Tale of Two Trade Recoveries: Evidence from the United States

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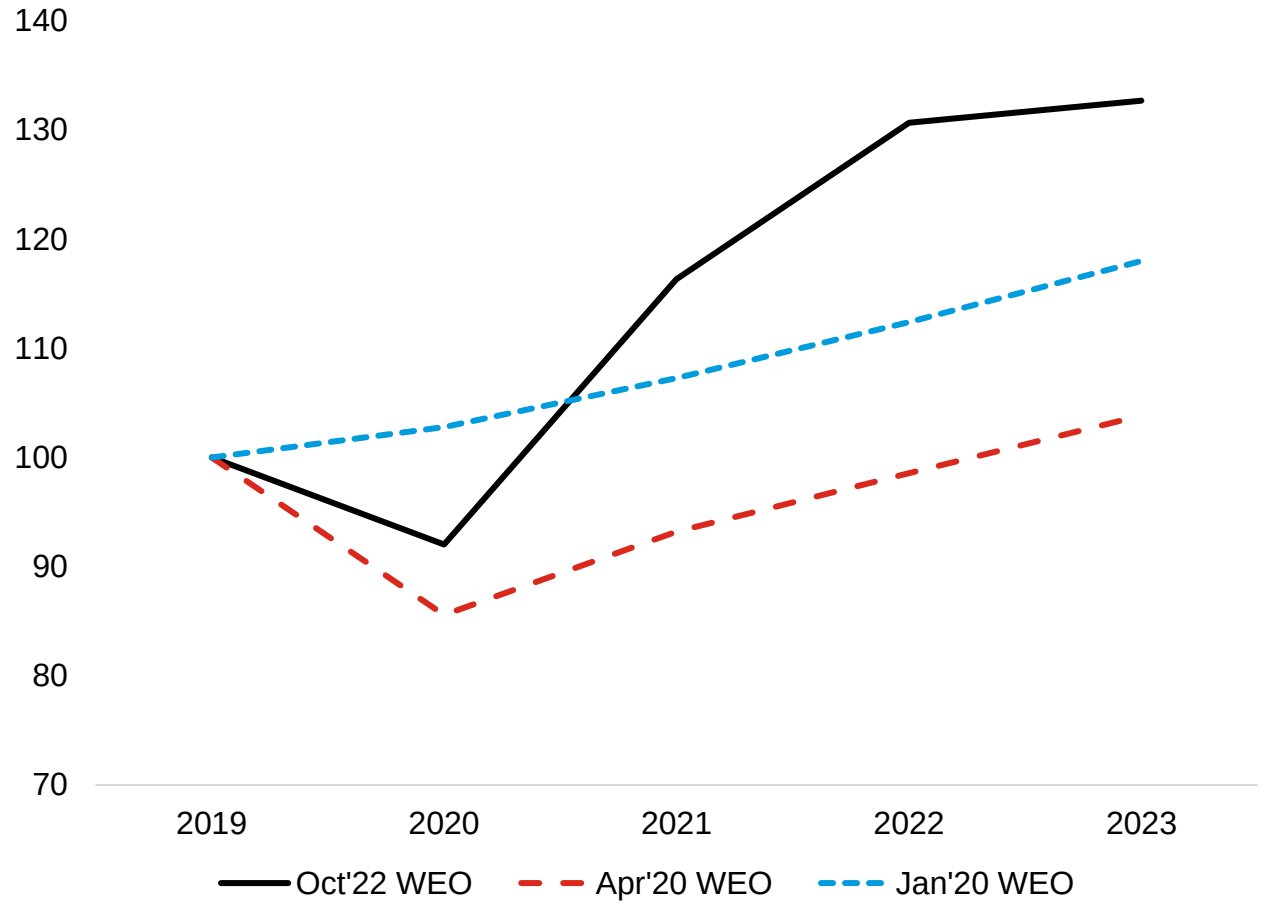
The views expressed herein are those of the authors and do not necessarily represent the views of the IMF, its Executive Board, or IMF management

Outline

- Motivation
- Prior work
- Empirical methodology
- Data
- Results
- Conclusions

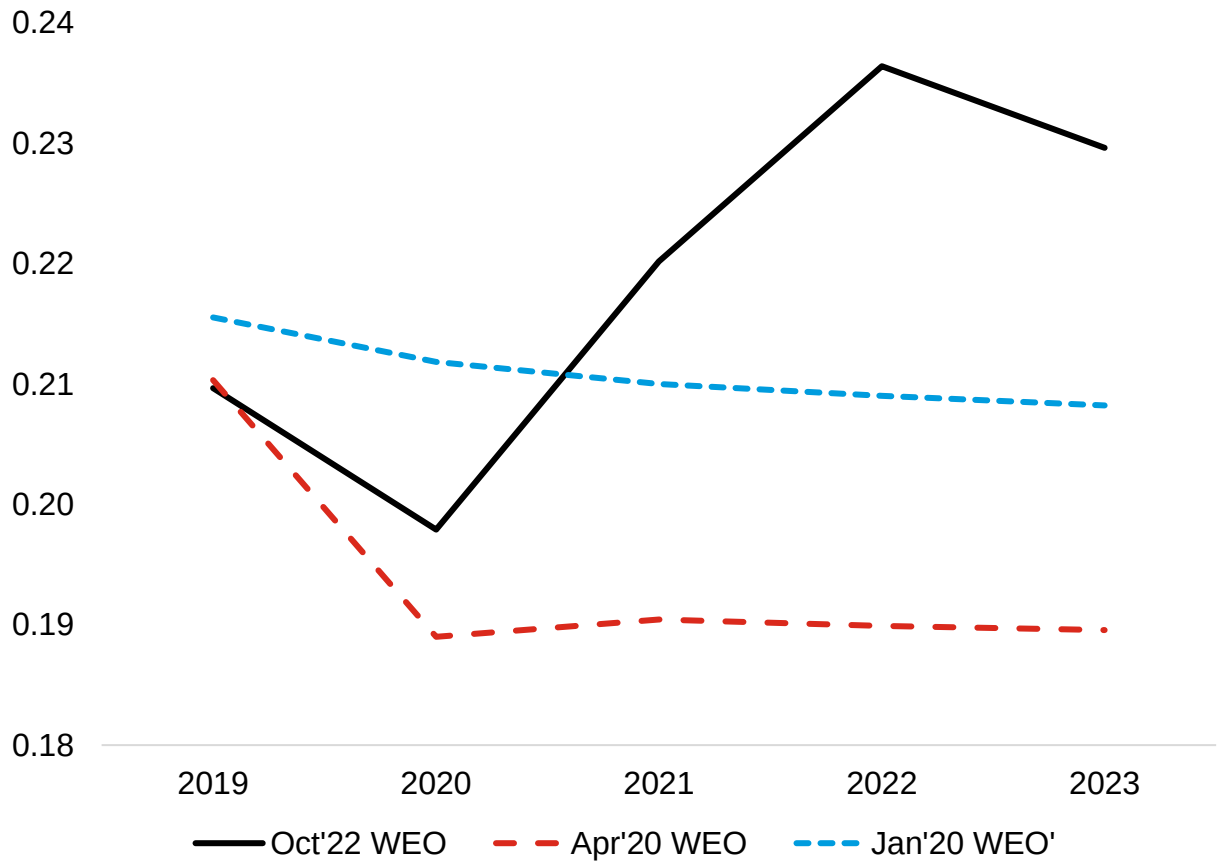
The pandemic and world trade

Collapse in world trade wasn't as deep as expected, rebound was substantially sharper than expected
World import value



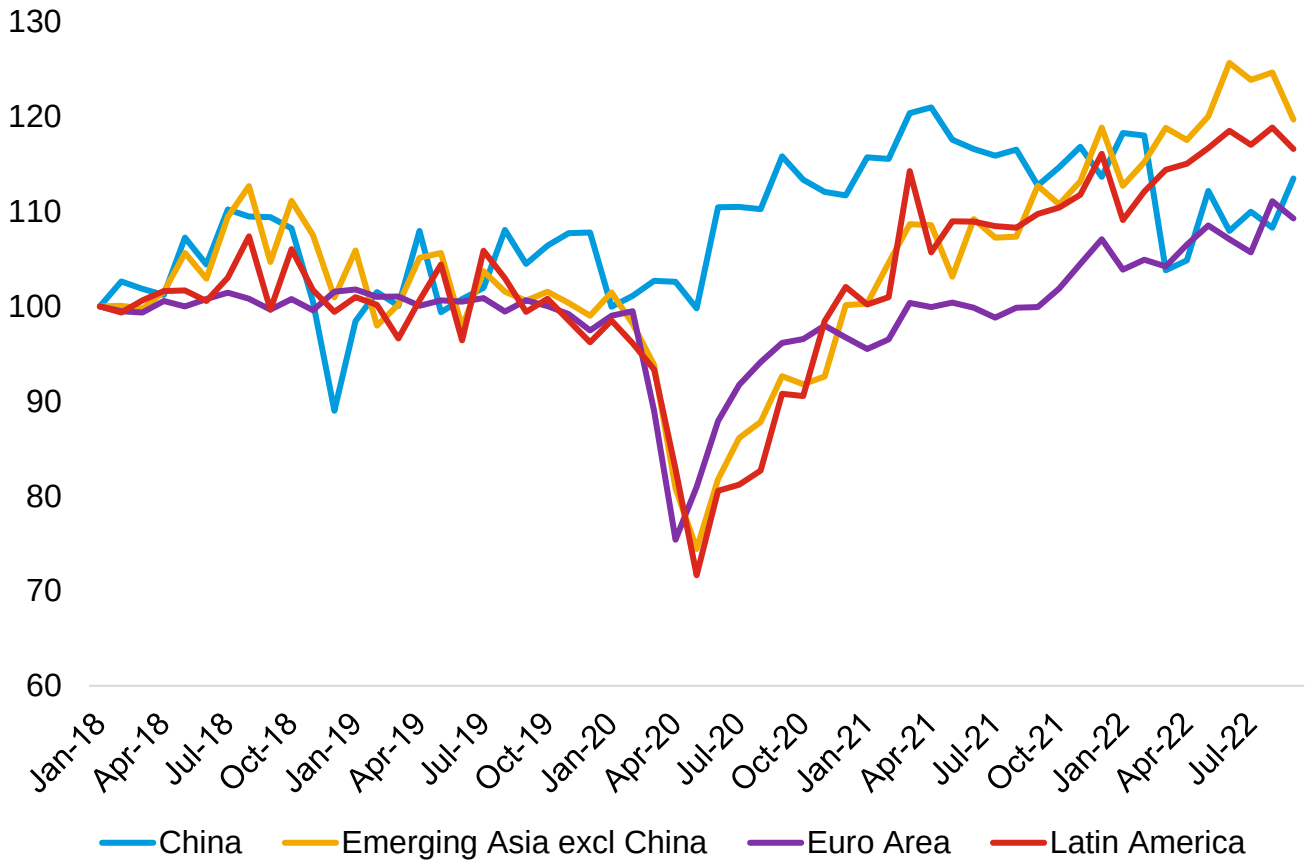
Post-pandemic trade relative to GDP

Even calculating trade as a share of world economic output, initial projections were overly pessimistic

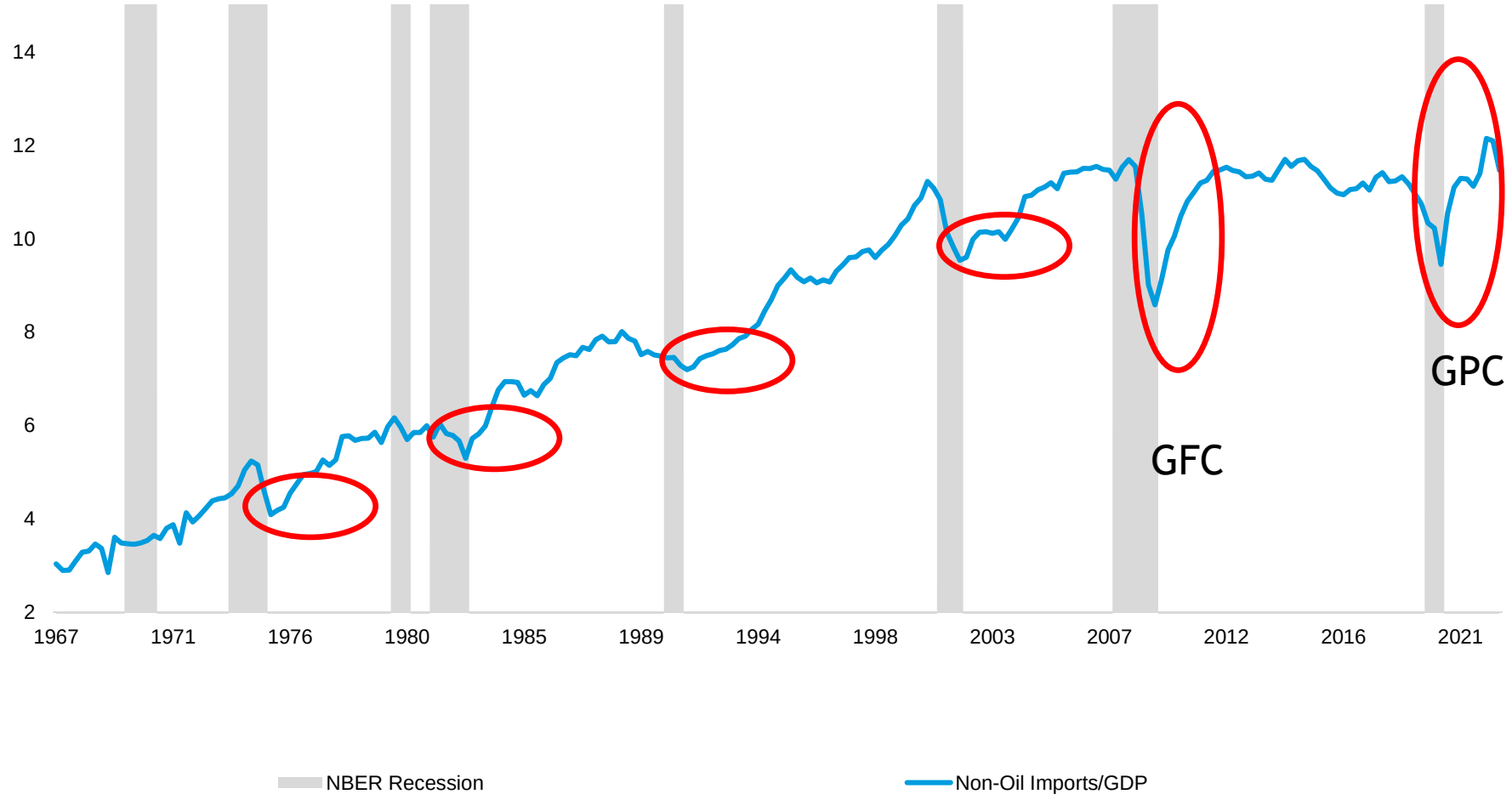


Regional rebounds from the pandemic

(Seasonally adjusted level of volume index)



US trade recoveries in historical perspective



Question and methods

- What explains the sharp rebound in trade post pandemic?
  - Vertical linkages
  - Trade credit
  - Composition (sectoral composition)
  - Rebound or base effect (degree of collapse) effects

- How does Global Pandemic Crisis (GPC) compare with Global Financial Crisis (GFC)
  - Collapse and Recovery

- Methods
  - Variation across sectors (Levchenko, Lewis, and Tesar, 2010)
  - Disaggregated data from the United States

Main takeaways

- While vertical linkages played an important role to explain the post-GFC trade collapse, they play an insignificant role in the pandemic, and during recoveries

  ➡ Vertical linkages only during the GFC collapse

- Composition effects matter
  - Post the GPC, both exports and imports recovered more in industries where industrial production increased more

    ➡ Sectoral effects important

- Sectors which collapsed more were the sectors which rebounded faster

  ➡ No hysteresis

Related literature

- Extensive literature on trade collapse after GFC
  - Vertical linkages: Bems, Johnson, and Yi (2010)
  - Trade finance/credit: Chor and Manova (2011), Amiti and Weinstein (2011)
  - Compositional effects: Baldwin (2009), Levchenko, Lewis and Tesar (2010), Eaton et al. (2016)
  - Other explanations e.g. inventory adjustment: Alessandria, Kaboski and Midrigian (2011) among many others

- Emerging literature on GPC
  - Trade policy: Baldwin and Evenett (2020)
  - Shipping delays and supply chain frictions: Alessandria et. al. (2022)

Empirical methodology

1. $\Delta y_{ci} = \alpha x_i + \beta C_i + \varepsilon_{it}$ **Collapse Phase**

2. $\Delta y_{ri} = \alpha x_i + \beta C_i + \gamma \Delta y_{ci} + \varepsilon_{it}$ **Recovery Phase**

Δy_{ci} = percentage change in US imports (or exports) in the 6-digit category i during the collapse

Δy_{ri} = during the recovery

x_i = vector of main explanatory variables [proxies for downstream and upstream linkages, trade credit, composition effects, and degree of collapse].

C_i = vector of control variables

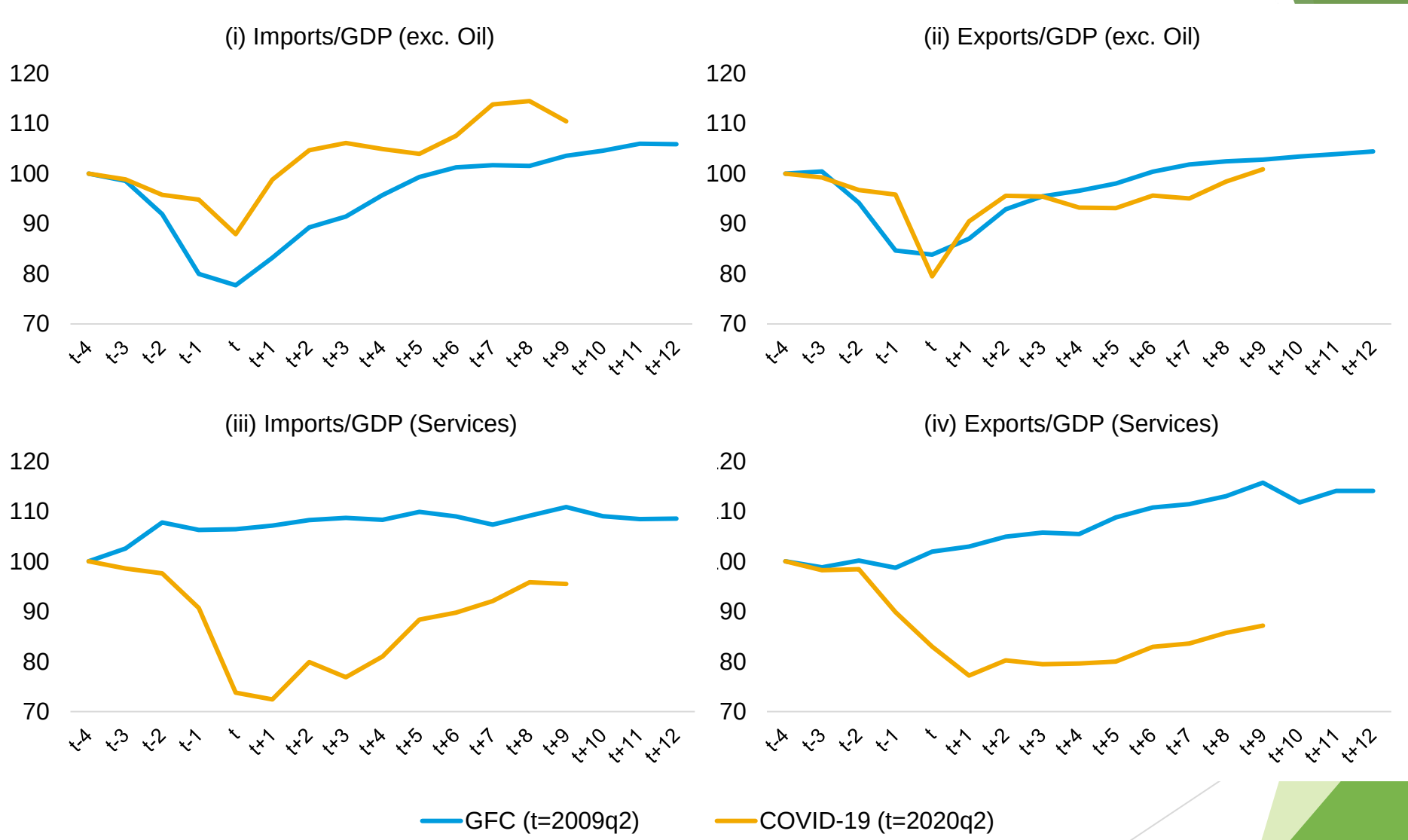
Data and definitions I

- Timing
  - Collapse: GFC: 2008q2 to 2009q2; GPC 2019q2 to 2020q2
  - Recovery: GFC: 2009q2 to 2011q2; GPC: 2020q2 to 2022q2
- Frequency and disaggregation
  - Quarterly data of U.S. imports and exports
  - NAICS 6-digit level
- Trade credit
  - “accounts payable/cost of goods sold”; “accounts receivable/sales- Compustat (2000-08; 2013-17)
- Composition
  - Industrial production (IP) index from U.S. Fed
  - Durable=1

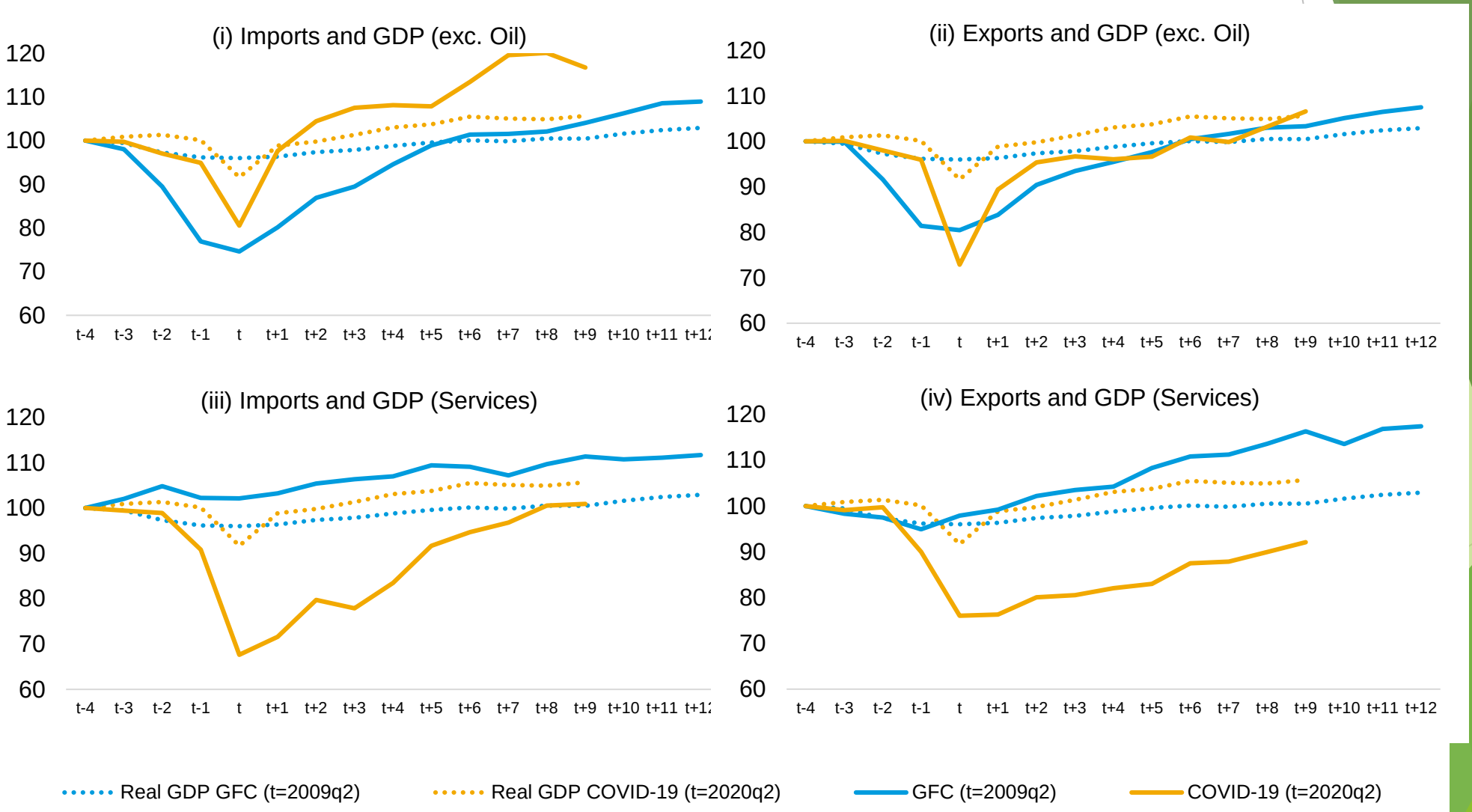
Data and definitions II

- Vertical linkages
  - U.S. BEA Input-Output Table 2002 (GFC) and 2012 (GPC)
  - Downstream:
    - average use of a commodity in row *i* in all downstream industries *j (#* industries that use *i* as an inputO
    - Herfindahl index of downstream intermediate use
  - Upstream:
    - intensity of intermediate good use by industry *j* (# intermediate inputs used by j),
    - Herfindahl index of intermediate use shares by industry j.
  - Production sharing = intra-firm trade as a fraction of total trade in an industry

First look at data



Recovery of trade after the crises cannot explained by dynamic of GDP



Sharper recovery in imports post GPC

period	Growth Non-Oil Real Exports/GDP	Growth Real Exports (services)/GDP	Growth Non-Oil Real Imports/GDP	Growth Real Imports (services)/GDP
GFC Collapse	-16.2	2.0	-22.3	6.4
GPC Collapse	-20.5	-17.0	-12.1	-26.2
GFC Recovery	22.3	10.8	30.7	2.5
GPC Recovery	23.8	3.3	30.2	29.9
GFC Pre to Post	2.5	13.0	1.6	9.1
GPC Pre to Post	-1.6	-14.3	14.5	-4.2

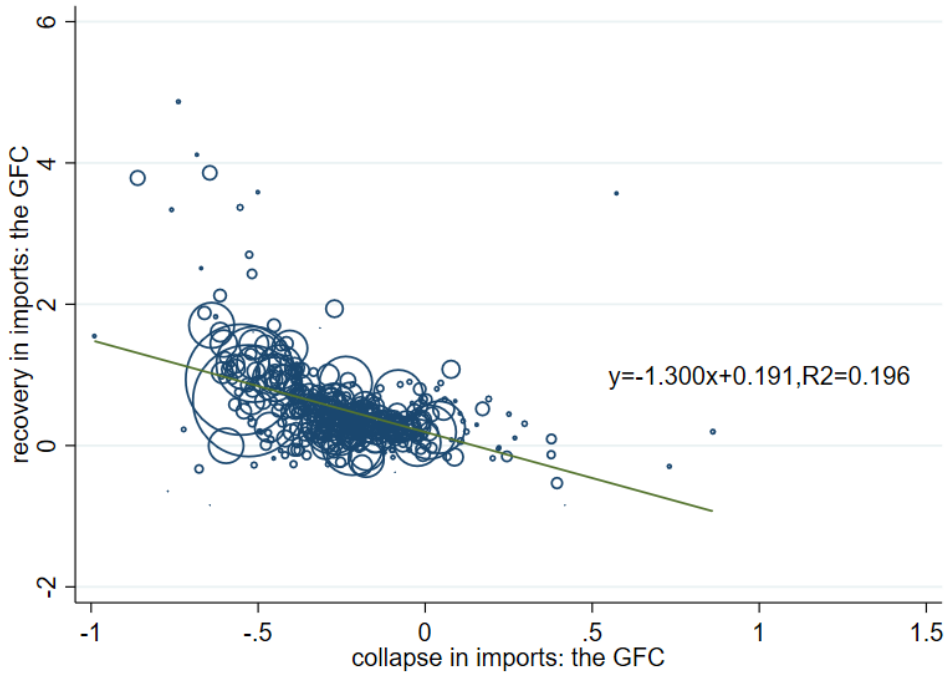
No evidence for role of vertical linkages in GPC collapse

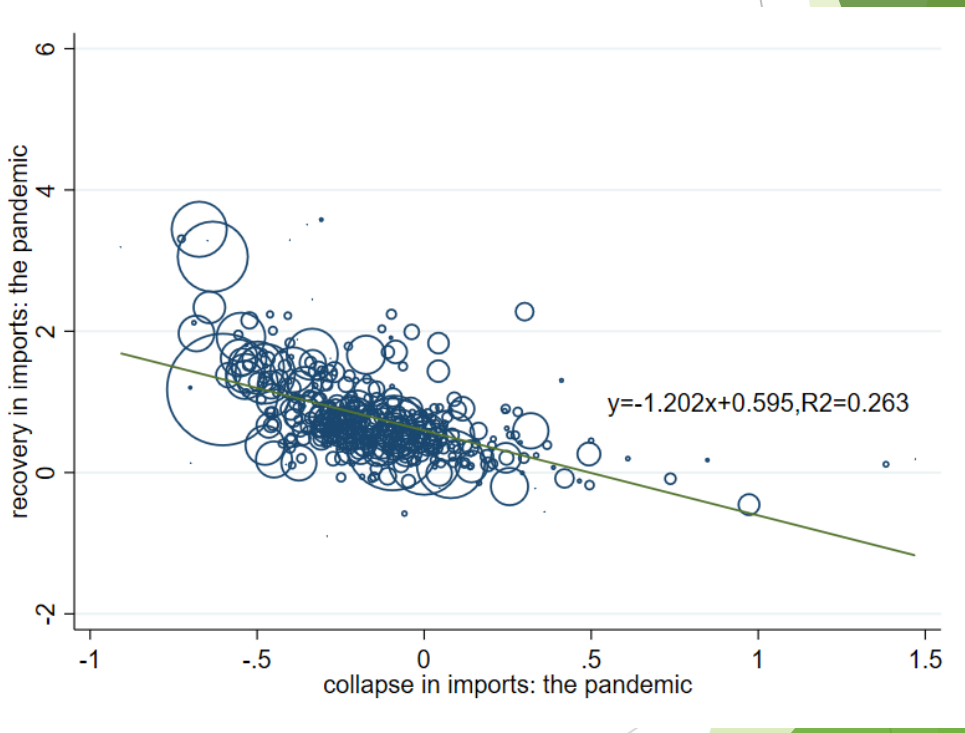
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Average Downstream Use	-0.192***				0.008			
	(0.037)				(0.022)			
Number of Downstream Industries		-0.156***				0.016		
		(0.040)				(0.022)		
Downstream Herfindahl			0.130***				-0.054**	
			(0.045)				(0.027)	
Production Sharing				-0.049				-0.063
				(0.049)				(0.055)
Share in Total	-0.082***	-0.094***	-0.126***	-0.107***	-0.048**	-0.046**	-0.037*	-0.038*
	(0.028)	(0.025)	(0.025)	(0.026)	(0.020)	(0.021)	(0.021)	(0.019)
Elasticity of Substitution	-0.055	-0.065	-0.059	-0.023	0.000	-0.002	0.002	0.001
	(0.056)	(0.057)	(0.057)	(0.057)	(0.044)	(0.043)	(0.045)	(0.042)
Labor Intensity	-0.153***	-0.139***	-0.152***	-0.141***	-0.063	-0.063	-0.067	-0.135*
	(0.052)	(0.052)	(0.053)	(0.051)	(0.042)	(0.041)	(0.042)	(0.071)
Observations	440	440	440	446	385	385	385	344
R-squared	0.074	0.061	0.054	0.035	0.008	0.008	0.011	0.019

… nor in recoveries.. Greater the collapse, stronger the rebound (no hysteresis)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Percentage change in trade during collapse	-0.403***	-0.422***	-0.420***	-0.413***	-0.341***	-0.339***	-0.337***	-0.363***
	(0.102)	(0.102)	(0.102)	(0.099)	(0.068)	(0.067)	(0.067)	(0.094)
Average Downstream Use	0.085				0.104**			
	(0.057)				(0.052)			
Number of Downstream Industries		-0.019				-0.010		
		(0.044)				(0.045)		
Downstream Herfindahl			0.012				0.040	
			(0.043)				(0.057)	
Production Sharing				0.124**				-0.013
				(0.049)				(0.066)
Share in Total	-0.039	-0.026	-0.029	-0.046	0.042	0.058	0.052	0.062
	(0.026)	(0.025)	(0.027)	(0.029)	(0.046)	(0.053)	(0.055)	(0.054)
Elasticity of Substitution	0.113**	0.105*	0.106*	0.102*	0.023	0.020	0.017	0.017
	(0.057)	(0.058)	(0.057)	(0.056)	(0.049)	(0.050)	(0.050)	(0.051)
Labor Intensity	-0.035	-0.029	-0.031	-0.058	0.007	-0.015	-0.012	0.009
	(0.065)	(0.063)	(0.065)	(0.060)	(0.054)	(0.057)	(0.057)	(0.059)
Observations	439	439	439	439	384	384	384	343
R-squared	0.189	0.182	0.182	0.196	0.120	0.109	0.111	0.112
					0.189	0.182	0.182	0.196

Imports' Recovery versus Collapse: sectoral rebound





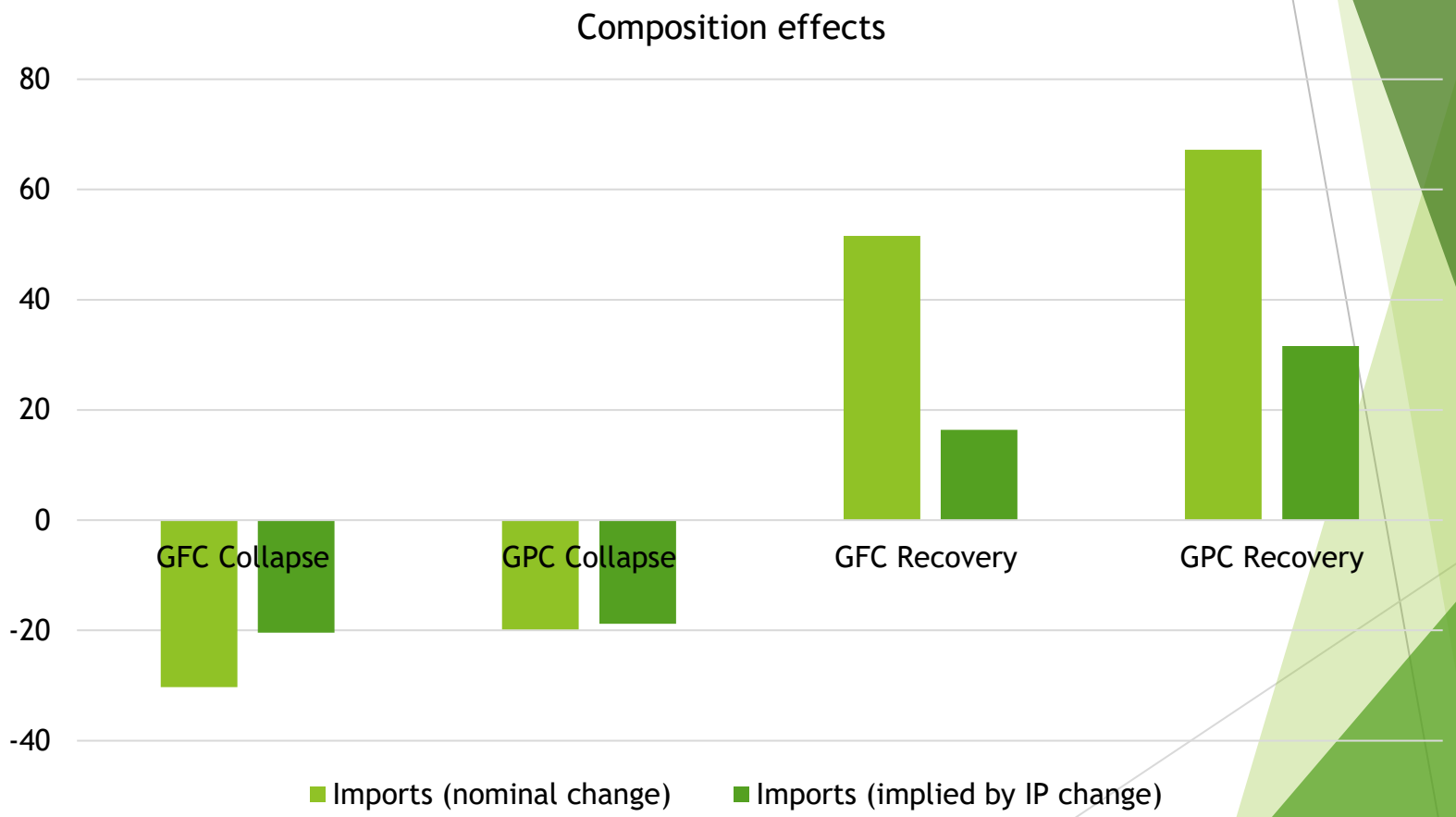
Composition effects matter to explain collapse

	(1)	(2)	(3)	(4)
Percentage Change in Industrial Production	0.288***		0.094***	
	(0.043)		(0.021)	
Durable dummy		-0.208***		-0.078
		(0.047)		(0.056)
Share in Total	-0.092***	-0.094***	-0.025	-0.034*
	(0.035)	(0.030)	(0.018)	(0.019)
Elasticity of Substitution	-0.001	-0.032	0.012	0.000
	(0.060)	(0.060)	(0.044)	(0.044)
Labor Intensity	-0.083	-0.091*	-0.079	-0.042
	(0.056)	(0.051)	(0.061)	(0.048)
Observations	404	446	345	385
R-squared	0.122	0.073	0.027	0.014

.. And recoveries too

	(1)	(2)	(3)	(4)
Percentage change in trade during collapse	-0.338***	-0.421***	-0.335***	-0.340***
	(0.113)	(0.104)	(0.087)	(0.068)
Percentage Change in Industrial Production	0.120**		0.183***	
	(0.055)		(0.044)	
Durable dummy		-0.011		-0.001
		(0.049)		(0.050)
Share in Total	-0.030	-0.027	0.013	0.058
	(0.027)	(0.024)	(0.057)	(0.055)
Elasticity of Substitution	0.125**	0.107*	0.006	0.019
	(0.058)	(0.056)	(0.049)	(0.049)
Labor Intensity	0.003	-0.029	-0.016	-0.014
	(0.053)	(0.060)	(0.058)	(0.056)
Observations	399	439	344	384
R-squared	0.195	0.182	0.147	0.109

Trade collapse, especially during GPC explained by output; ½ of recovery in trade in GPC from output



Summary of the results

	Global Financial Crisis		Global Pandemic Crisis	
	Collapse	Recovery	Collapse	Recovery
Downstream Linkages	Yes	No	No	No
Upstream Linkages	Some	Some for exports	Some	Some
Credit Intensity	No	No	No	No
Composition (IP)	Yes (strong)	Yes (strong)	Yes (strong)	Yes (strong)
Durables	Yes (strong)	Some for Exports	Yes (weak)	Yes (weak)
Rebound	-	Yes (strong)	-	Yes (strong)

Other findings

- Results similar for exports
- No role for trade credit during collapse or recovery, for GFC and GPC

Conclusions

CONTRIBUTION

- Collapse in trade after GFC and GPC attracted lot of attention
- Quick and unexpected recovery less studied. This paper fills the gap. Using data from the US

FINDINGS

- No evidence for role of vertical linkages in GPC collapse, nor in recoveries
- Greater the collapse, stronger the rebound (no hysteresis)
- Composition effects matter to explain collapse and recoveries