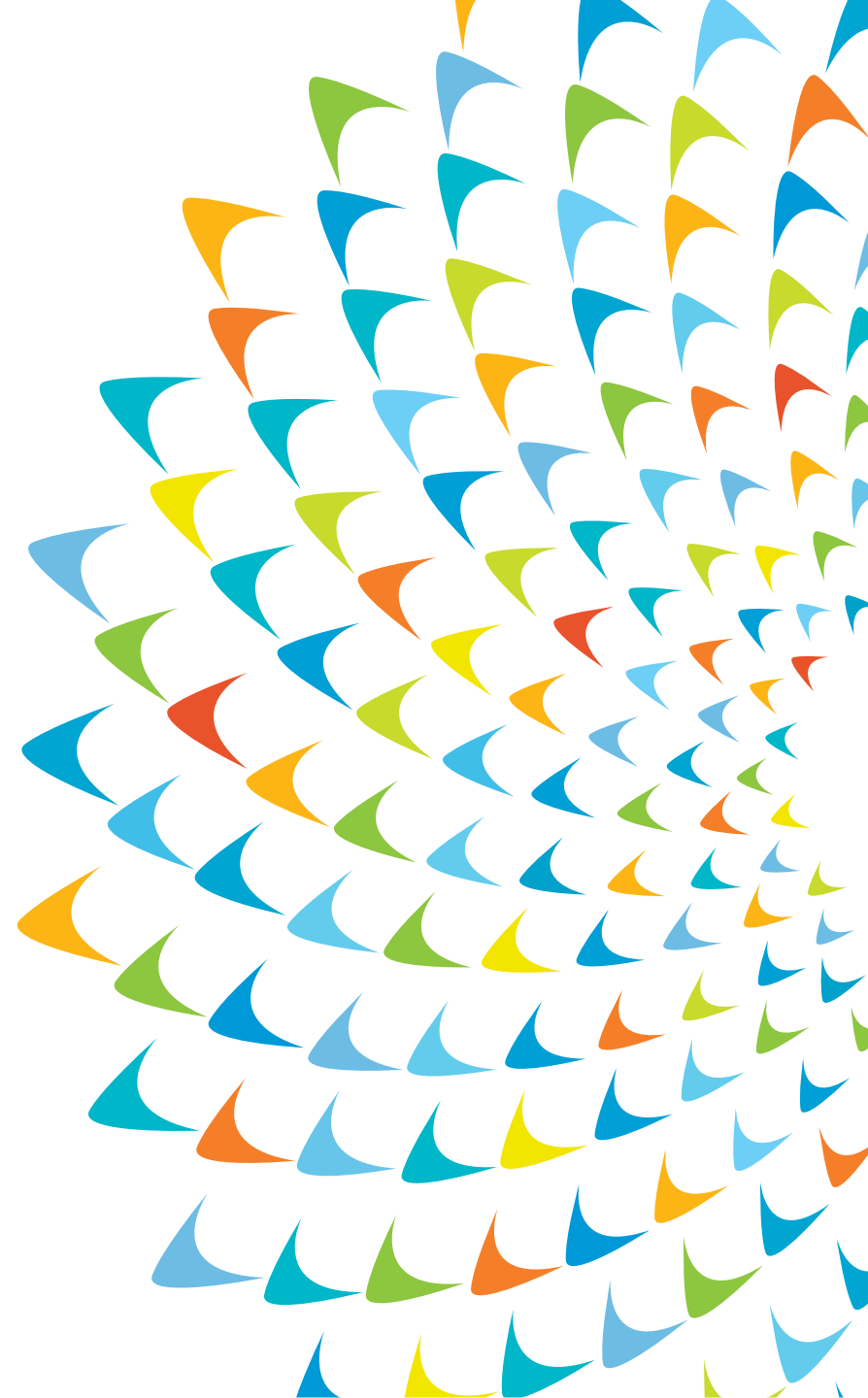




The Use of MRIOTs to Discern the State and Evolution of Globalization

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Outline

- Background and Conceptualization
- The ADB MRIOTs
- Analytical Examples
- Possible Extensions

Background and Conceptualization

Background and Conceptualization

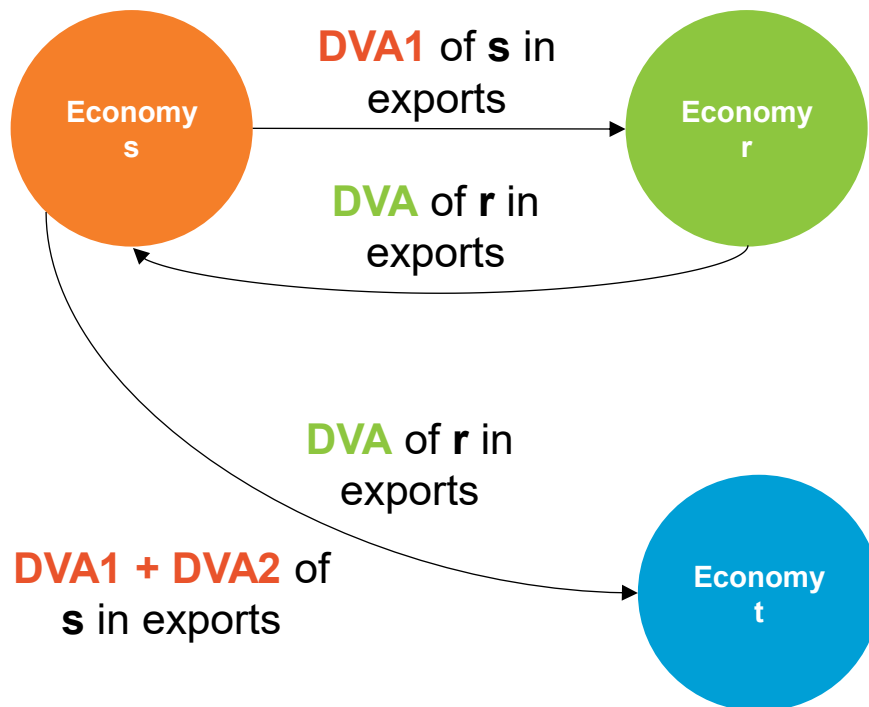
- **Globalization** refers to the process by which economies become more interdependent due to cross-border movement of goods and services, capital, technology, information, and people (ADB, 2023)
- Globalization remains a “highly controversial phenomenon” (Huwart and Verdier, 2013):
 - Winners and losers involved
 - Different ways to measure

Background and Conceptualization

- Existing approaches to measuring globalization
 - Trade openness (trade-to-GDP ratio)
 - Composite measures:
 - DHL Connectedness Index
 - KOF Globalization Index
 - ADB Global Integration Index
 - OECD Trade in Value Added
 - Foreign value-added content of gross exports
 - Domestic value-added embodied in foreign exports
 - Backward participation in GVCs
 - Forward participation in GVCs

Background and Conceptualization

- Input-output (IO) analysis-based decomposition frameworks help address measurement errors such as double counting and foreign value-added



Issues:

- 1) DVA1 counted twice – first, in exports to r and second, in exports to t
- 2) DVA of r comprises part of economy s exports to economy t (this is foreign value-added)

The ADB MRIOTs

ADB MRIOTs (Schematic)


		Economy A	...	Rest of the World	Economy A	...	Rest of the World	Total Output
		c1 ... c35	...	c1 ... c35	y1 ... y5	...	y1 ... y5	
Economy A	c1 ⋮ c35	Z			Y			x
⋮	⋮							
Rest of the World	c1 ⋮ c35							
Value-added		va						
Total Output		x						

ADB MRIOTs (Schematic)

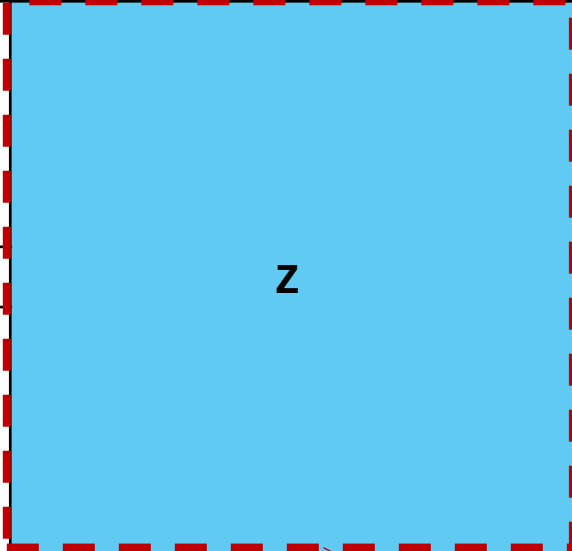
2000-2016: 62
economies + RoW
2017-2023: 72
economies + RoW

		Economy A	...	Rest of the World	Economy A	...	Rest of the World	Total Output
		c1 ... c35	...	c1 ... c35	y1 ... y5	...	y1 ... y5	
Economy A	c1 ⋮ c35	Z			Y			x
⋮	⋮							
Rest of the World	c1 ⋮ c35							
Value-added		va						
Total Output		x						

ADB MRIOTs (Schematic)

35 industries 		Economy A	...	Rest of the World	Economy A	...	Rest of the World	Total Output
		c1 ... c35	...	c1 ... c35	y1 ... y5	...	y1 ... y5	
Economy A	c1 ⋮ c35	Z			Y			x
⋮	⋮							
Rest of the World	c1 ⋮ c35							
Value-added		va						
Total Output		x						

ADB MRIOTs (Schematic)

		Economy A	...	Rest of the World	Economy A	...	Rest of the World	Total Output
		c1 ... c35	...	c1 ... c35	y1 ... y5	...	y1 ... y5	
Economy A	c1	Z			Y		x	
	:							
c35								
:	:							
Rest of the World	c1							
	:							
c35								
Value-added		va	 Global interindustry transaction / intermediates matrix					
Total Output		x						

ADB MRIOTs (Schematic)

		Economy A	...	Rest of the World	Economy A	...	Rest of the World	Total Output			
		c1 ... c35	...	c1 ... c35	y1 ... y5	...	y1 ... y5				
Economy A	c1 ⋮ c35	Z			Y			x			
⋮	⋮										
Rest of the World	c1 ⋮ c35										
Value-added		va	<div>Global final demand matrix</div>								
Total Output		x									

ADB MRIOTs (Schematic)

		Economy A	...	Rest of the World	Economy A	...	Rest of the World	Total Output
		c1 ... c35	...	c1 ... c35	y1 ... y5	...	y1 ... y5	
Economy A	c1 ⋮ c35	Z			Y			x
⋮	⋮							
Rest of the World	c1 ⋮ c35							
Value-added		va						
Total Output		x						

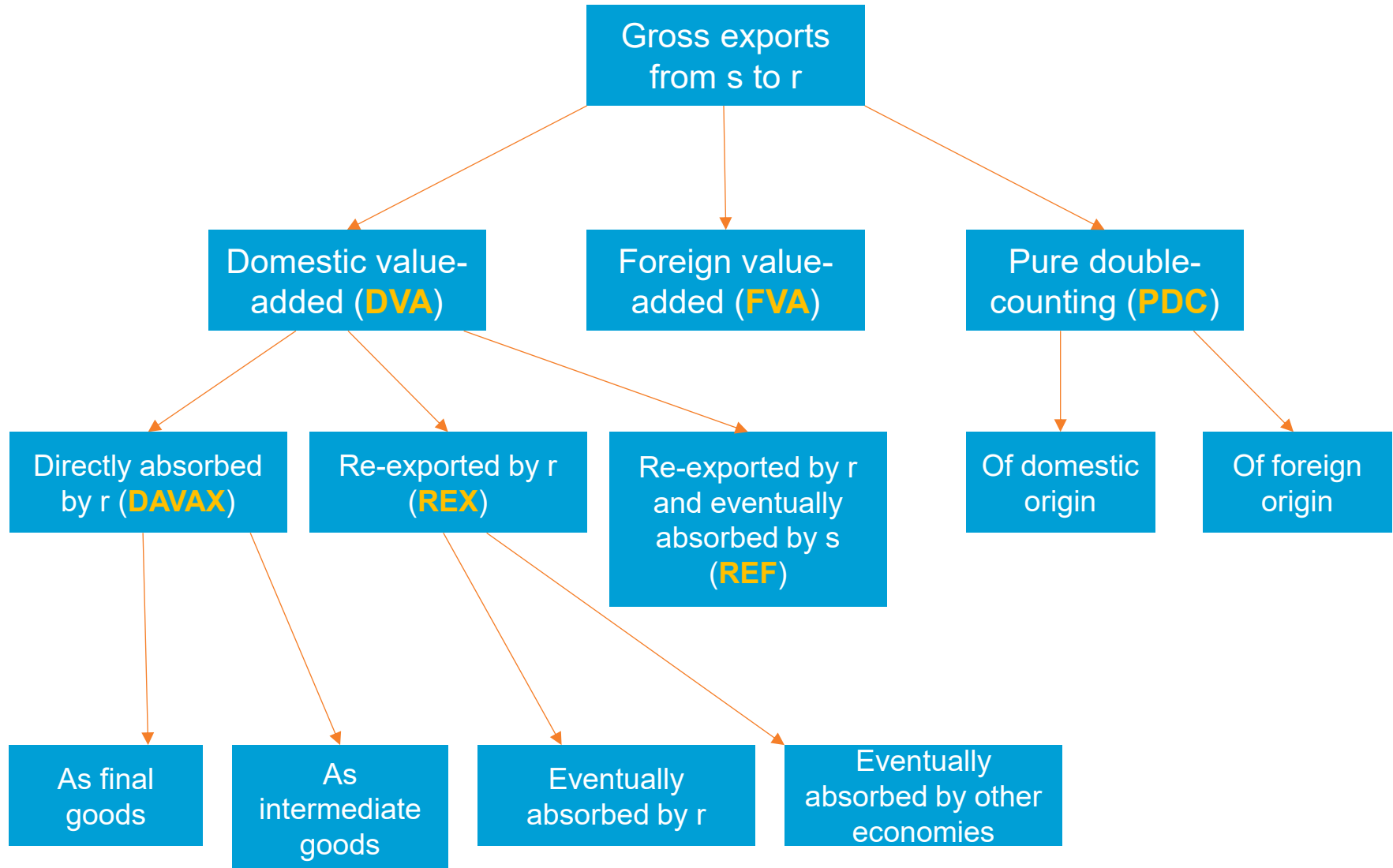
Value added matrix

ADB MRIOTs (Schematic)

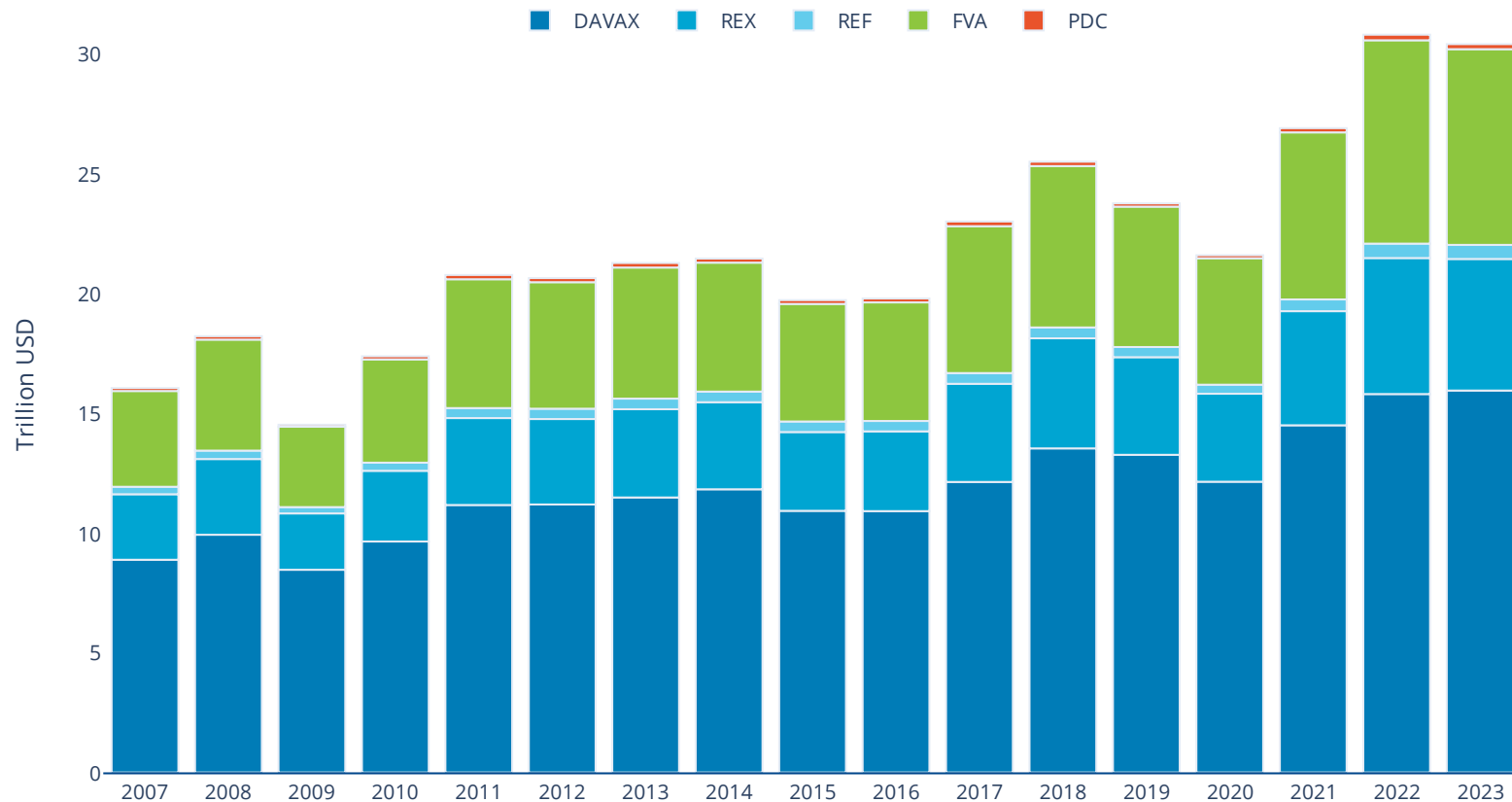
		Economy A	...	Rest of the World	Economy A	...	Rest of the World	Total Output				
		c1 ... c35	...	c1 ... c35	y1 ... y5	...	y1 ... y5					
Economy A	c1 ⋮ c35	Z			Y			x				
⋮	⋮											
Rest of the World	c1 ⋮ c35											
Value-added		va										
Total Output		x		Gross output vector (balanced)								

Analytical Examples

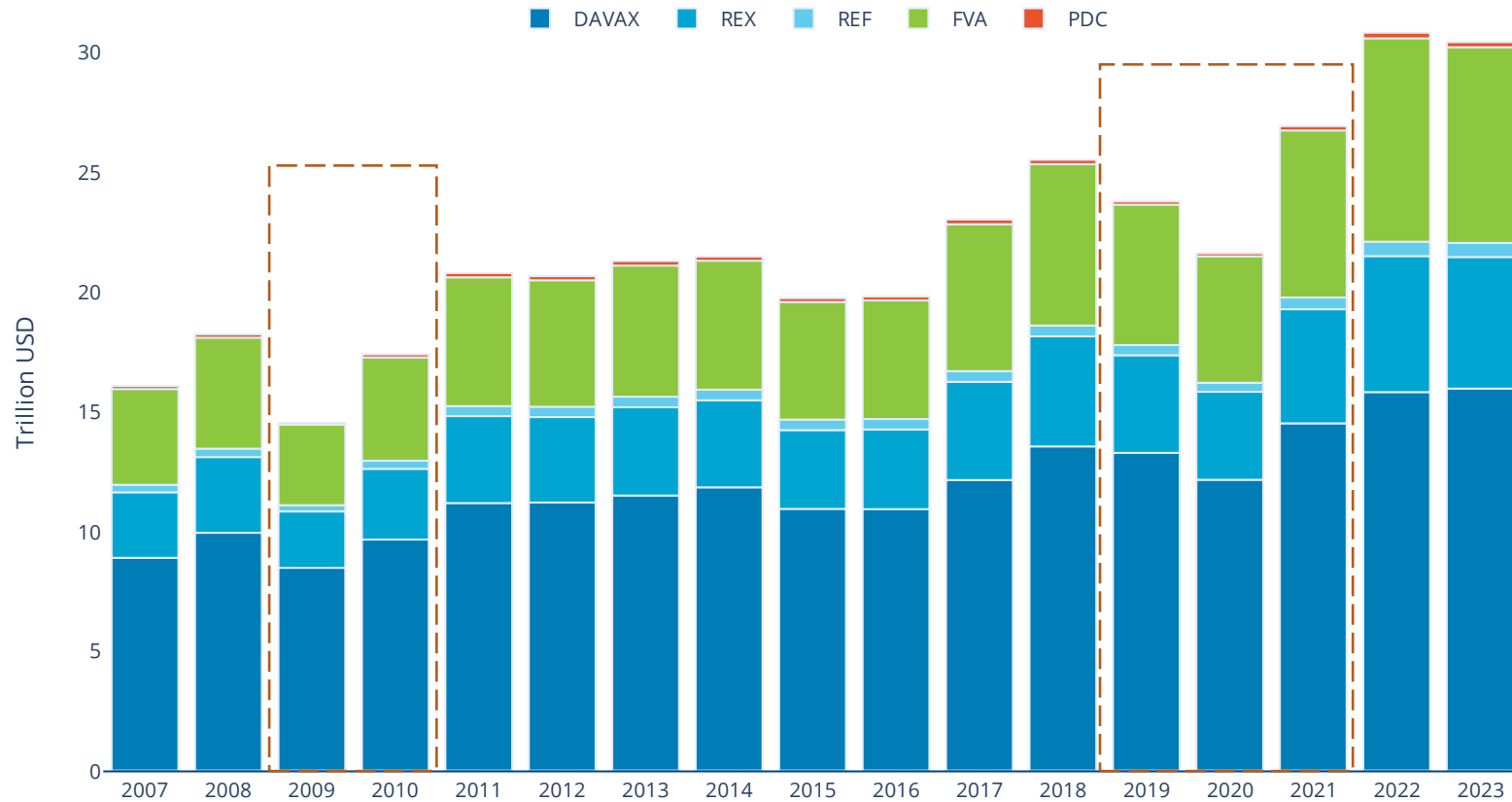
Gross Exports Decomposition Framework



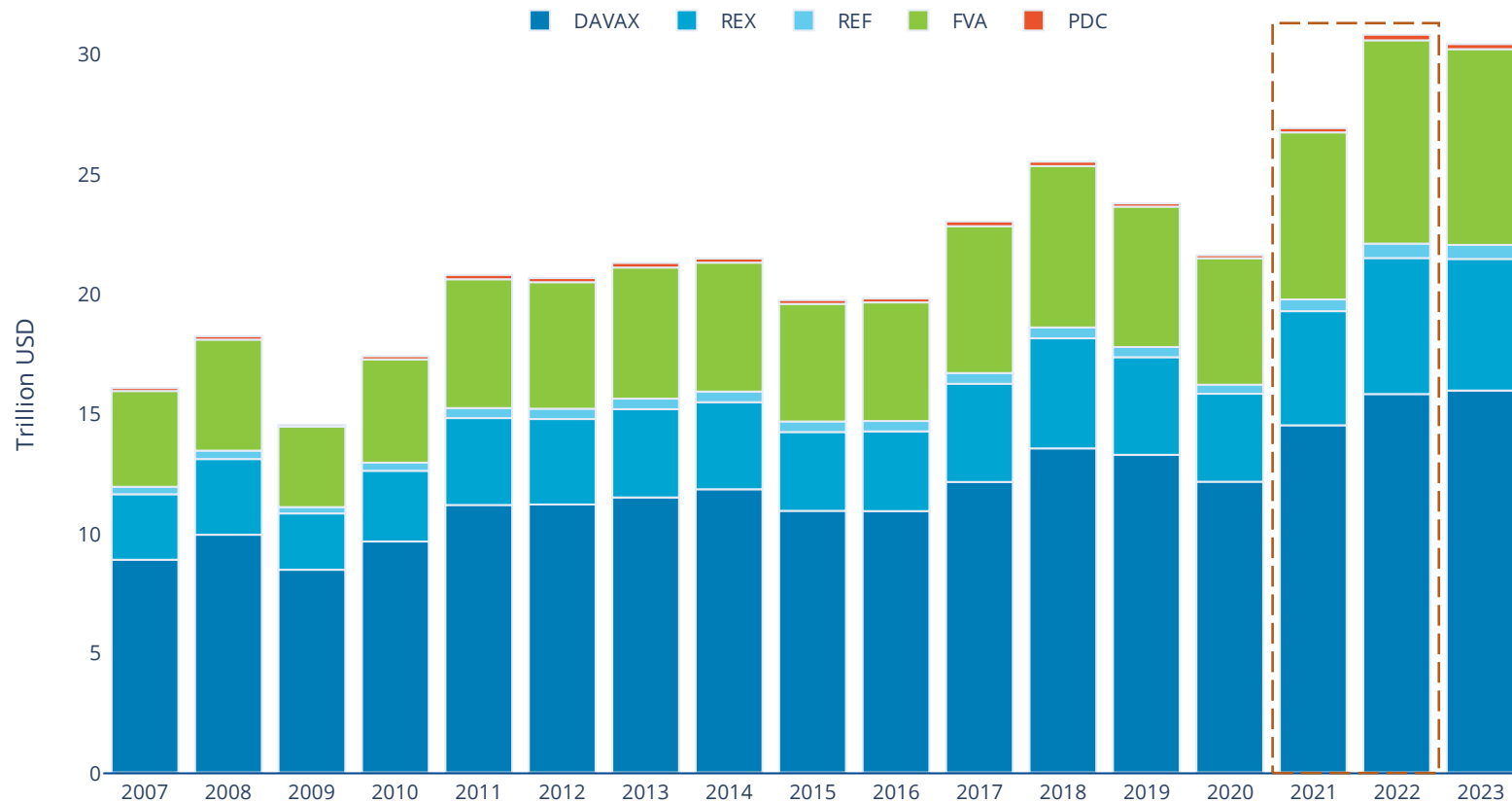
The relative shares of VA components of world exports remained stable – the majority of which is comprised by DAVAX



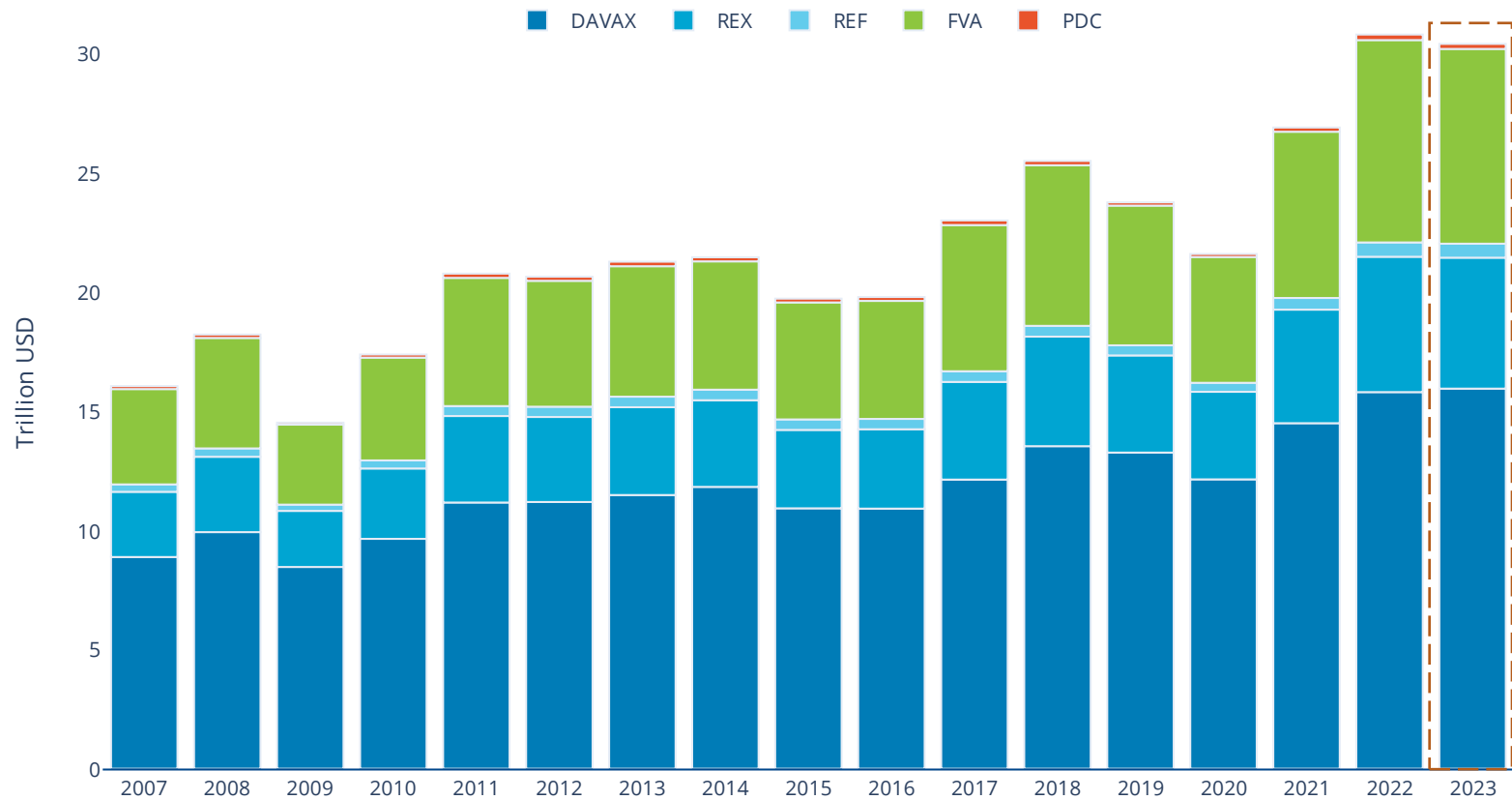
GVC-related trade appeared to be cyclical with major fluctuation in exports



As global efforts to combat the spread of COVID-19 were set in motion, signs of recovery were seen



This observed growth, however, was not sustained in 2023



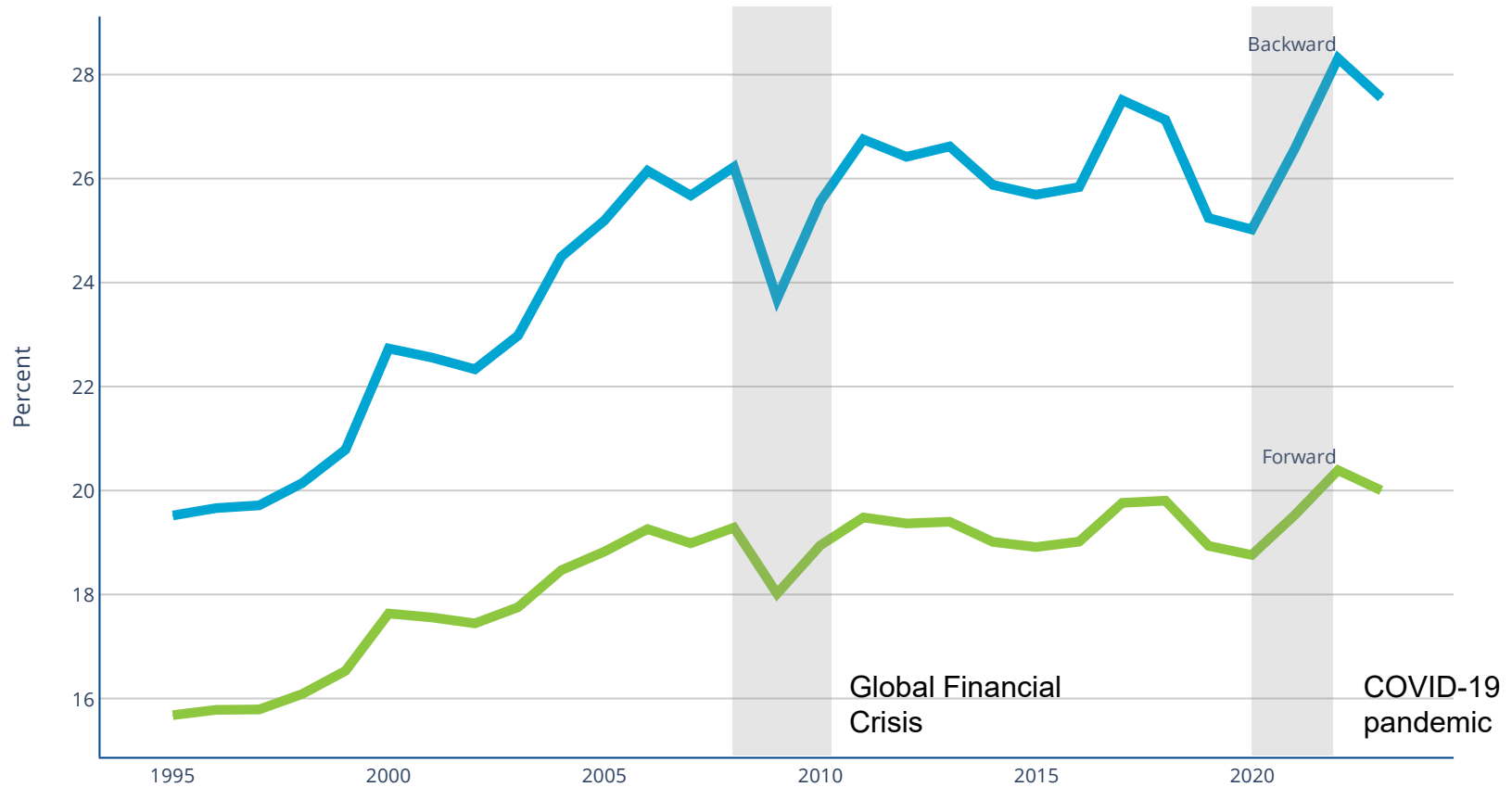
GVC Participation

$$\text{Forward GVC Participation} = \frac{\text{REX} + \text{REF}}{\text{Exports}}$$

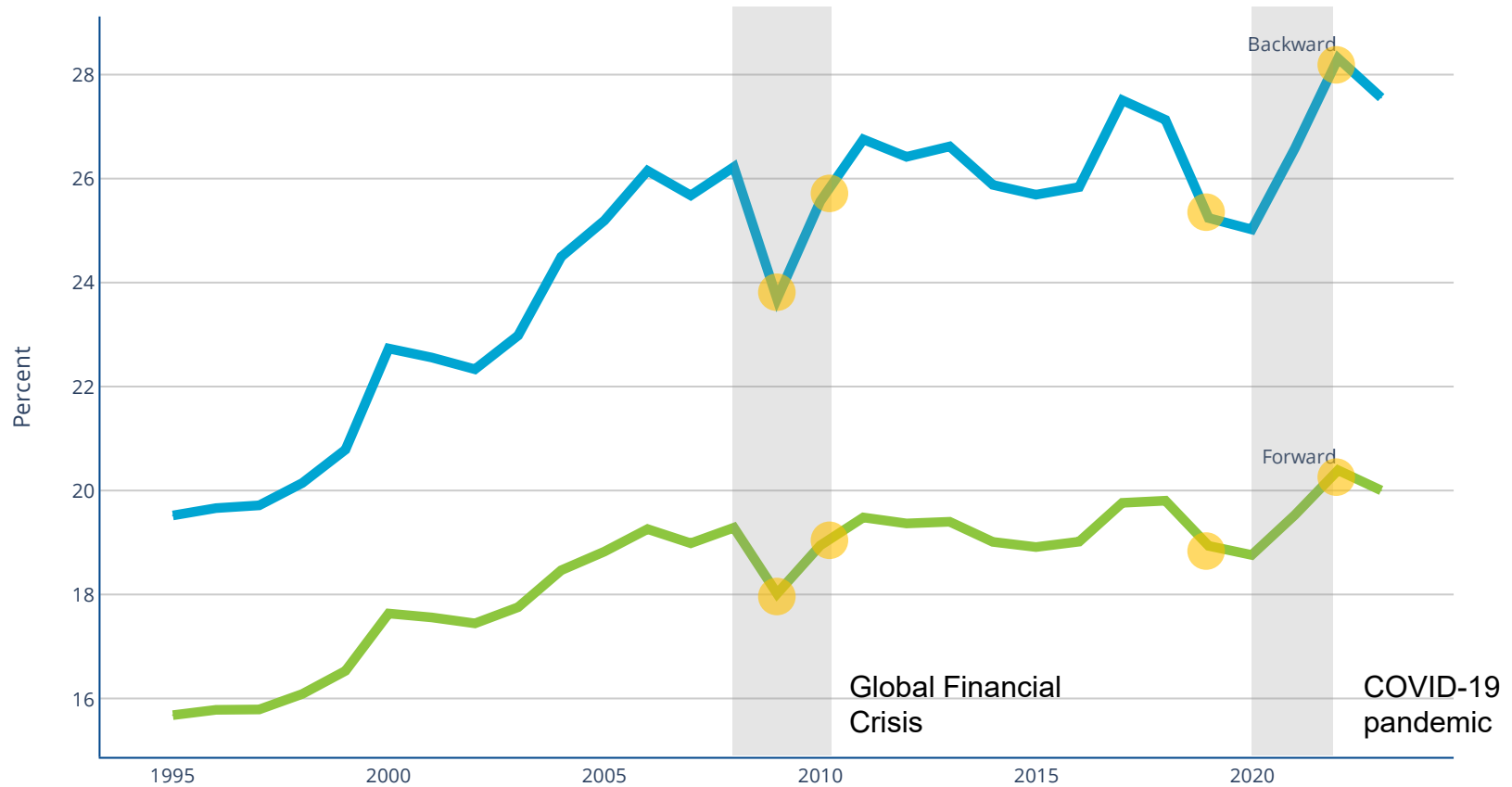
$$\text{Backward GVC Participation} = \frac{\text{FVA} + \text{PDC}}{\text{Exports}}$$

Note: For activities to be considered as GVC-related, they must cross national borders at least twice

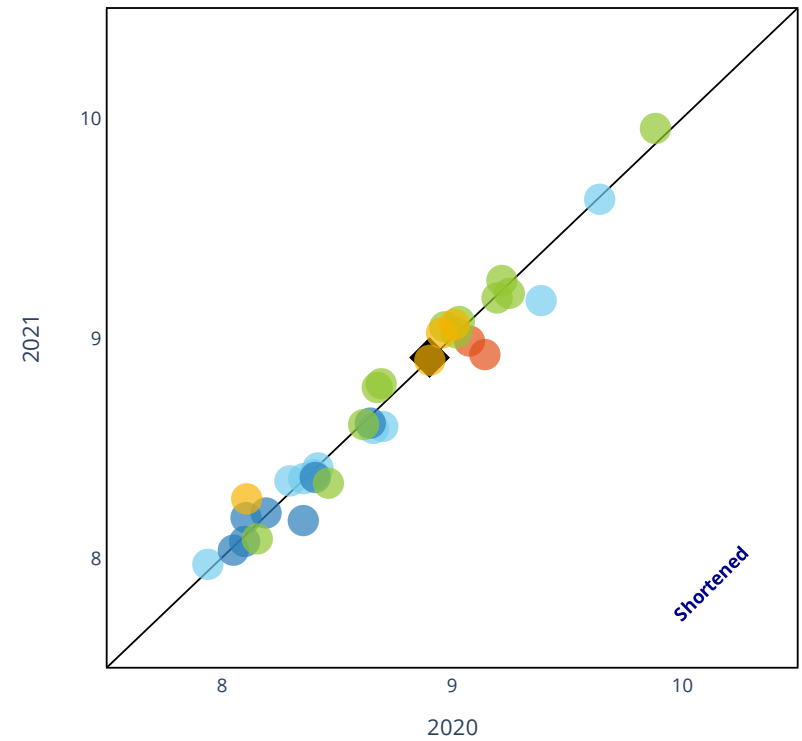
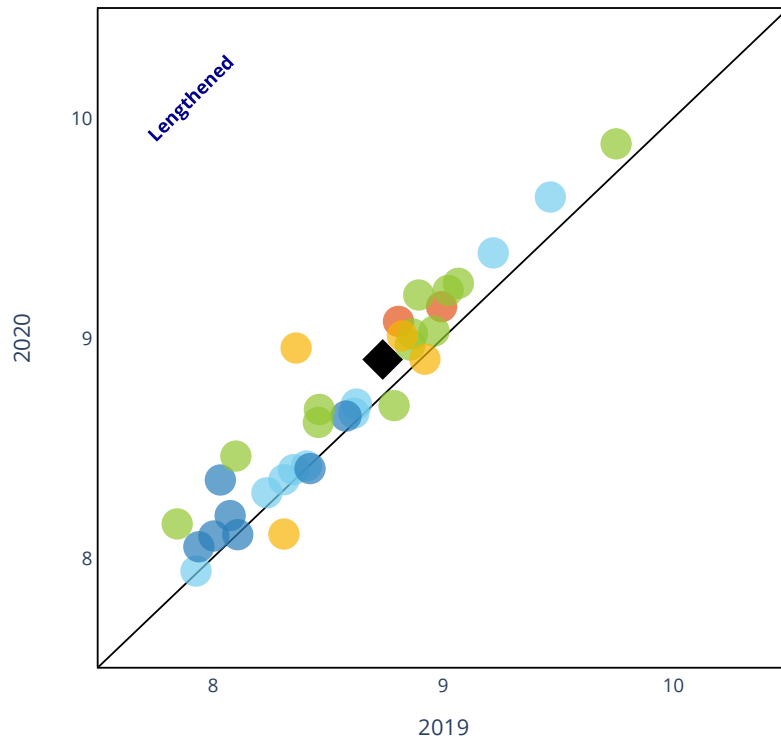
The world's trade-based GVC participation rates followed the same trend for gross exports



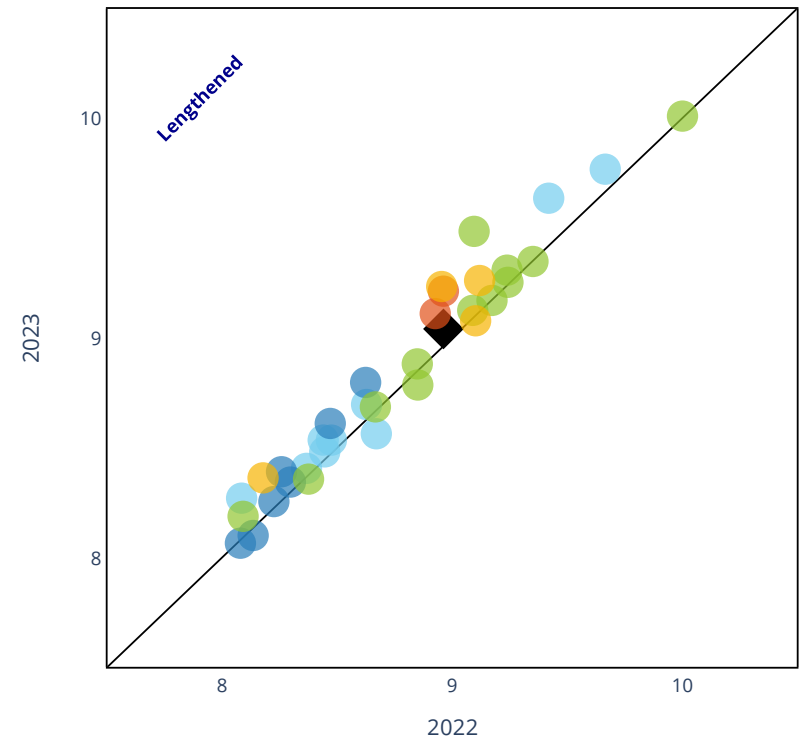
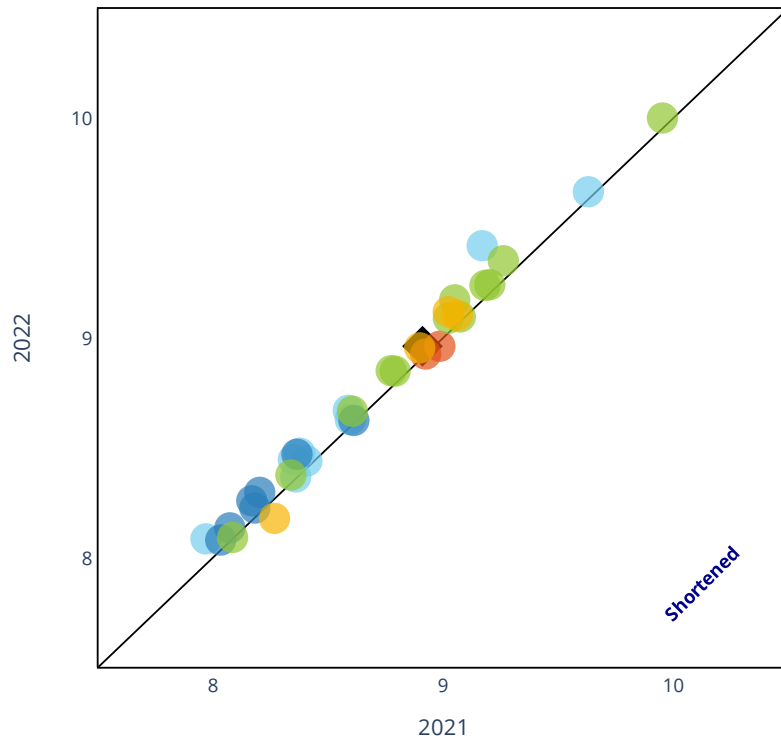
Backward GVC participation has always been greater and was about twice as sensitive to shocks compared to its forward counterpart



GVCs saw a general lengthening from 2019 to 2020 and a shortening from 2020 to 2021



From 2022 to 2023, GVC production lengths increased once again



Possible Extensions

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- Construction of a composite index
 - GVC indicators combined with variables that cover other dimensions of globalization (e.g., social, political)
- Use of inter-country input-output tables that distinguish activities of foreign affiliates from domestic firms
 - OECD analytical AMNE database
 - For tracking trade in factor income



Thank you.

