MAPPING THE PARTICIPATION OF GREECE IN GLOBAL VALUE CHAINS

P. Dimas[1,*], D. Stamopoulos[1], P. Panagiotopoulos[1], A. Protogerou[1]

[1]Laboratory of Industrial and Energy Economics (LIEE), School of Chemical Engineering, National Technical University of Athens, Greece

(*petrdimas@chemeng.ntua.gr)

Scope – Aim

The aim of this paper is to map Greece's participation in Global Value Chains (GVCs) at the country and sector level. We estimate standard input-output (IO) measures of GVC participation by extending and applying a production-based decomposition of value-added flows and offer a comprehensive mapping of the different dimensions of GVC integration resulting at novel dataset of indicators for the country and sector level. We use this to map the participation of Greece in GVCs in forward and backward production linkages and identify its most GVC-intensive sectors.

Theoretical background

The rise of GVCs has revolutionized production, as national and organizational boundaries no longer bound firms' production activities. Instead, outsourcing and offshoring can disperse their activities to different locations based on efficiency and cost-minimization criteria [1,2] This gives rise to a finer international division of labour and production activities across countries and sectors, resulting in significant opportunities for greater specialisation gains. Each country must identify and understand its structural weaknesses and comparative advantages and leverage them to design strategies that secure the maximum gains from GVC participation.[3] In this context, assessing the extent of the integration within GVCs has become key to drawing comparisons with other economies, identifying strategic opportunities and shaping its industrial policy. Issues such as the GVCs positioning and participation patterns have been extensively considered for the comparative assessment of national economic performance.[4]

Methodology

The methodological procedure utilizes the latest OECD inter-country input-output tables[6] (ICIOTs), covering 45 NACE rev.2 sectors for 76 countries from 1995 to 2020.

We apply a production-based decomposition[5] to obtain the bilateral value-added flows that concern the GVC components of international trade for forward (panel a) and backward (panel b) participation.
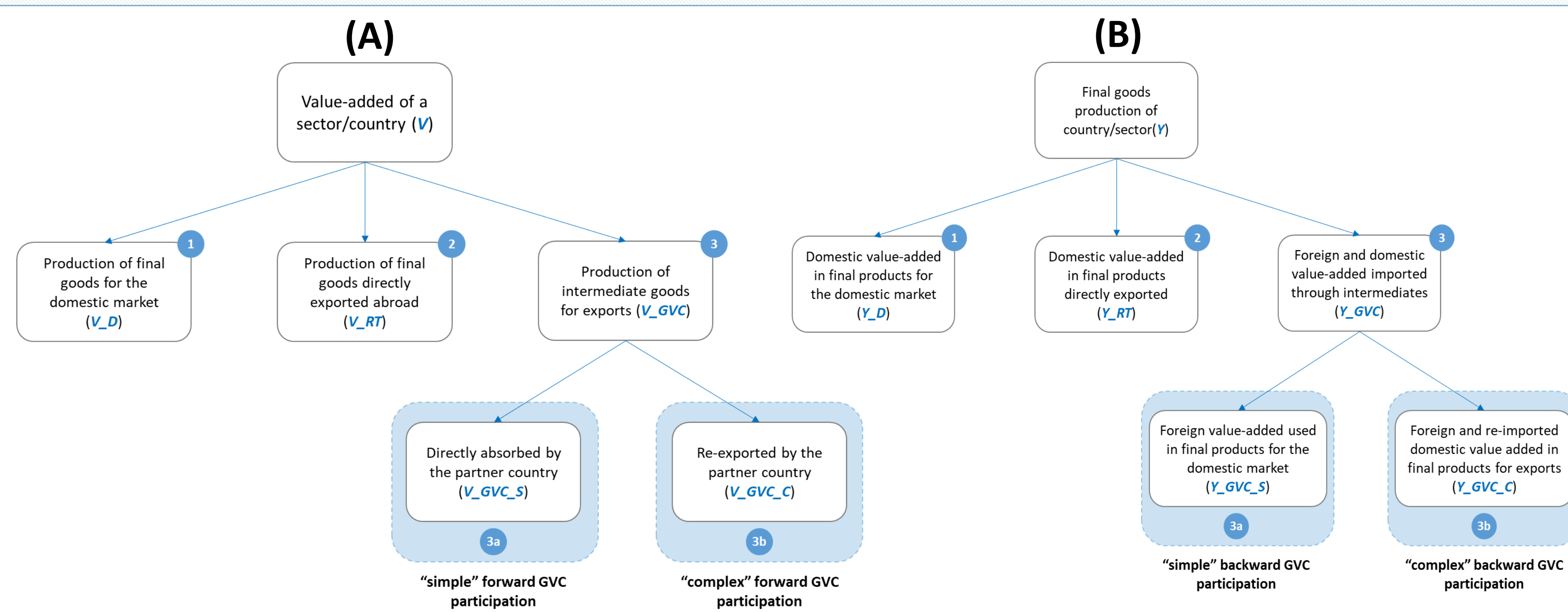
## Forward (a) and backward (b) GVC participation for Greece (GRC) and the EU

(A) (B)
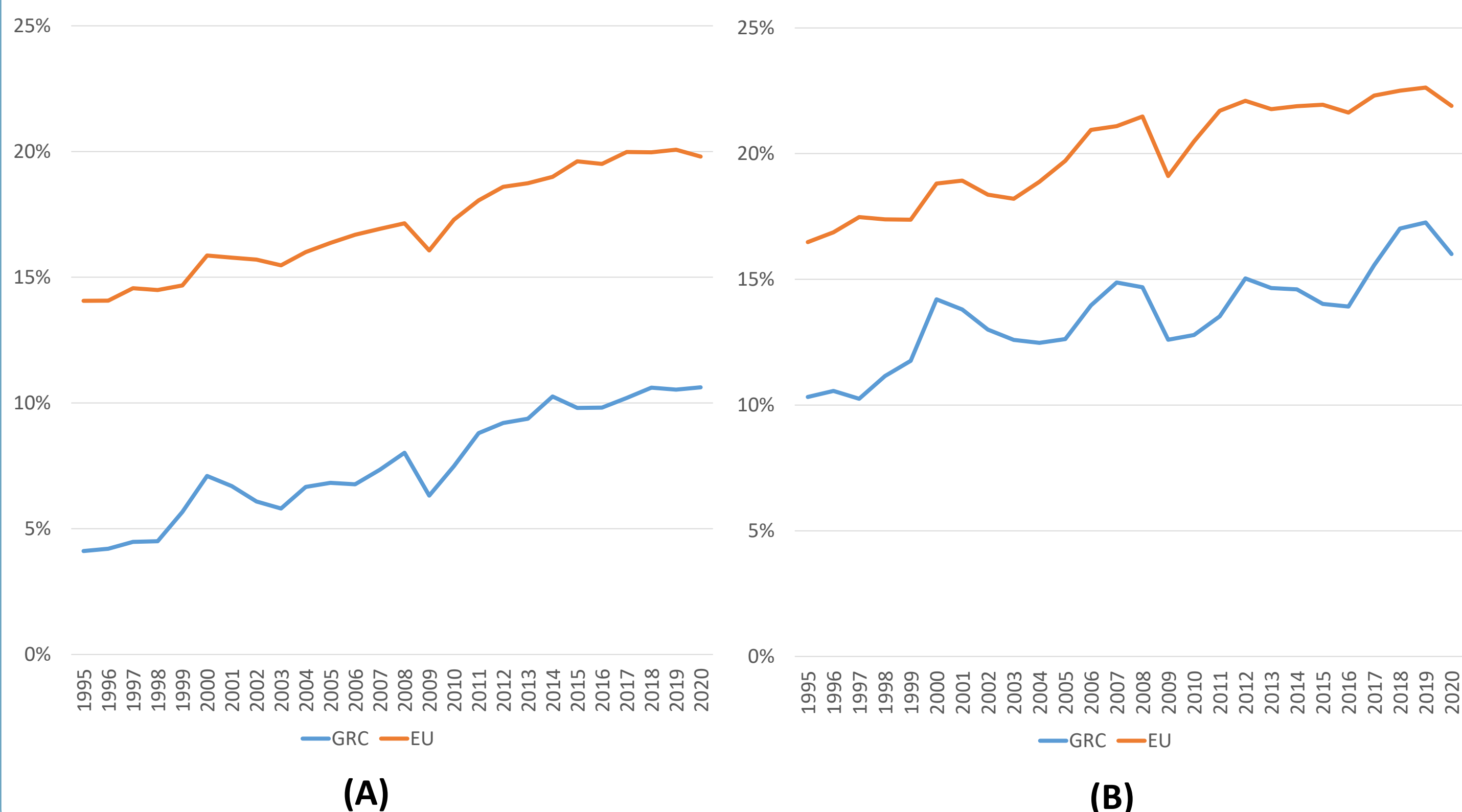
Top performing sectors (NACE Rev. 2 classification) in forward GVC participation

| 1995	2010	2020
C24 (36.9%)	H50 (59.9%)	C24 (84.7%)
C19 (21.6%)	C24 (50.1%)	B07_08 (73.2%)
H50 (21.4%)	B09 (31.7%)	B09 (61.4%)
B07_08 (18.4%)	B07_08 (30.1%)	H50 (56.9%)
C20 (17.9%)	H52 (28.5%)	H51 (42.5%)
C22 (16.6%)	H51 (28.1%)	C19 (42.3%)
A03 (16.2%)	C20 (24.0%)	C20 (34.4%)
B09 (16.0%)	C19 (23.4%)	H52 (34.4%)
H52 (10.9%)	C22 (21.5%)	B05_06 (31.8%)
C27 (9.84%)	A03 (17.6%)	C22 (31.0%)

The top performing sectors retain their status across the examined period, and include basic metals (C24), water transports (H50), mining supporting activities (B09), and mining of metals and mines and quarries (B07_08). Other notable sectors include petrochemicals (C19), chemicals (C20), and rubbers and plastic products (C22).

Forward Timeline of Greece's simple forward (a), complex forward (b), and simple backward (c) and complex backward (d) GVC participation from 1995 to 2020
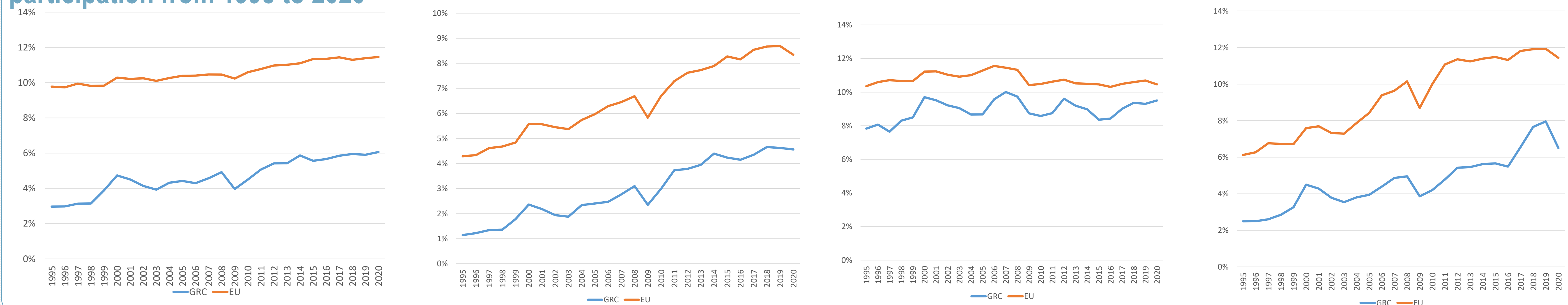
Electronics/opticals (C26), machinery and equipment (C28), electrical equipment (C27), fabricated metals (C25), and petrochemicals (C19) are heavily orientated towards BCK participation, while water transports (H50), rubbers and plastics (C22), non-metallic minerals (C23), and software and computer services (J62-J63) present a more balanced orientation pattern in their GVC participation activities.

Most Greek manufacturing sectors are BCK orientated → possible high dependency in critical inputs from abroad. On the other hand, mining, and quarrying activities (B sectors) along with basic metals (C24) dominate FWD participation
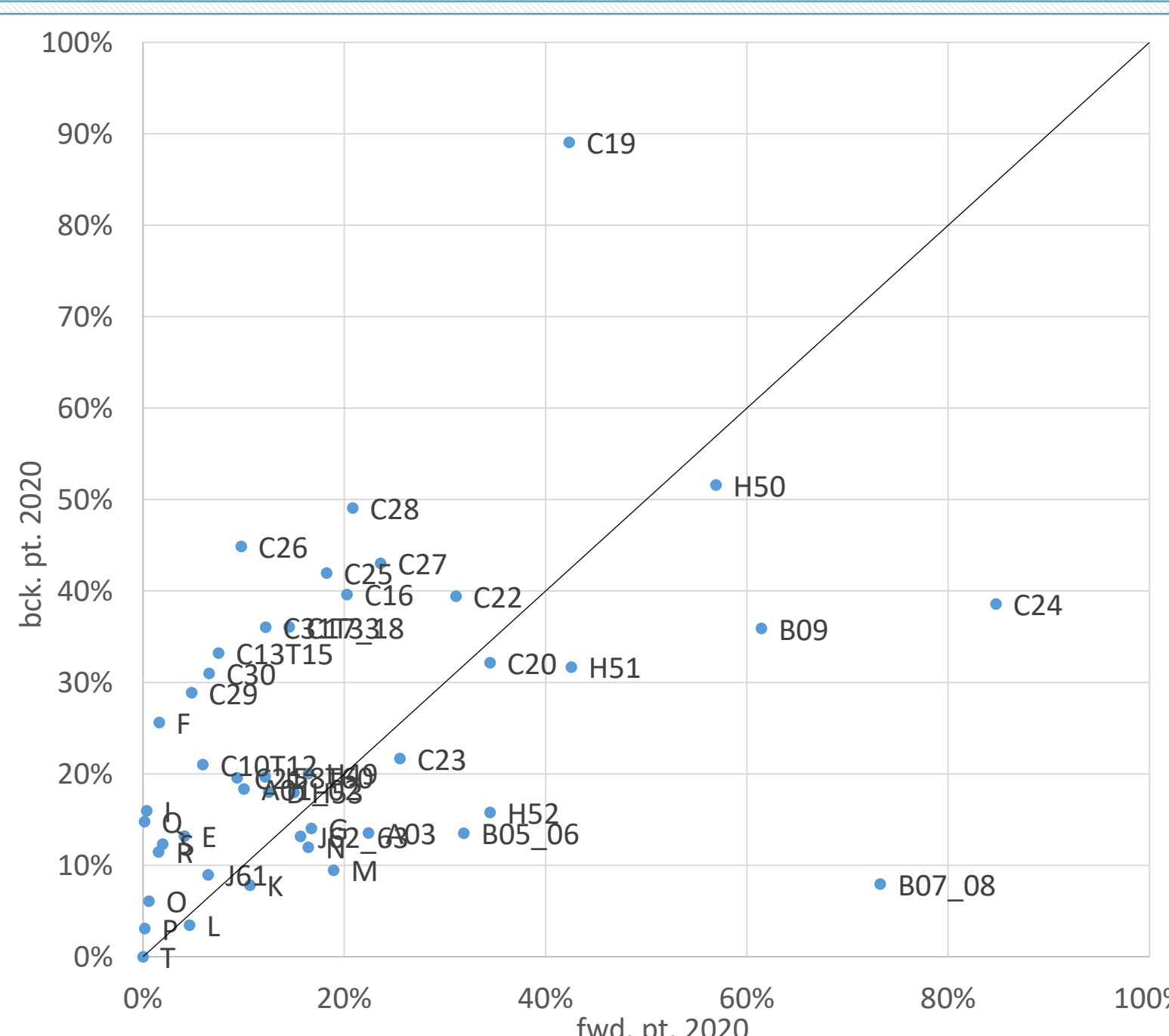
Relative changes of forward GVC participation in industrial sectors for three periods:

- **1995-2007**: global GVC deepening and national economic prosperity
- **2008-2014**: economic crisis, disruptions caused in global supply chains and the stagnation/recovery years
- **2015-2020**: the new steady-state in global markets

	1995-2007	2008-2014	2015-2020
	C21 (195%)	C30 (267%)	B07_08 (50.4%)
	C31T33 (125%)	C23 (164%)	B05_06 (33.6%)
	D (117%)	B07_08 (124%)	C19 (31.1%)
	C25 (98.2%)	C16 (122%)	C21 (22.6%)
	C28 (59.9%)	C19 (87.2%)	C24 (18.2%)
	C27 (57.1%)	C26 (79.1%)	C20 (16.9%)
	C22 (56.7%)	D (71.6%)	C28 (12.5%)
	C16 (53.4%)	C31T33 (65.1%)	C17_18 (11.7%)
	E (51.6%)	C25 (64.6%)	C27 (11.7%)
	C13T15 (50.6%)	C29 (62.5%)	C13T15 (11.0%)

References

1. Ambos, B., Brandl, K., Perri, A., Scalera, V. G., & Van Assche, A. (2021). The nature of innovation in global value chains. Journal of World Business, 56(4), 101221.
2. Antràs, P. (2020). Conceptual aspects of global value chains. The World Bank Economic Review, 34(3), 551-574.
3. World Bank (2020). World Development Report 2020: Trading for Development in the Age of Global Value Chains. Washington, DC: World Bank Group
4. Gereffi, G. (1999). A commodity chains framework for analyzing global industries. Institute of Development Studies, 8(12), 1-9.
5. Wang, Z., Wei, S. J., Yu, X., & Zhu, K. (2022). Global value chains over business cycles. Journal of International Money and Finance, 126, 102643.
6. OECD Inter-Country Input-Output Database (2023). http://oe.cd/icio