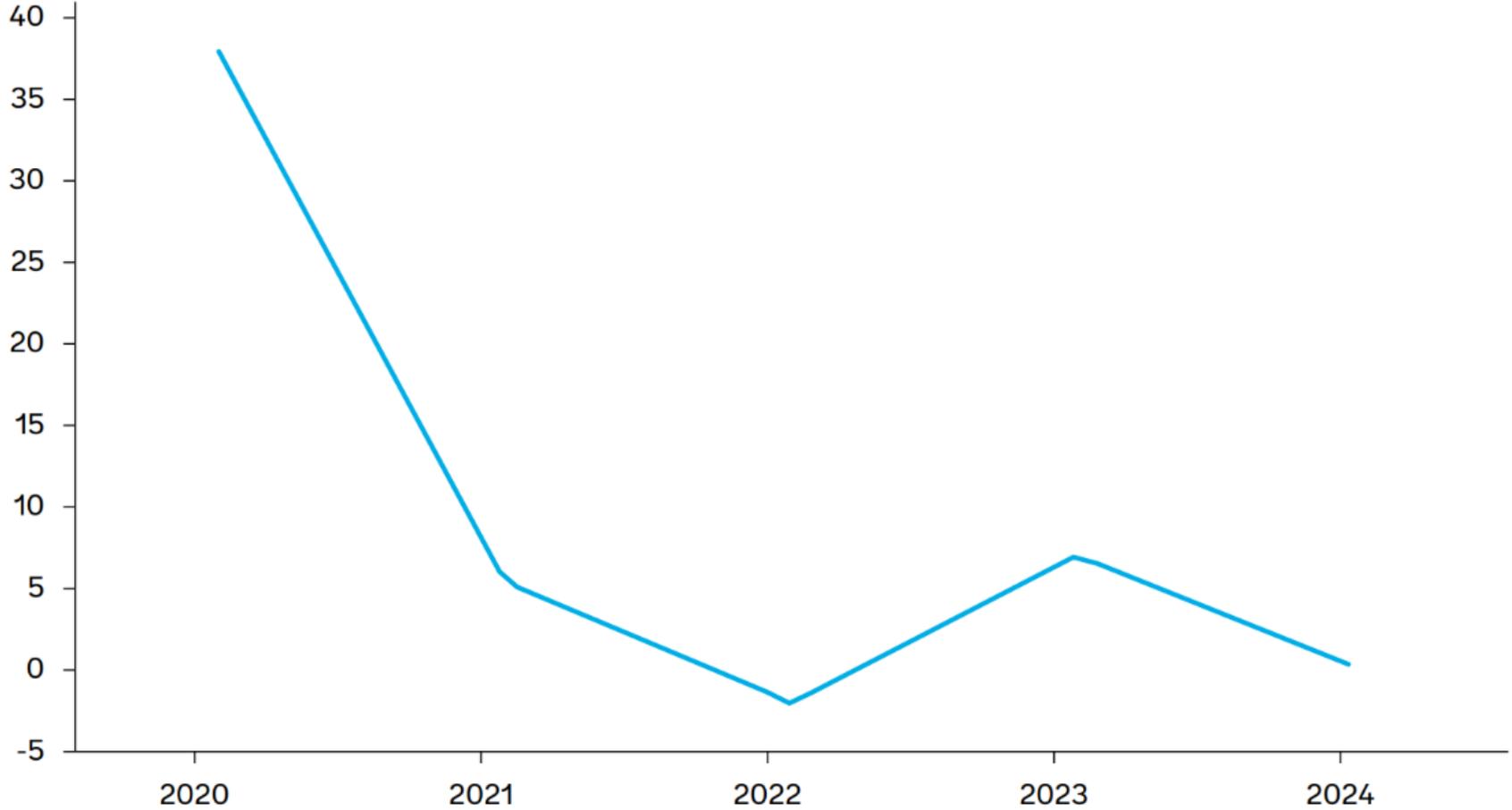
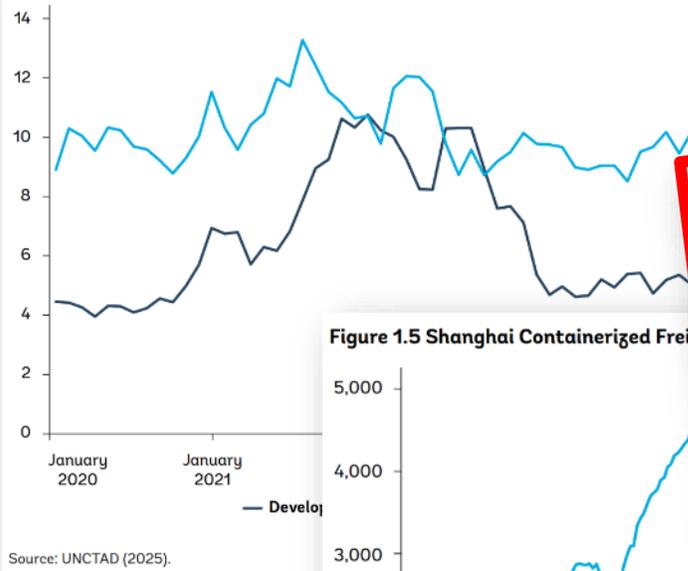
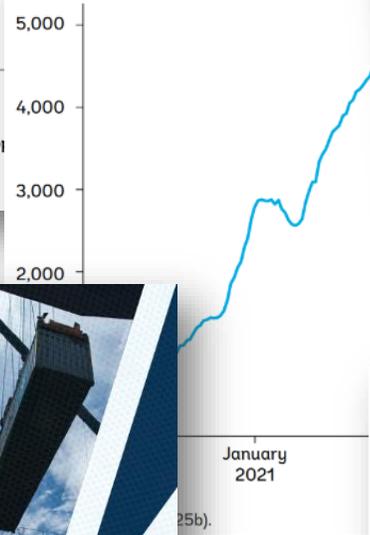


Figure 1.4 Time in port in hours, container ships, 2020 to 2024



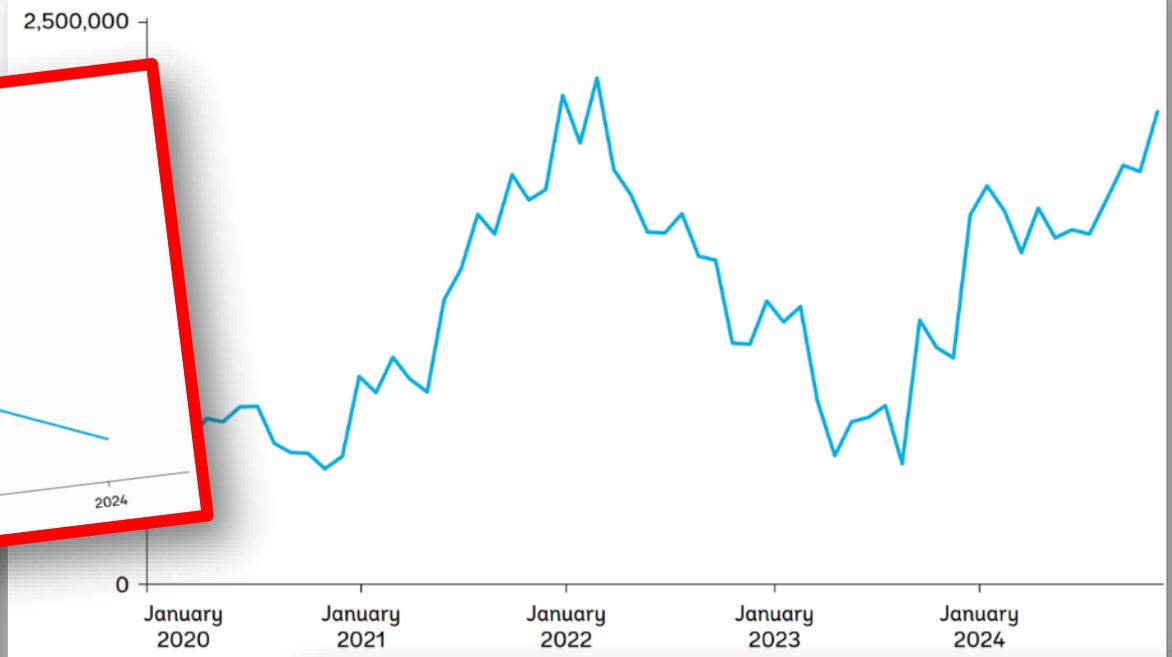
Source: UNCTAD (2025).

Figure 1.5 Shanghai Containerized Freight



Source: UNCTAD (2025).

Figure 1.1 Global Supply Chain Stress Index (GSCSI), January 2020 to December 2024, TEU



Source: World Bank (2025a).

Figure E.1 The global average CPPI, 2020 to 2024

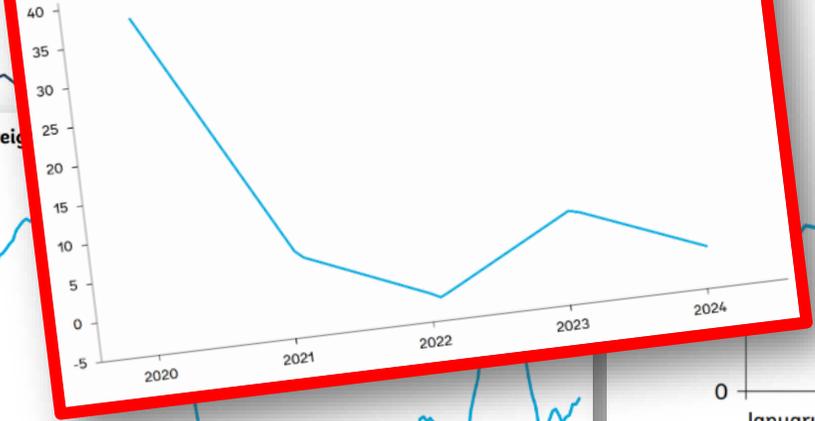
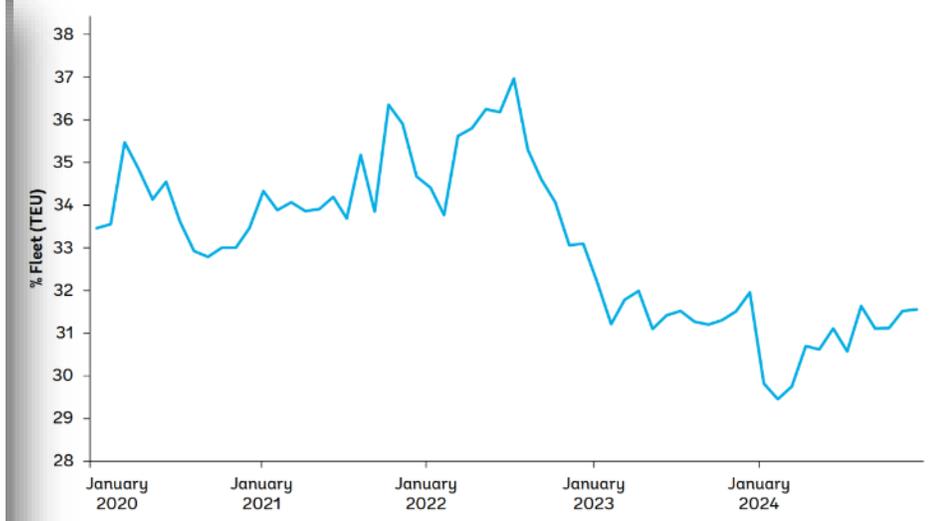


Figure 1.2 Clarkson's Port Congestion Index (PCI), Containerships in Port, percent of fleet capacity, January 2020 to December 2024



Source: Clarksons (2025a).

Figure 1.3 Global Supply Chain Pressure Index (GSCPI), 2020 to 2024



Source: Federal Reserve Bank of New York (2025).



Figure 2.1 CPPI averages by World Bank region, 2020 to 2024

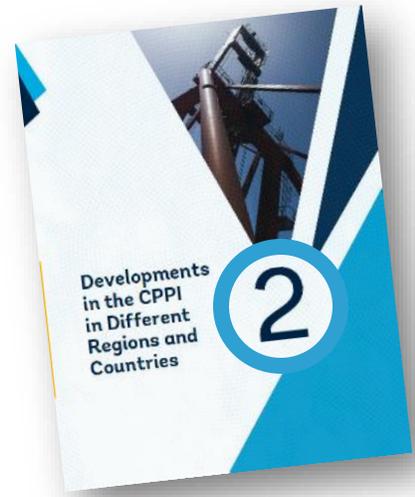
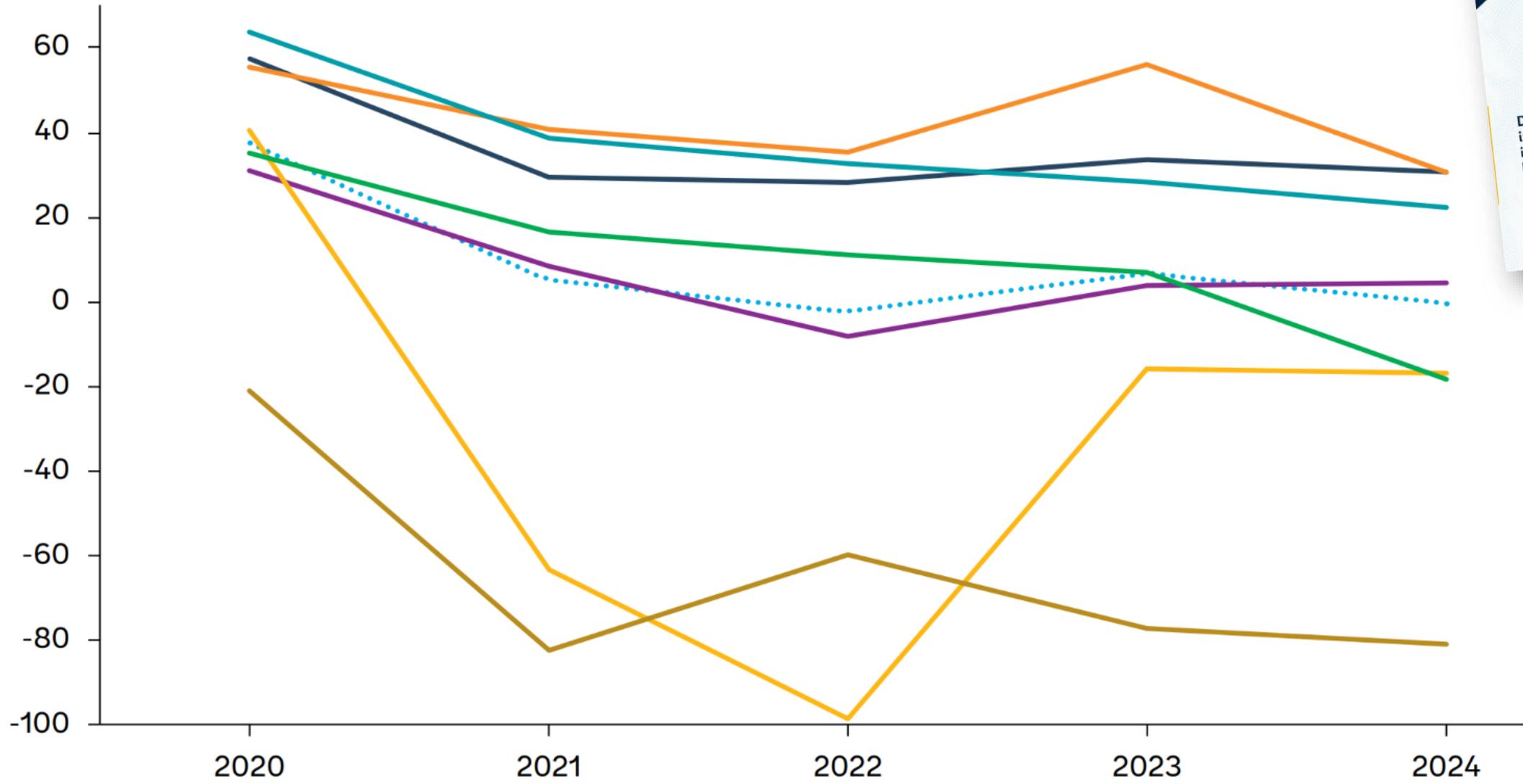
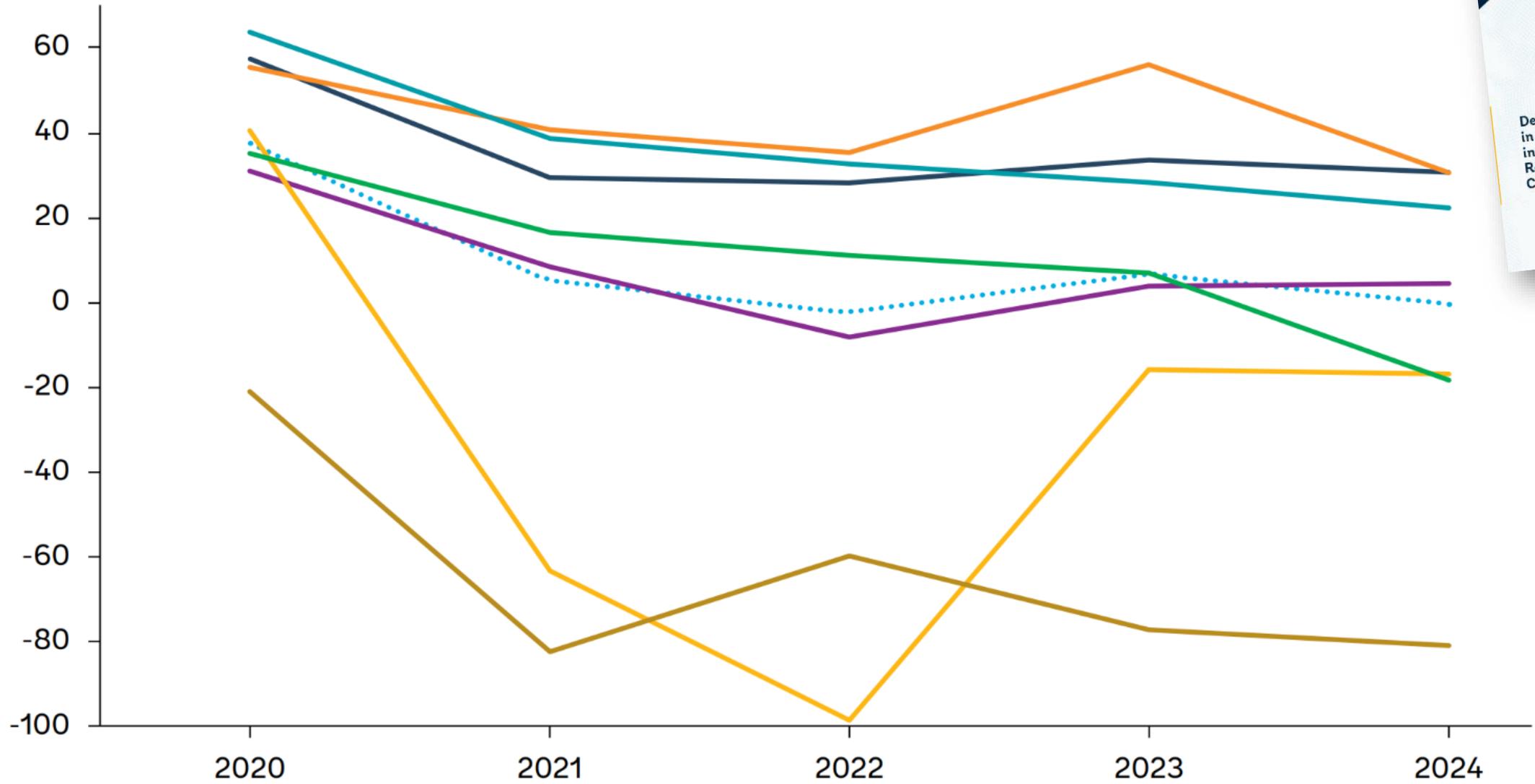


Figure 2.1 CPPI averages by World Bank region, 2020 to 2024



..... Global Average — East Asia & Pacific — Middle East & North Africa — South Asia
— Europe & Central Asia — North America — Latin America & Caribbean — Sub-Saharan Africa

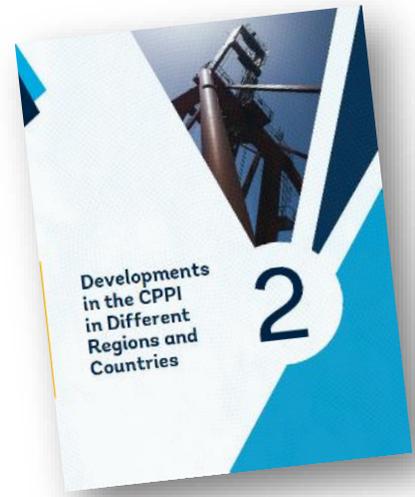


Table 2.1 Top 20 CPPI in 2024

Rank	Port	Economy	CPPI
1	Yangshan	China	146.3
2	Fuzhou	China	139.2
3	Port Said	Egypt, Arab Rep.	137.4
4	Dalian	China	136.5
5	Tanger-Med	Morocco	135.8
6	Mawan	China	133.0
7	Cai Mep	Viet Nam	132.5
8	Guangzhou	China	130.2
9	Chiwan	China	129.5
10	Ningbo	China	127.9
11	Hamad Port	Qatar	124.8
12	Hong Kong	Hong Kong SAR, China	122.5
13	Tanjung Pelepas	Malaysia	118.3
14	Tianjin	China	117.8
15	Salalah	Oman	116.9
16	Yokohama	Japan	115.2
17	Xiamen	China	115.1
18	Kaohsiung	Taiwan, China	112.9
19	Yantian	China	111.3
20	Algeciras	Spain	109.0





4.1 What is Difficult to Change

4.2 Terminal Performance – the berth side of the CPPI

Speed and efficiency in cargo operations

Yard management

Yard crane deployment

Technology and real-time data systems

Labor and management practices

Capacity building and communication: skilled labor and management

Challenges for low-income economies

Investing in improvements



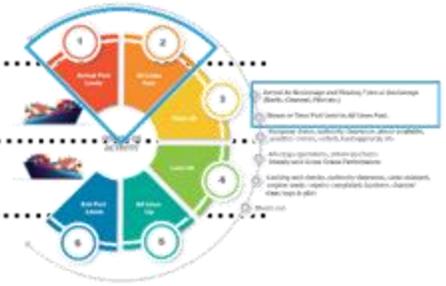
4.3 Time at Anchor and Arrival – the seaside of the CPPI

Berth planning and allocation

Port call optimization

Optimizing ancillary maritime services

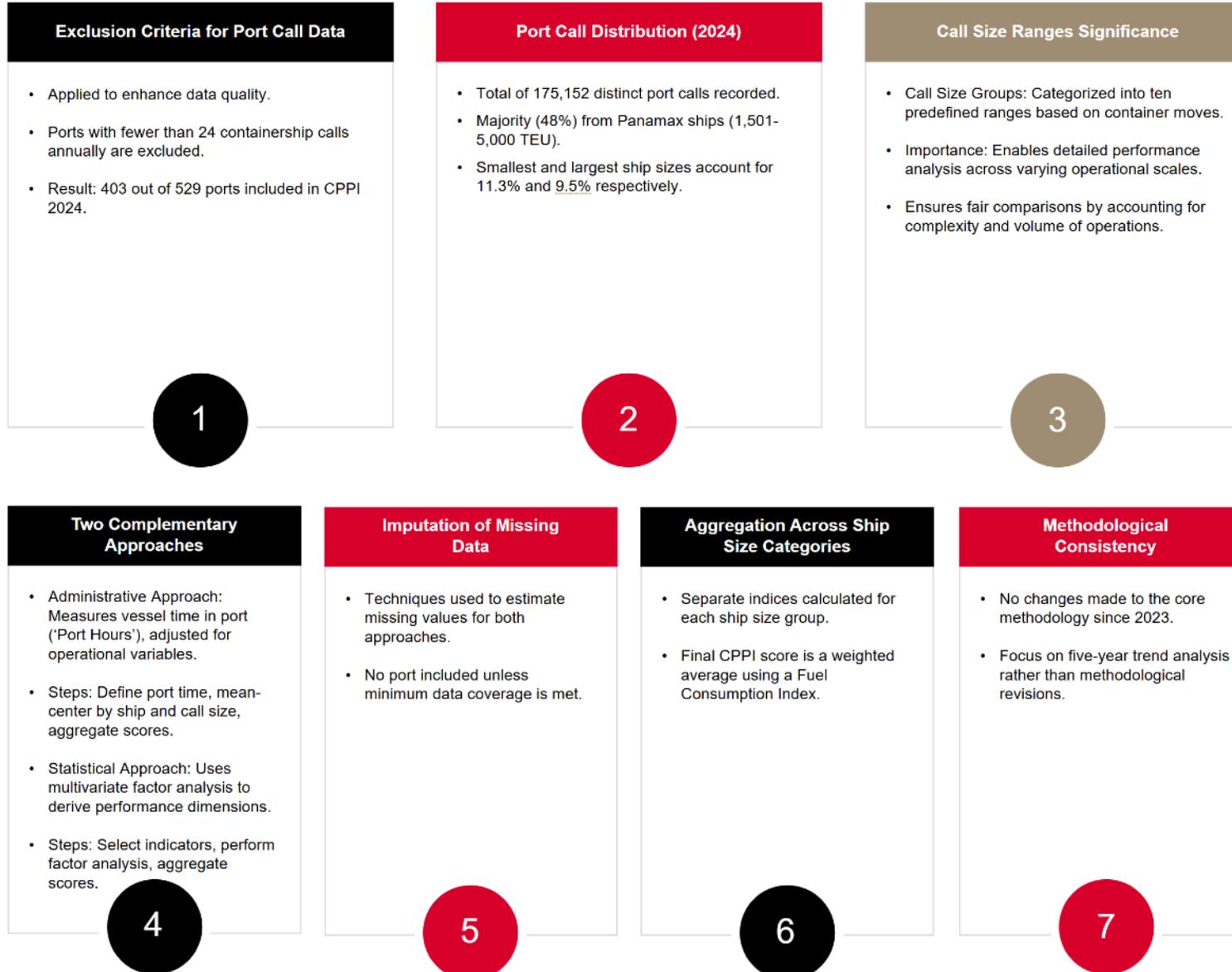
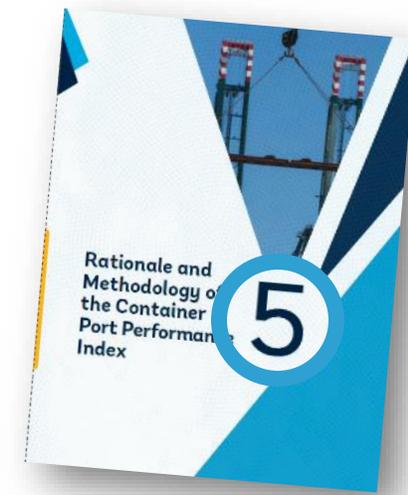
Digital platforms



4.4 Responding to external developments that affect port performance ...

The CPPI methodology

Peer reviewed, in its 5th year

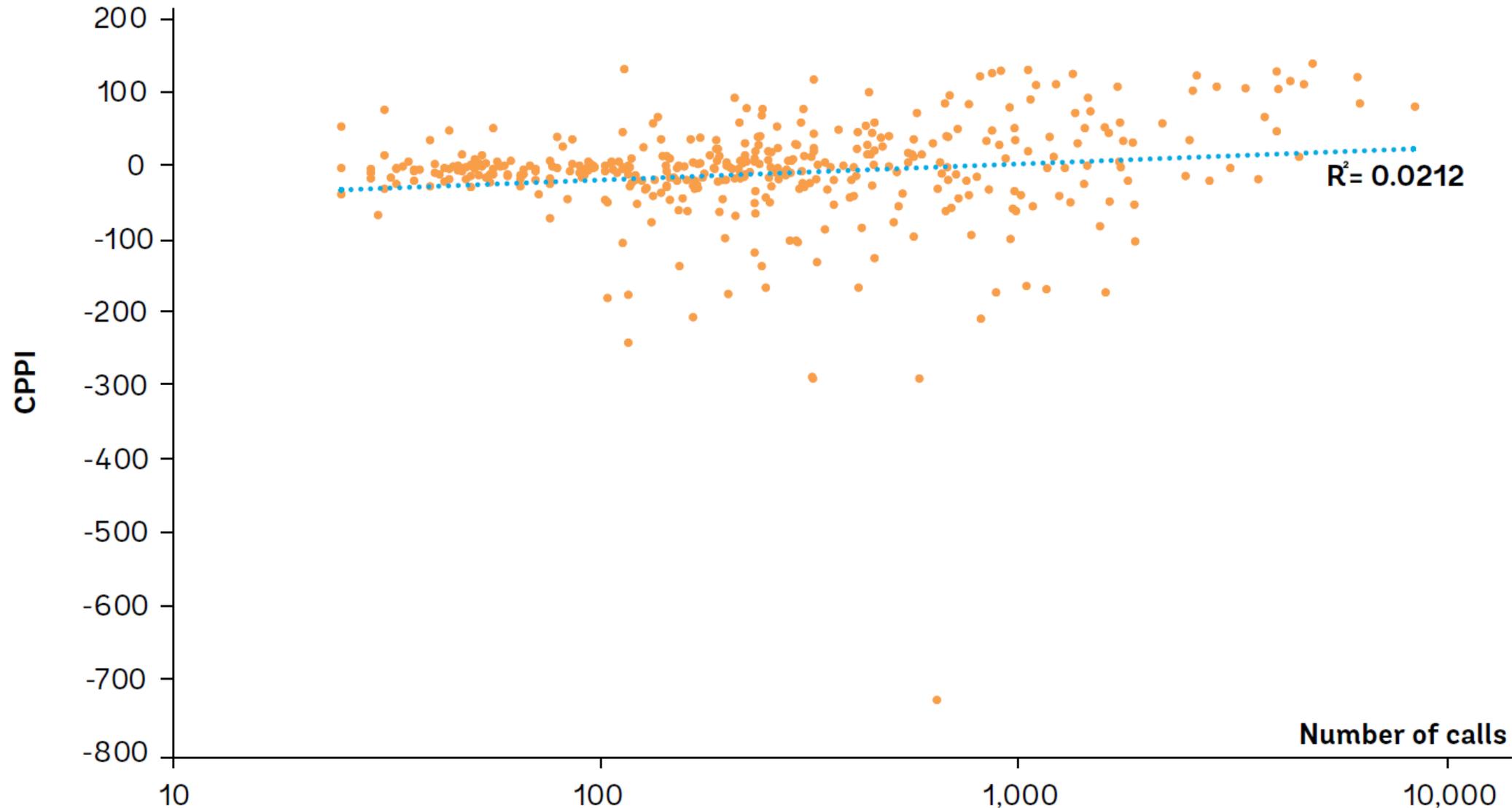


Relationship Status: "It's complicated"

How can we compare apples and oranges (large ports and small ports) (toads and grandmothers)?



Figure 3.7 Correlation between number of calls and CPPI, 2024

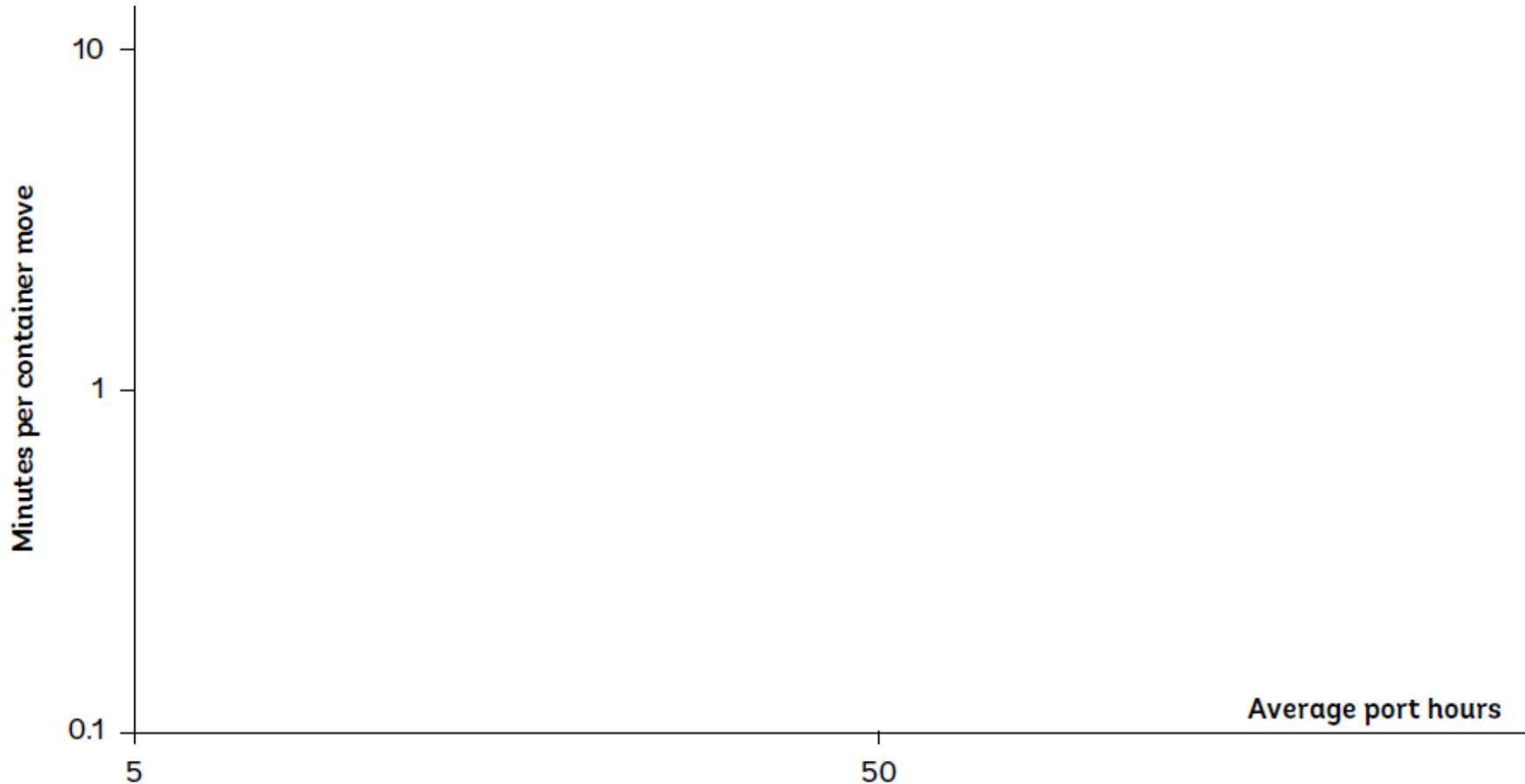


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- Relationship between speed and time in port?

Figure 5.1 Correlation between minutes per move and total time ships spend in port, 2024

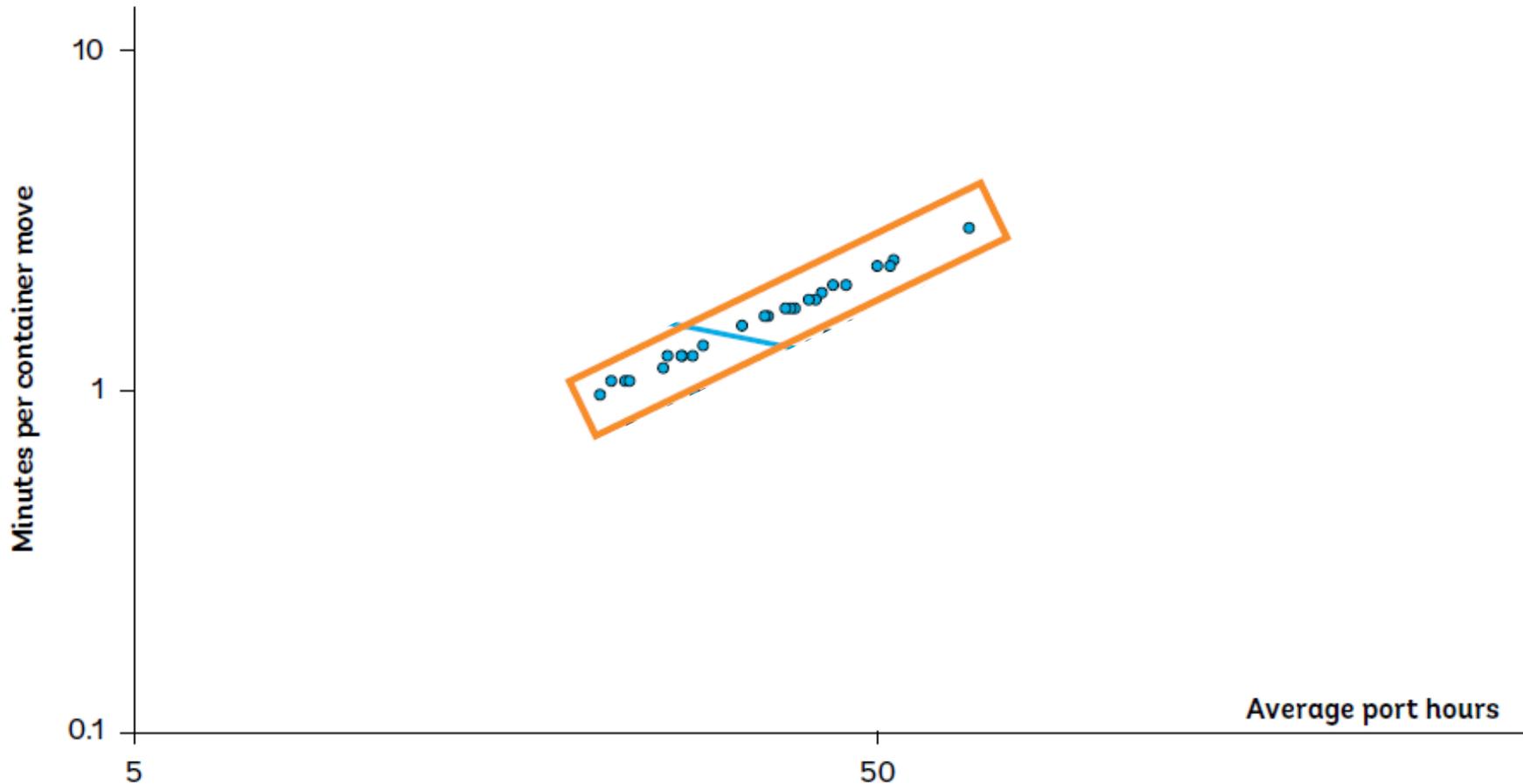


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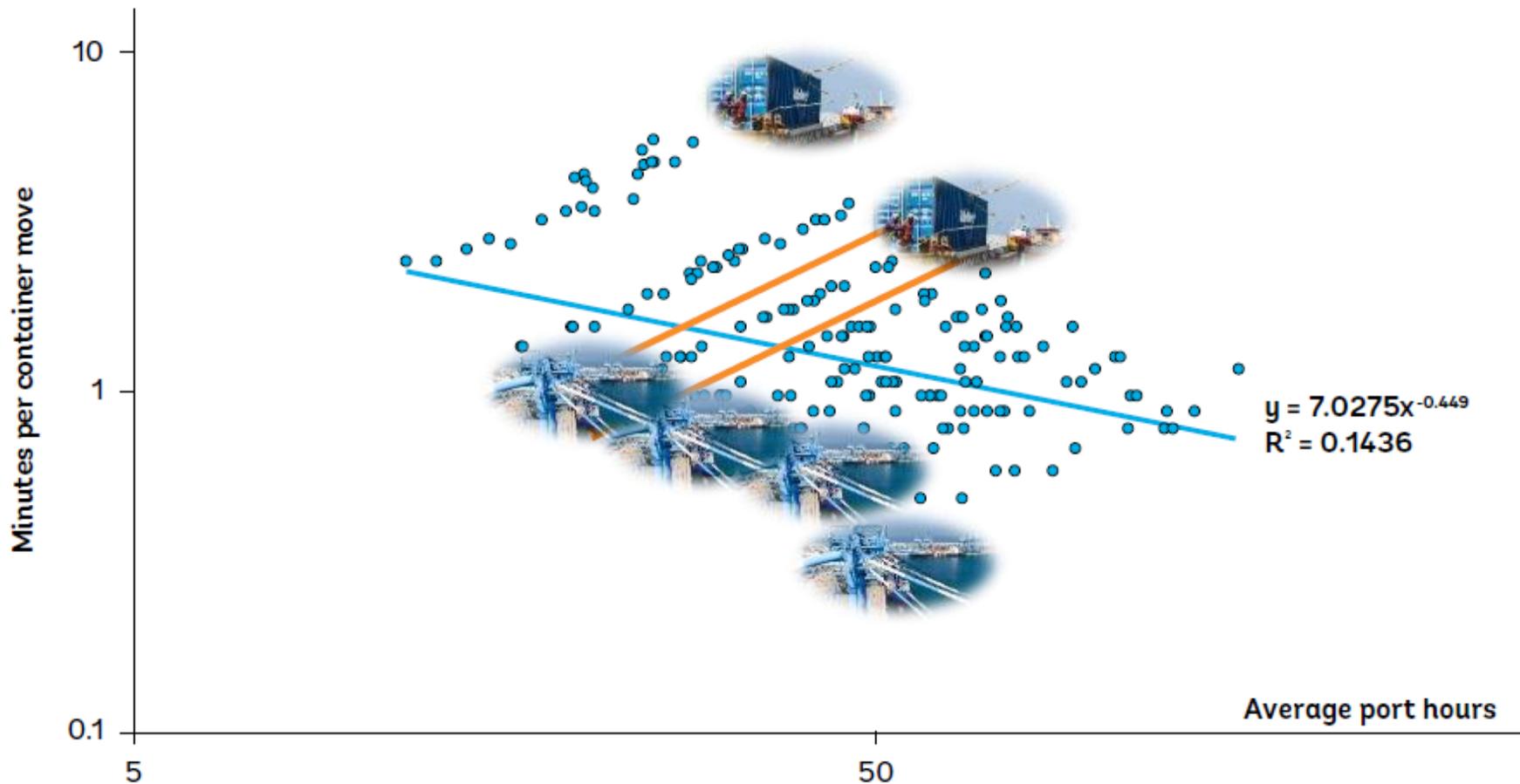
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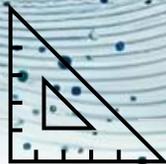
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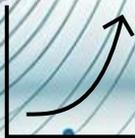
Port Reform Toolkit: Improving Port Performance



Global Trends



Measuring Port Performance

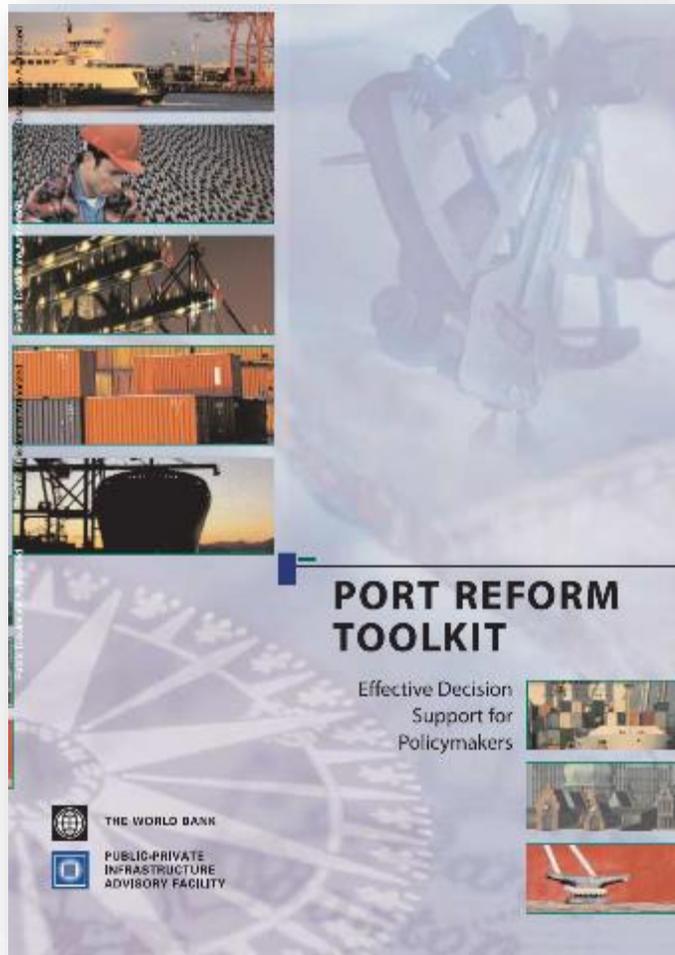


Improving Port Performance

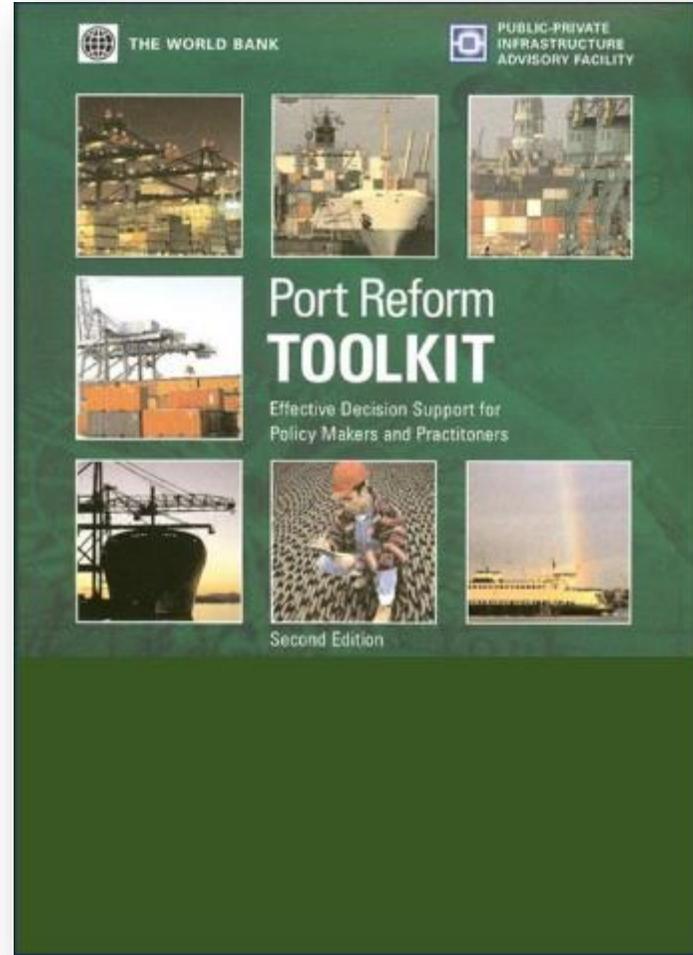


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The story of the Port Reform Toolkit



2001



2007



2025

The 10 Modules of the Port Performance Toolkit, 3rd edition, 2025

Module 1: Trends

Module 1 provides a foundational understanding of the global trends shaping the port sector today. These range from incumbent forces like macroeconomic shifts and changing trade patterns to new drivers like supply chain disruptions and resilience, climate change, corporate responsibility, and digitalization.

Module 2: Change Management

Module 2 explains how to manage port reform through a structured, strategic approach. It suggests using a five-step change-management cycle that includes assessment, planning, implementation, performance measurement, and continuous feedback.

Module 3: Port Governance

Module 3 reviews the different roles and functions of port authorities and seeks to examine the range of governance models adopted by ports across various countries. Highlighting the evolving role of port authorities—from traditional landlords to trusted port developers and community builders—this module outlines how to balance commercial autonomy with public accountability.

Module 4: Private Sector Participation

Module 4 discusses the various models and implications of private sector participation in ports, from outsourcing and terminal concessions to full privatization. Given the range of stakeholders, this module outlines various approaches to assessing what structure best fits a specific context, considering factors like a port's strategic priorities, investment needs, competition, as well as regulatory and technical capacity.

Module 5: Economic Regulation

Module 5 examines how to design and implement effective economic regulation in ports to ensure fair pricing, prevent monopolistic practices, and promote competition. The module helps address commonly asked questions such as: When is regulatory intervention necessary? How can regulatory models be tailored to national contexts? And how can a balance be struck between protecting port users and encouraging private investment?

Module 6: Risk Management and Financing

Module 6 explores how to manage risks and structure financing for sustainable and investable port especially those involving public-private partnerships. The module presents insights into how to proactively identify various financial and non-financial risks, allocate them appropriately, and apply the right tools to manage them.

Module 7: Social and Labour Aspects

Module 7 addresses the human and social dimensions of port reform by focusing on labor relations, workforce development, and equitable change management. With a focus on human capital, the module shares practical insights on designing fair labor adjustment strategies. These include voluntary retirement plans, retraining programs, and stakeholder engagement to help mitigate the social impact of port reforms—especially those involving automation and private sector participation.

Module 8: Environmental Sustainability

Module 8 provides an overview of environmental issues in ports, outlining options to integrate environmental sustainability into port infrastructure and port operations. Given the intricate relationship of ports with the environment, this module offers guidance on how to assess environmental impacts, set environmental targets, implement management systems, and plan environmentally-friendly and climate-resilient infrastructure.

Module 9: Digitalization and Cybersecurity

Module 9 offers guidance on how ports can pursue a structured digital transformation journey, from introducing foundational digital systems to becoming fully integrated “smart ports”, while ensuring robust cybersecurity. Against the backdrop of increasingly interconnected systems, the module highlights the critical drivers of port digitalization, outlines how to implement digitalization modernization programs, and manage associated risks. It emphasizes digital governance, workforce upskilling, and cybersecurity frameworks as key enablers of smart port development.

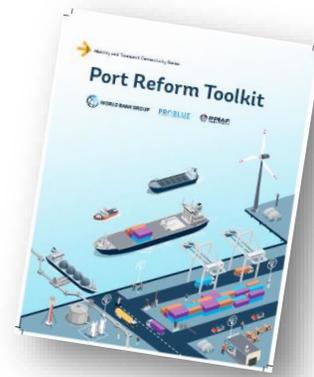
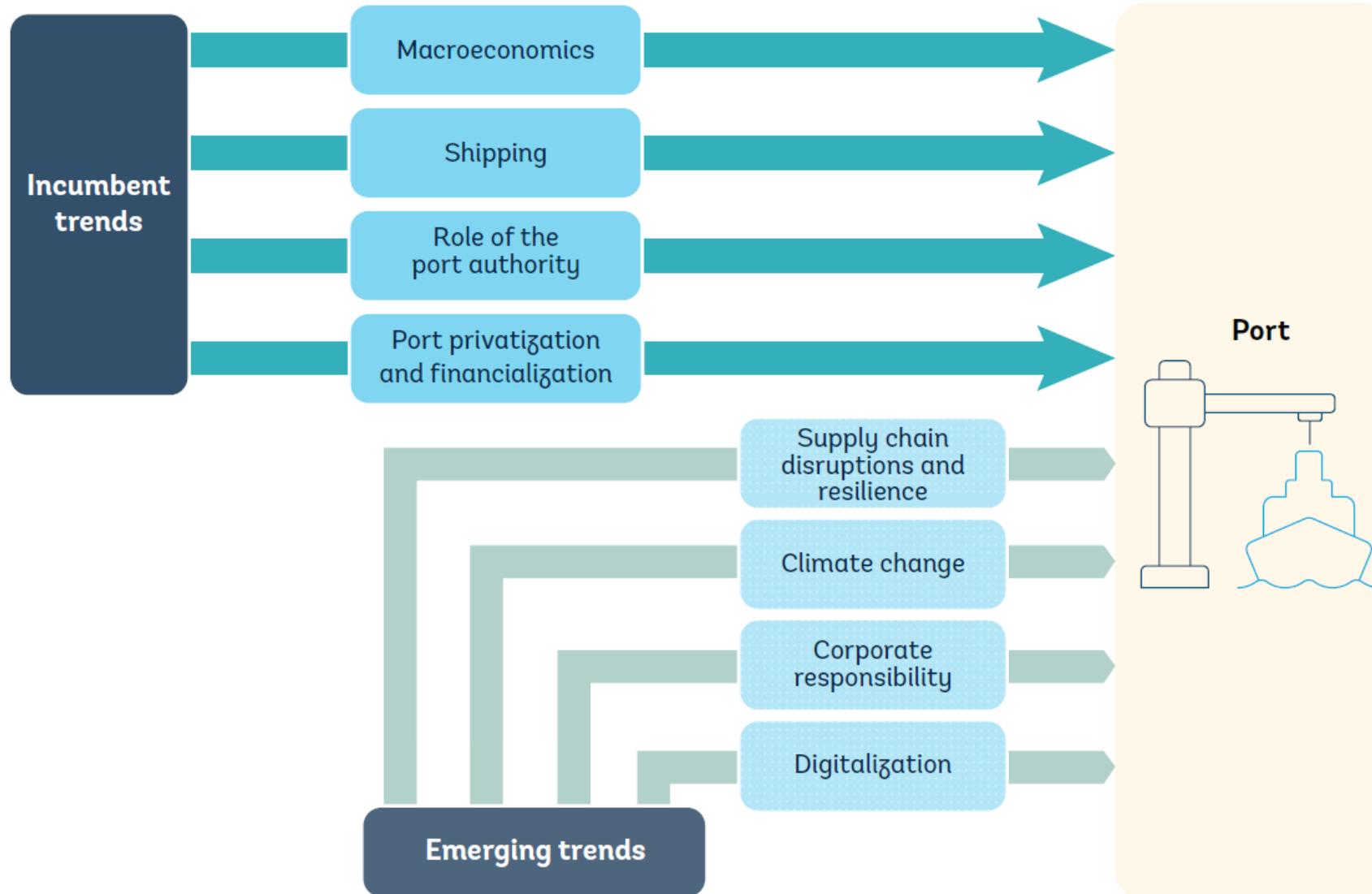
Module 10: Port-City Interface

Module 10 highlights the crucial and evolving port-city relationship, addressing land-use conflicts, congestion, and environmental issues, as well as integrating port planning with urban development. It stresses stakeholder collaboration via community engagement tools and joint projects to balance efficiency and community well-being.



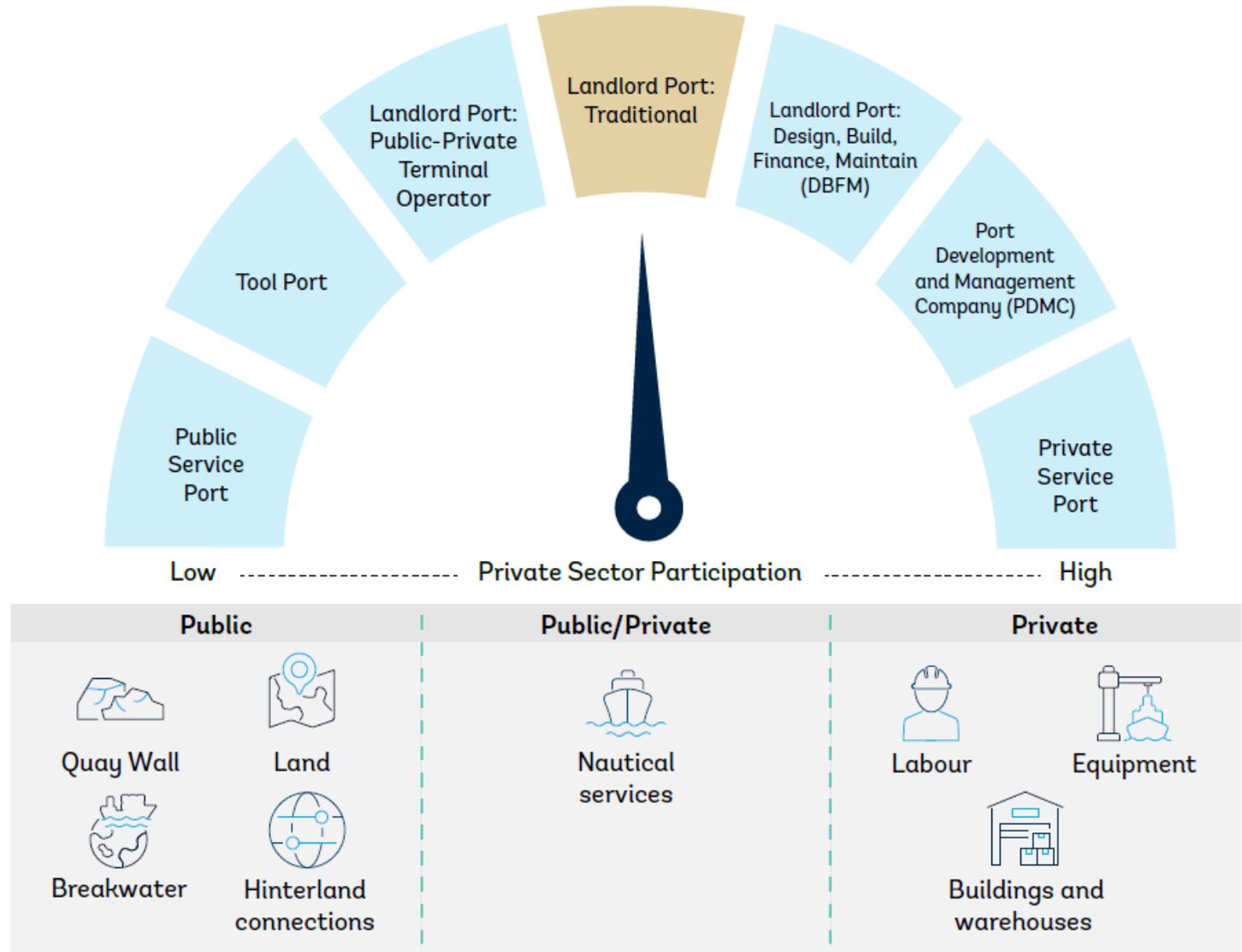
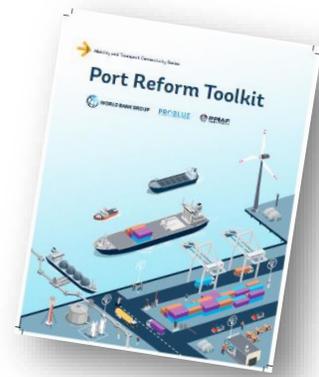
Module 1: Trends

New and old



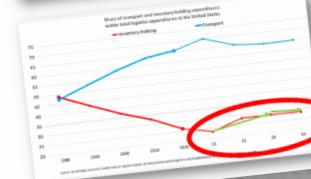
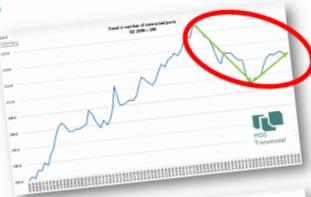
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At the core of the three versions of the toolkit



Zooming in on Ports

The CPPI covers the five years of global supply chain interruptions

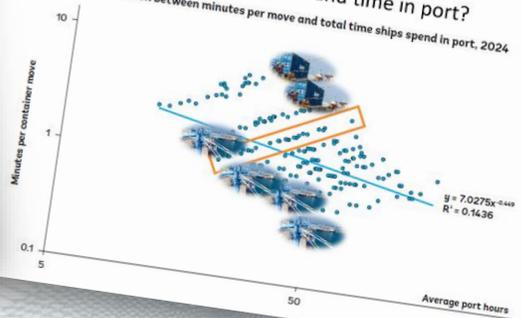


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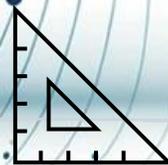
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Module 10: Port City Synergy

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