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Managing Risks in Global Value Chains: Strengthening Resilience

Submitted by: Policy Support Unit, APEC Secretariat

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THAILAND

Workshop on Opportunities and Challenges for Global Value Chains During the COVID-19 Pandemic and Post-Pandemic Economic Recovery
13-14 October 2022

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Managing Risks in GVCs: Strengthening Resilience

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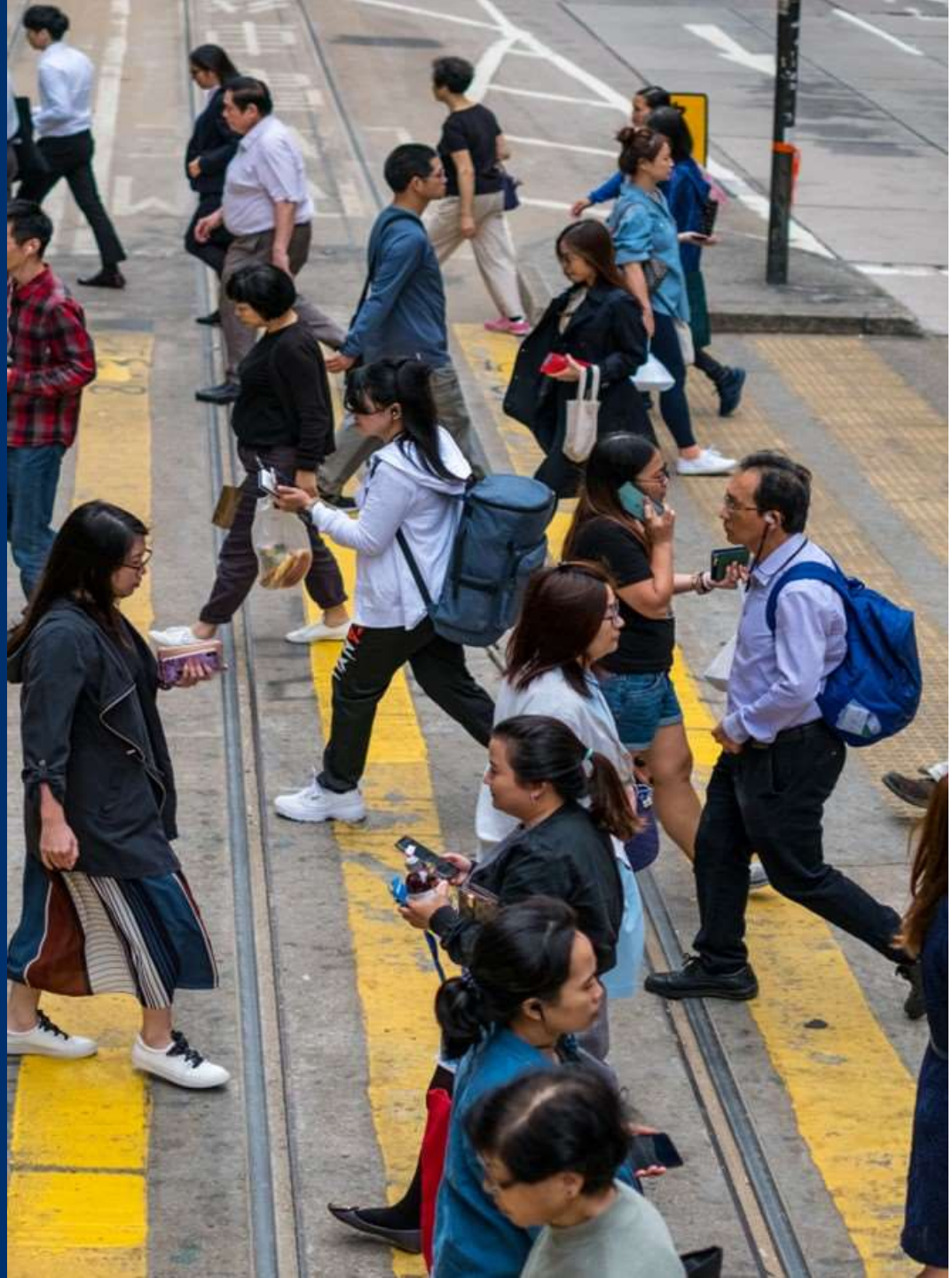
APEC Workshop on Opportunities and Challenges for GVCs during COVID-19 Pandemic and Post-Pandemic Economic Recovery

13 – 14 October 2022 | Time zone: UTC+7

Advancing Free Trade for Asia-Pacific Prosperity



Outline

- The Rise of Global Value Chains
- Systemic and global risks
- Defining resilience
- Turning resilience into competitive advantage
- Policy Priorities

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The Rise of Global Value Chains

- The proliferation of global supply chains: from East Asian Miracle to ‘Factory Asia’
  - Three attributes of the miracle: outward orientation, macroeconomic stability, and investment in people
  - Factory Asia: extensive regional production network with Korea and Japan as major outsourcing economies, and China and most South-East Asian economies as assemblers of parts and components into final products
- In 1990, Asia produced 26.5% of global manufacturing output; steadily increase to 46.5% by 2013. At the same time, trade in intermediate goods have increased from 14% in 2000 to 50% in 2012.
- The flourishing of global trade has open opportunities for manufacturing firms (large and small), workers, logistics businesses, as well as governments in opening up their economies to foreign investments.
- Consumers also benefited by having more options and being given a more competitive price for their needed products.
- Trade facilitation: WTO TFA, RTA/FTA, customs improvement (digital and paperless), structural and regulatory reforms => lowered trade costs and improves connectivity
- Emergence of business and trade hubs

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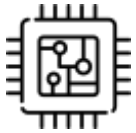
COVID-19 has severely impacted global supply chains

International Trade

The APEC region saw a 6.3% decrease in exports and a 5.5% decrease in imports in 2020

Global Manufacturing

Closure of businesses and factories has caused merchandise exports to fall in 2020



Electronics

Vulnerabilities of the electronics industry were laid stark because of its lean production methods

Responses

Supply chain disruptions have impeded COVID-19 response and mitigation measures, e.g. food and medicines

Global supply chains were disrupted through a **ripple effect.** Some products products sourced from manufacturing hubs are no longer being produced or exported at the same rate.

→ This highlights the need to build **more resilience** into global supply chains.

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Systematic Risk

Systematic Risk	
Characteristic	**Impact**
• Economy-wide risks that often are not able to be addressed through firm level risk mitigation strategies • Not within the control of firms • Often linked with unexpected events (e.g COVID-19)	• A local event may have many transmission channels • As GVCs are increasingly integrated and connected, small events can easily become large regional or even global events

The ten most severe risks on a global scale over the next 10 years

1 Climate action failure	2 Extreme weather	3 Biodiversity loss
4 Social cohesion erosion	5 Livelihood crises	6 Infectious diseases
7 Human environmental damage	8 Natural resources crises	9 Debts crisis
	10 Geoeconomic confrontation	

Source: World Economic Forum Global Risks Perception Survey 2021-2022

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Risk and Globalisation

Global Financial Crisis in 2008

- underestimated the risk of financial globalisation
- cross-border financial integration would enable more risk sharing
- subprime mortgage crisis spill over across borders due to global financial links

Global pandemic 2020

- overestimated the risks of sprawling and intricate production networks
- supply chain disruption and vulnerabilities
- sharp bounce-back in global merchandise trade

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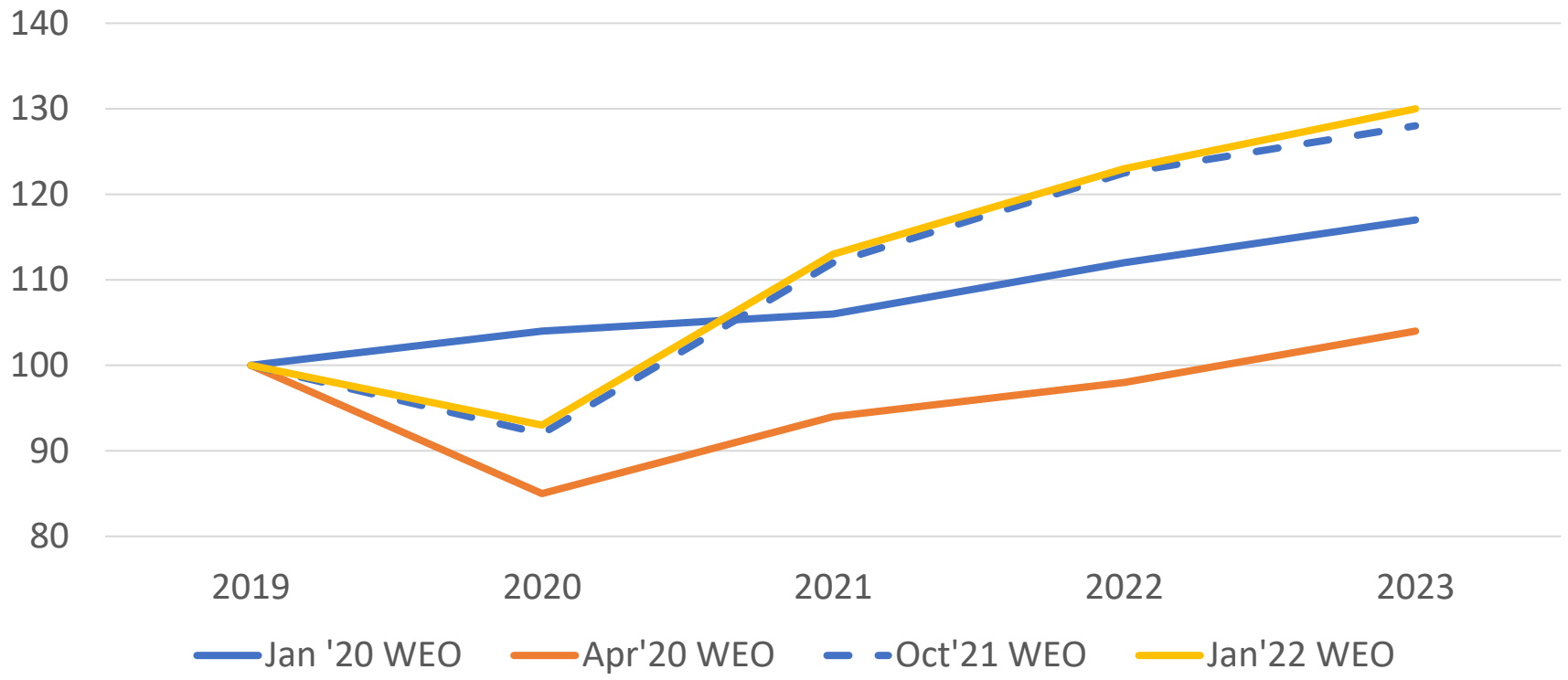
Source: Mishra and Spilimbergo (2022), "Globalization and Resilience".

Pandemic and World Trade

The evolution of projections of world merchandise imports by value (index, 2019=100)



Source: Mishra and Spilimbergo (2022), "Globalization and Resilience".

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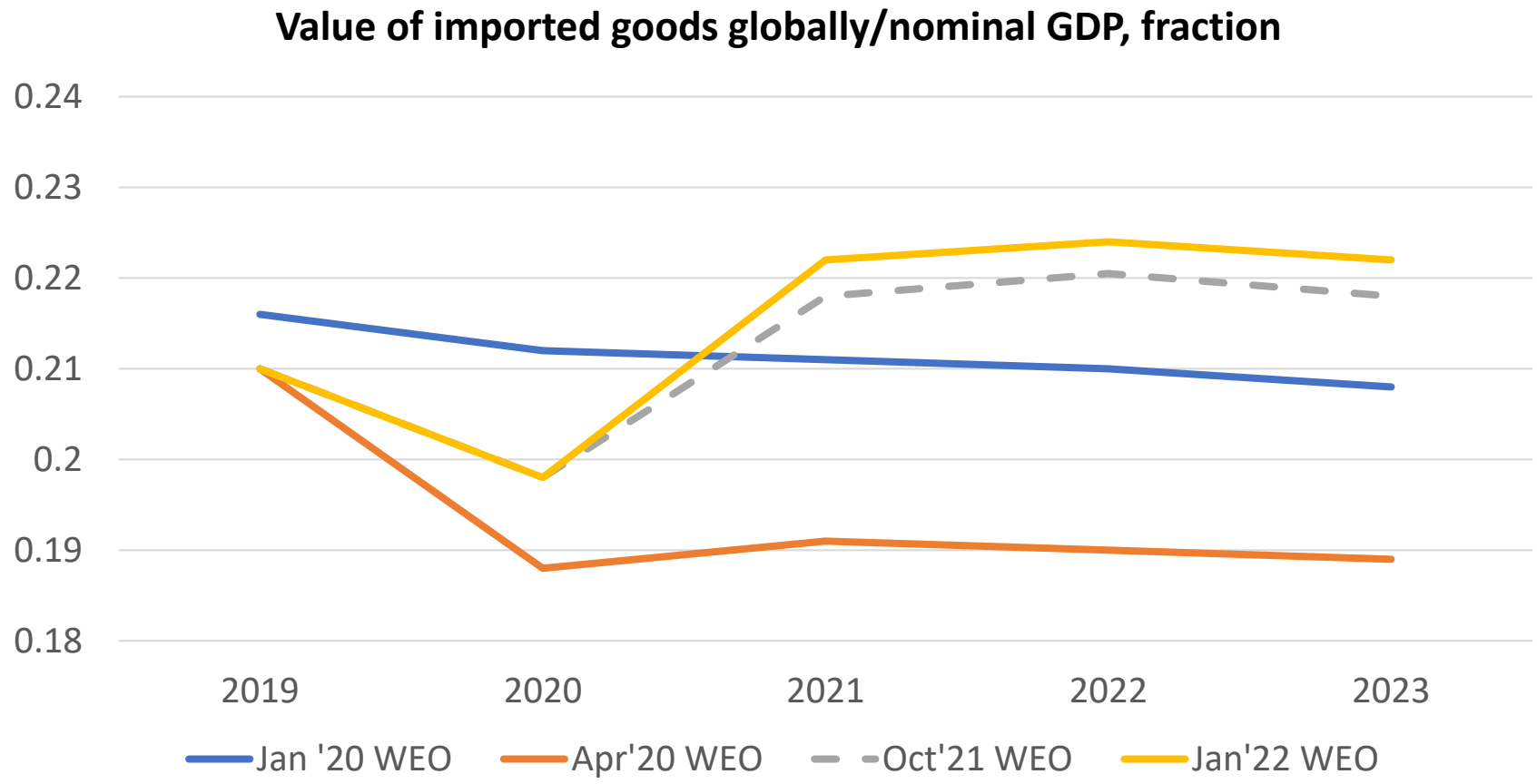
Trade relative to GDP



Source: Mishra and Spilimbergo (2022), "Globalization and Resilience".

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Efficiency vs resilience

Key characteristics of a resilient supply chain:

- **Robustness**: strong enough to withstand shocks and changes
- **Agility**: able to quickly recover from shocks
- **Flexibility**: able to leverage on options and alternatives during
- **Redundancy**: able to build adequate surplus capacity

Inattention to Resilience

Greater GVC concentration has been blamed for vulnerabilities, but the real culprit is inattention to long-term resilience in pursuit of short-term profits.

Cost of Resilience

Resilience is not a cost-free endeavor, it comes with hard choices and trade-offs. Measures to strengthen resilience such as diversification could incur higher costs.

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Global expansion (excluding initial years) after four global recessions (1975, 1982, 1991, 2009)

	1977-81	1984-90	1993-2008	2011-19
Global				
Output per capita	1.4	1.8	1.8	1.6
Output per capita (PPP)	1.4	1.8	2.4	2.3
Industrial production	2.8	3.7	3.0	2.3
Trade	4.4	5.7	6.9	3.9
Investment	2.9	4.1	3.8	3.7
Credit	3.6	6.8	4.2	3.5
Advanced economies				
Output per capita	2.3	3.2	1.8	1.4
Output per capita (PPP)	2.3	3.2	2.0	1.4
Trade	4.6	6.9	6.2	3.4
Credit	3.5	7.1	3.5	1.5
Government expenditure	4.1	3.3	2.8	1.2
EMDEs				
Output per capita	1.4	1.1	3.4	3.3
Output per capita (PPP)	1.4	1.2	3.6	3.6
Trade	4.1	2.8	8.6	4.7
Credit	6.1	1.9	10.1	9.9
Government expenditure	5.8	2.4	7.2	5.7

Note: EMDEs are Emerging Market and Developing Economies. Numbers shown are average annual growth rates. Source: Data from Kose, et al. (2020), Tables 9 and 10. Note: Output per capita in this context is used as a proxy for productivity.

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Supply Chain for Stronger Economic Recovery

Disruptions to supply chain networks can have considerable impacts on inflation

Year 2022: anxieties about high inflation

- Increases in shipping costs trigger significant increases in import prices, producer price inflation, headline and core inflation, and inflation expectations (IMF, 2022)
- A 243% increase in container freight rates induced an 11.4% increase in import price levels for computer products (UNCTAD, 2021)
- 50% rise in manufacturing producer price inflation can be avoided if supply bottlenecks are handled adequately (IMF, 2022)

Supply chain disruptions can lead to protracted inflationary impacts

- Supply chain networks could transmit supply shocks and price increases along their chains.
- The impact could be amplified if supply chain participants create buffers in the existing lean production networks, causing bottlenecks.
- The inflationary impact of the bottlenecks may be temporary, but if the bottlenecks are not resolved quickly, this may trigger an upward shift in wage growth and inflation expectations.
- The expansion of GVCs could build up a network through which wage and price pressures spread from within borders through direct channels such as price pressures for imported inputs.

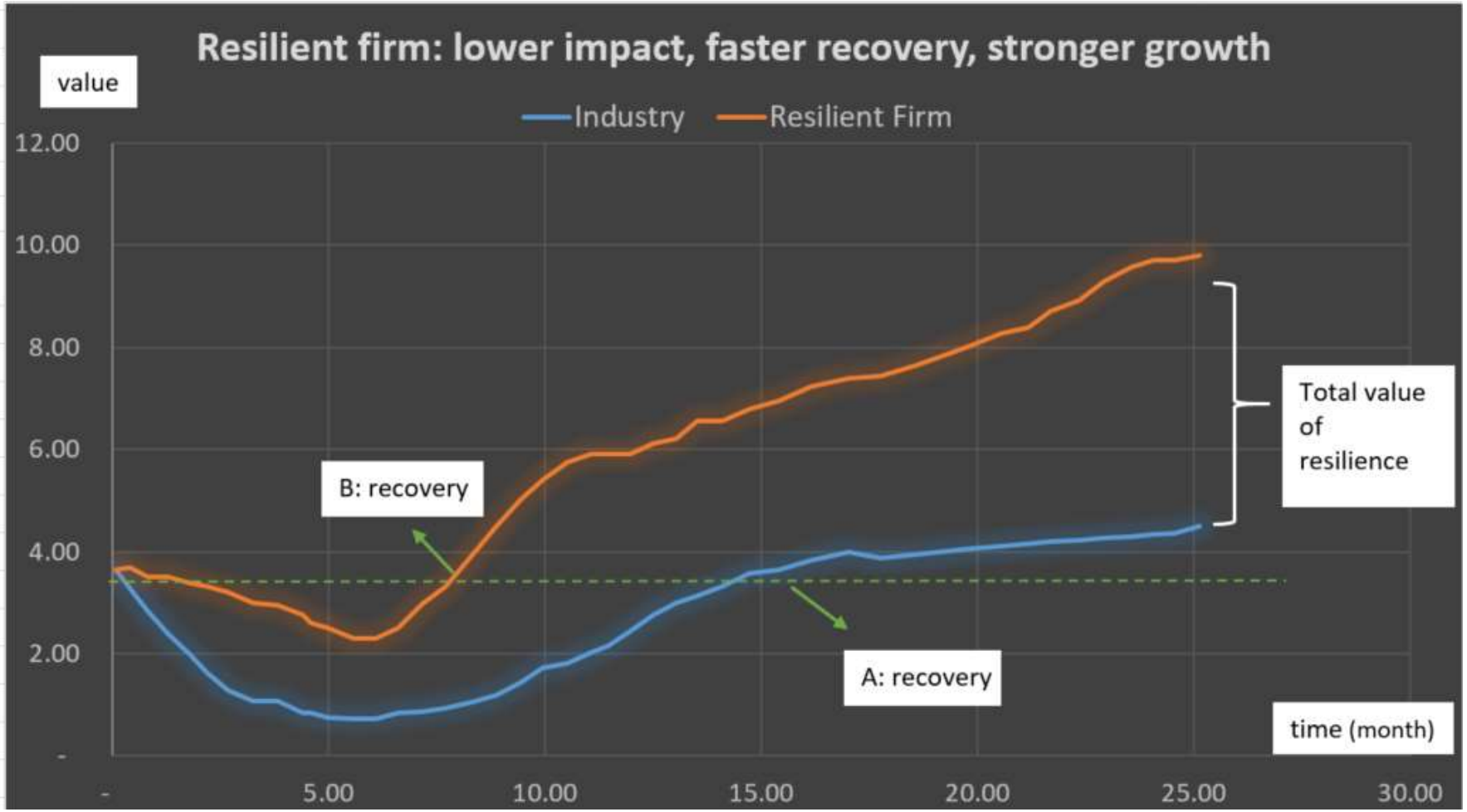
Turning resilience into competitive advantage

Anticipation advantage
- Contingency plan
- Early warning systems

Cushioning advantage
- Building buffers
- Diversifying revenue and operations

Adaptation advantage
- Alignment with social norms
- Operational flexibility

Shaping advantage
- Shaping new normal
- Redefining industries



Note: illustrative data.

Source: Reeves, Shmul, and Martínez (2021), "How Resilient Businesses Created Advantage in Adversity During COVID-19", Boston Consulting Group report.

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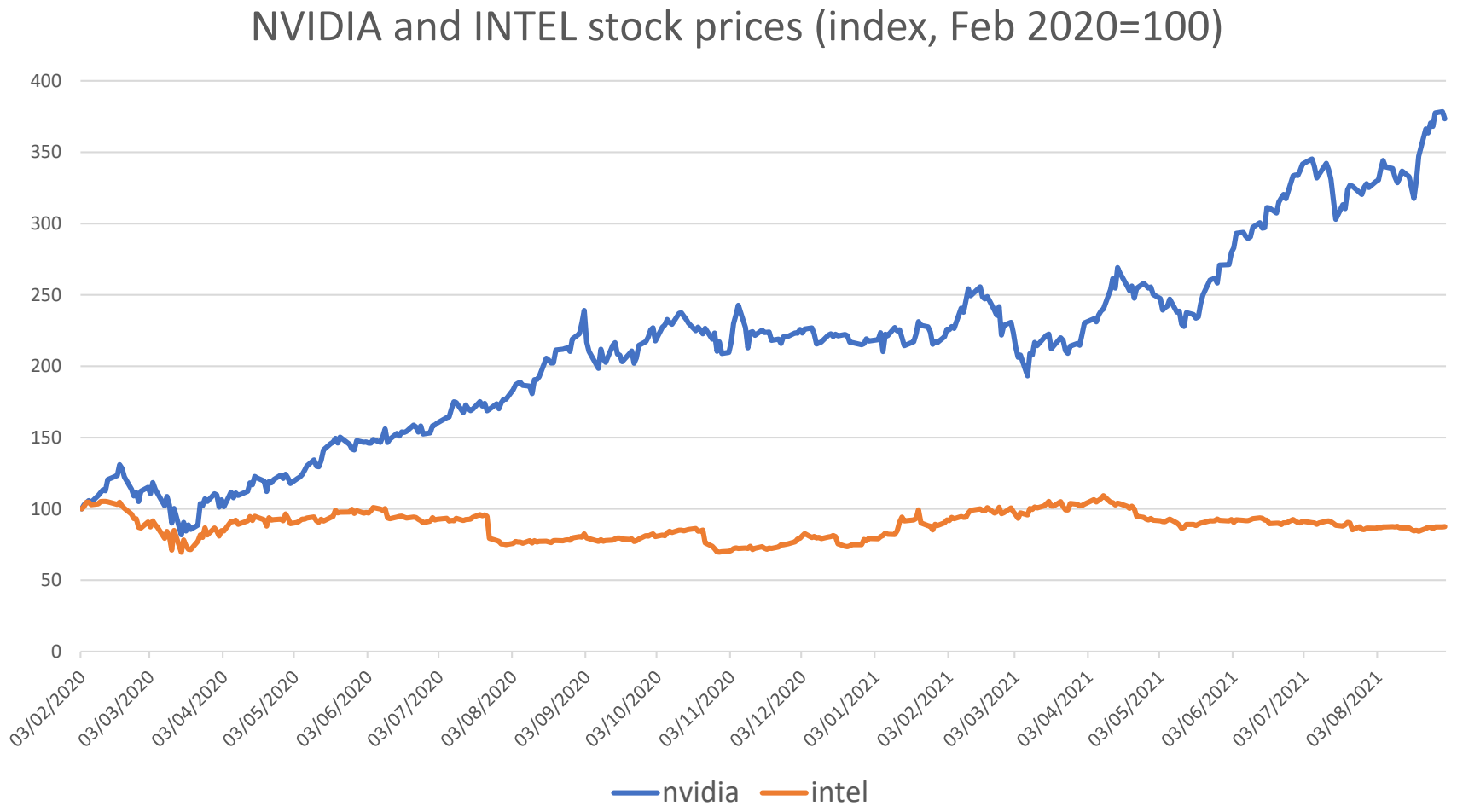
Semiconductor industry

NVIDIA launched Clara Guardian, a smart hospital solution installed in more than 10,000 hospital rooms. Clara Guardian allows: remotely monitor and detect changes to patient vital signs; enforce the wearing of personal protective equipment (PPE); direct employees and visitors away from high-risk areas of the hospital; have contactless patient interaction, etc.

(Source: Accenture, Technology Vision 2021).



Data from https://www.macrotrends.net/

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Investing in supply chain resilience

Investment strategy	Description	Examples of investments
Discovery	Investing in the ability to identify potential problems	- Improved information technology (IT) or information sharing - Early warning by supply chain partners - Forecasting - Demand sensing
Information	Investments in improving the quantity, speed and quality of information flows	- Improved IT - Effective communication - Information visibility
Supply chain design	Designing and implementing flexible supply chains	- Supply base management - Supply base configuration - Choosing flexible supply chain partners
Buffers	Creating cushions in the form of inventory, capacity or lead times	- Inventory - Operating flexibility - Excess operating capacity - Redundancy - Excess/safety lead time
Operating flexibility	Changing either flows or product specifications	- Transportation alternatives - Variable bills of materials
Security	Protecting the system from supply chain shocks such as theft, damage and counterfeiting	- Firewalls - Quarantine - Strengthened physical systems
Preparedness	Designing contingency plans for possible supply chain shocks	- Planning for contingencies - Training/rehearsing - Risk assessment and insurance
Indirect investments	Investing in other areas (goodwill or willingness) that could be drawn from when a shock occurs	- Relationships with suppliers/customers - Supplier/customer loyalty

Source: Adapted from S.A. Melnyk et al., “Understanding Supply Chain Resilience” (Michigan State University).

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Policy Priorities for Economies

Reduce trade costs and ensure a resilient economic recovery

Invest in trade facilitation reforms and facilities to resolve bottlenecks

Focus efforts in preventing supply chain disruptions to risky and essential products

Strengthen policy coordination and regional cooperation

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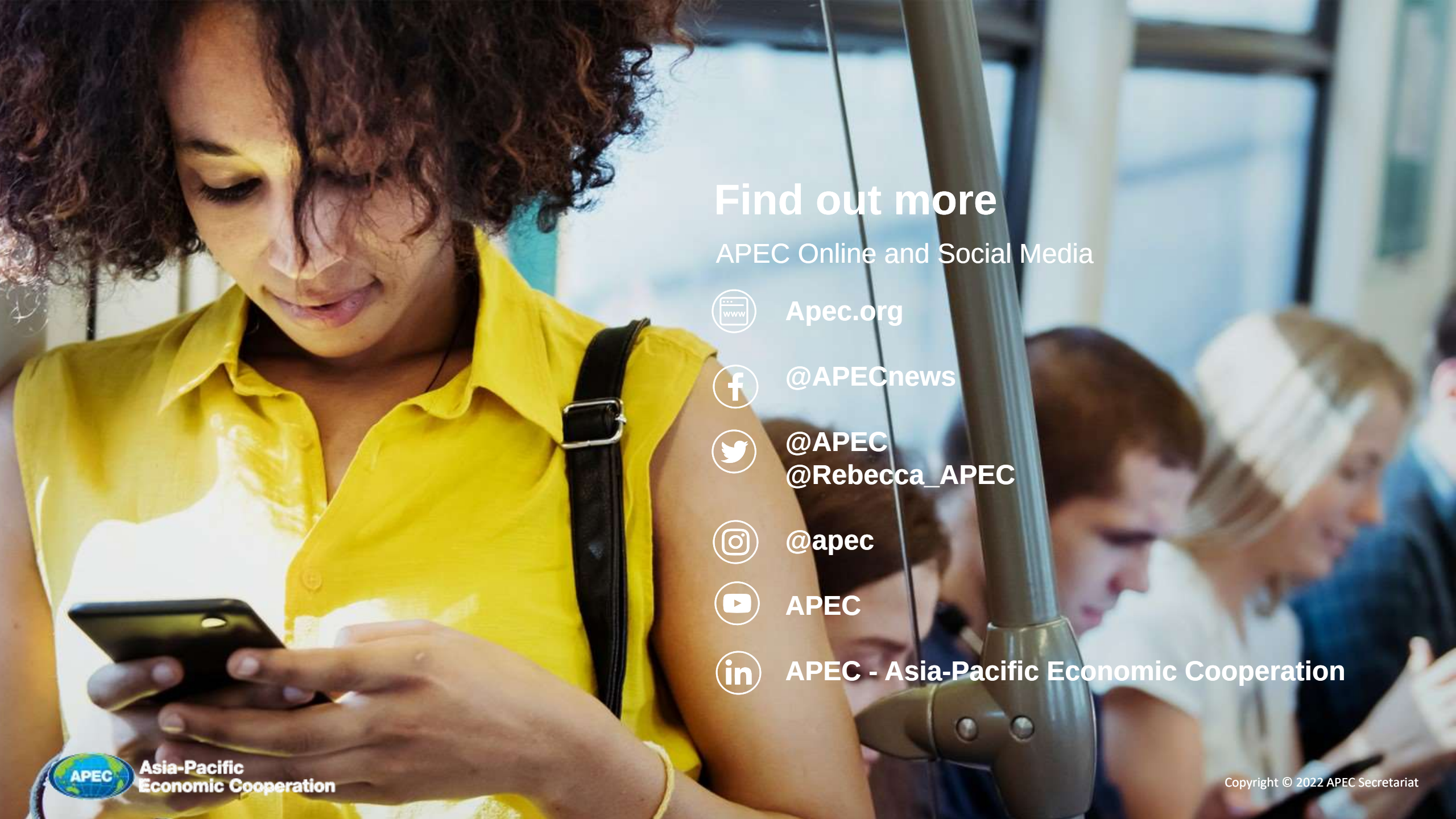
Appendix:
Properties of Trade Networks, Selected Essential Goods

	2000	2018	2020
Medical equipment			
Nodes	222	227	226
Arcs	13,755	20,757	19,261
Density	0.28	0.40	0.38
Import (in-degree) centralisation	0.50	0.54	0.54
Export (out-degree) centralisation	0.68	0.56	0.59
Trade value (USD thousands)	570,119,168	1,680,690,304	1,537,981,824
PPE			
Nodes	222	226	226
Arcs	10,192	15,544	15,228
Density	0.21	0.31	0.30
Import (in-degree) centralisation	0.46	0.53	0.55
Export (out-degree) centralisation	0.68	0.62	0.63
Trade value (USD thousands)	45,116,756	130,621,400	194,875,376

	2000	2018	2020
Medical supplies			
Nodes	222	226	226
Arcs	14,004	20,296	18,994
Density	0.29	0.40	0.37
Import (in-degree) centralisation	0.46	0.50	0.54
Export (out-degree) centralisation	0.66	0.57	0.58
Trade value (USD thousands)	275,041,696	1,039,849,088	1,101,964,800
Chemicals			
Nodes	222	227	226
Arcs	9,109	12,262	11,859
Density	0.19	0.24	0.23
Import (in-degree) centralisation	0.36	0.44	0.46
Export (out-degree) centralisation	0.69	0.65	0.65
Trade value (USD thousands)	146,504,640	394,189,184	378,793,024

Note: Nodes refer to number of economies in a network. Arcs refer to number of bilateral trade ties between economies (nodes). Degree centralisation shows the level of distribution for centrality scores: a network that is highly centralised will have a maximum score equal to 1, in which one node has the maximum possible score and the other nodes register the lowest possible scores.



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