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Working Paper 16/2024

August 29, 2024

Nearshoring and Farsharing in Europe within the Global Economy: Regional Trends, Structural Components and Sectoral Patterns

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Abstract

This paper documents recent trends in the geographical distribution of value added across Global Value Chains (GVCs). By combining the industry (i.e., source) and value chain (i.e., destination) analytical perspectives, we find two concurrent processes setting Europe's participation to GVCs apart from other two macro-regions, Asia-Pacific and the Americas. European value chains have recently increased the share of value added they import from within Europe — which amounts to *nearshoring* — while European country-industries have, from a long-period perspective, increased the share of value added they provide to extra-European value chains — which we refer to as *farsharing*. We study these trends by decomposing regional dynamics into structural components, zooming in to Europe to highlight country- and sector-level patterns. Crucially, if global final demand decelerates, the positive intra-European spillovers due to regional backward linkages (*nearshoring*-induced effects) might not become as effective as they could potentially be, given that activating European production increasingly requires extra-European final demand (the *farsharing* constraint).

Keywords — Global Value Chains; Input-Output Analysis; International Production Fragmentation; Nearshoring

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1 Introduction

Is the global economy immersed in a new era of de-globalisation since the aftermath of the great recession (2008/09)? Are we instead experiencing a transition towards a reorganisation of value chains with a shift from global to more regional productive configurations? Is the (now) fashionable term *nearshoring* suggestive of a relevant trend similarly impacting Europe, Asia-Pacific and North and Latin America on both the input sourcing and output destination sides of value chains, or are there regionally characteristic trends?

So far the empirical literature investigating the trends in international fragmentation of value chains has found contrasting results. Focusing on the period between 1995 and 2011, Los et al. (2015) find that in almost all product chains, the share of value added outside the country-of-completion has increased since 1995 and this is especially due to the increase in value added outside the region to which the country belongs (Europe, NAFTA or East Asia) suggesting a shift from regional to more global value chains. This trend was only interrupted during the period of the financial crisis in 2008.

This evidence challenges the view of Baldwin and Lopez-Gonzalez (2015) emphasising that supply chain trade is not really global but it is rather marked by regional blocs (Factory Asia, Factory North America, and Factory Europe) where China, the United States and Germany play a central role. However, in line with Baldwin and Lopez-Gonzalez (2015), but focusing on a limited number of countries (those belonging to the Association of Southeast Asian Nations ASEAN), Zhong and Su (2021) find increasing integration between 2000 and 2017 within the area and declining foreign value added shares in ASEAN. They also find increasing value added contributions from emerging economies and declining contributions from advanced economies.

Heterogeneous evidence also emerges from studies investigating globalisation and regionalisation using network analysis. While Cerina et al. (2015) and Xiao et al. (2020) mainly support the evidence of regionalisation of value chains, Amador and Cabral (2017) find evidence of their globalisation.

While there is no conclusive evidence on whether a trend of regionalisation in value chains is taking place, there is general agreement on a slowing down, starting from the financial crisis, of the pace of globalisation relative to the 'hyper-globalisation' era (1986-2008) (Piatanesi and Arauzo-Carod, 2019; Antràs, 2020). Antràs discusses the extent to which de-globalisation will continue in the future and concludes that this will depend more on political and institutional factors than on trends in technology.

The debate on the reconfiguration of GVCs has gained new momentum after the COVID-19 pandemic shock and the Ukrainian war which represent two new challenges for globalisation. However, there is no unanimous consensus on the directions that such reconfiguration should follow. Overall, different avenues have been indicated such as (geographically) shortening value chains and making them more domestic but also increasing the diversification of suppliers (Javorcik, 2020; Lin and Lanng, 2020; Miroudot, 2020).

While the perception of the fragility of GVCs to external shocks has shifted the debate on the trade-off between efficiency and security in the direction of reshoring or nearshoring (Javorcik, 2020; Posen, 2022), geographically concentrating production — which would be a consequence of a slowdown in globalisation — has been argued to erode the resilience of supply chains (Miroudot, 2020). Using a simple framework to gain some insights on the long-term effects of the war in Ukraine on global value chains, Ruta (2022) shows that, although the reorganisation away from countries perceived as riskier will affect sectors and products differently, the same technological and economic factors that have underpinned the international fragmentation of production in recent decades make a reversal of global value chains unlikely.

Despite the recent development of an extensive literature on the reshaping of GVCs, especially since the COVID-19 pandemic (Baldwin and Evenett, 2020) and the war in Ukraine (Ruta, 2022), empirical evidence on GVC rewiring that considers both the input sourcing and output destination perspectives — within and across macro-regions of the world economy — is still missing.

The aim of this paper is to apply (and further refine) inter-country input-

output metrics (Foster-McGregor and Stehrer, 2013; Timmer et al., 2014; Los et al., 2015) to the OECD Inter-Country Input-Output (ICIO) dataset, in order to shed light on these issues. In particular, we aim to document and understand the regional trends, structural components and country- and sector-level patterns of changes in the geographical distribution of (i) foreign value added participating in GVCs (input sourcing perspective), and (ii) domestic value added contributing to foreign GVCs (output destination perspective).

Our methodological contribution is threefold. First, we complement Los et al. (2015) by extending the time period and country sample considered, covering the aftermath of hyper-globalisation (i.e., we cover the 1995-2018 period) and explicitly include several countries in Asia-Pacific and the Americas. This may (and will) have an important bearing on results: what in Los et al. (2015) were considered 'global' value added contributions (allocated to a residual rest-of-the-world) become 'regional' ones, once these countries are explicitly identified in the sample. Hence, regional-to-global ratios are modified in a sizeable way (especially for Asia-Pacific). Moreover, rather than focusing only on the input sourcing perspective (i.e., foreign value added content of domestic final output), we devise metrics to quantify the degree of regionalisation/globalisation of domestic value added content of foreign final output.

Second, we propose a novel structural decomposition which distinguishes three different components of macro-regional aggregates: (i) an *intrinsic* component, which captures the relative regionalisation of value added imports or exports at the granular country $\times$ sector level, (ii) a *sectoral* component, which captures the effect of changes in the product mix of final output (FINO) or industry mix of gross value added (GVA) and, (iii) a *regional* component, which captures the effect of changes in the country mix of regional FINO or GVA. Such a decomposition allows us to identify specific structural changes that have a sizeable effect at the macro-regional level, and help explain the trends observed.

Third, we zoom in to Europe and identify countries and sectors driving macro-regional trends and, finally, suggest a back-of-the-envelope calculation

of the gains associated with a relative regionalisation of input sourcing in Europe, which may be useful to trigger policy debates around (potential) inter-country spillovers associated with greater European strategic autonomy in certain value chains.

Focusing on Europe, we find two opposite trends on the input sourcing and output destination sides of GVCs and industries, respectively. On the one hand, between 2012 and 2018, European GVCs have been increasingly sourcing value added from within Europe, after a long-period decline in regionalisation throughout hyper-globalisation (which we refer to as *nearshoring*). At the same time, though, European industries have only mildly reverted a long-period trend towards increasing reliance on extra-European GVCs as an activating demand source (a so-far understudied phenomenon which we label *farsharing*).

These opposing trends alert on the need to better understand the nature of Europe's GVC integration. On the input sourcing side, the extent to which nearshoring is driven by process innovation, international competitiveness or automation strategies, amongst other determinants. On the output destination side, the long-period consequences of domestic final demand contraction, partially explained by fiscal consolidation policies in Europe over the past decade.

Hence, our results suggest that policies pursuing EU's Open Strategic Autonomy (Damen, 2022) should consider its increasing reliance on foreign final demand, especially in connection to the long-term consequences of fiscal consolidation policies on domestic final output of EU member states. That is, Europe should not focus exclusively on productive integration from the cost (or input) perspective, but also on the final demand sources which activate output in Europe.

The rest of the paper is organised as follows. Section 2 introduces key metrics for studying regional and global sourcing and destination of value added. Also, it conceptually explains the distinction between two units of analysis: the country-industry and the country-GVC. Section 3 is the main section of the paper, reporting and discussing our results. First, we document unweighted,

granular trends at the country × sector level. Second, we report regional trends for three macro-regions (EU28, Asia-Pacific and the Americas). Third, we decompose regional dynamics into structural components. Fourth, we zoom in to Europe to highlight country- and sector-level patterns. Fifth, we provide a first-order approximation to nearshoring gains in Europe. Finally, section 4 closes the paper.

2 Measuring regional and global value added content of trade

The starting point to devise *nearshoring* and *farsharing* indicators is the world's gross value added (GVA) vector, $\boldsymbol{y}$.[1] Each monetary unit of gross output $\boldsymbol{q}$ embodies an amount of value added $\boldsymbol{v}^T = \boldsymbol{y}^T\widehat{\boldsymbol{q}}^{-1}$. But gross output is itself activated by demand for final products $\boldsymbol{f}$ through direct and indirect inter-country, inter-industry input requirements, captured by the Leontief global inverse matrix $\boldsymbol{B} = (\boldsymbol{I} - \boldsymbol{A})^{-1}$, thus having: $\boldsymbol{q} = \boldsymbol{B}\boldsymbol{f}$. Hence, the value added content of output ($\boldsymbol{v}^T\boldsymbol{q}$) can be distributed across and linked to each activating source of final demand: $\boldsymbol{v}^T\boldsymbol{q} = \mathbf{1}^T(\widehat{\boldsymbol{v}}\boldsymbol{B}\widehat{\boldsymbol{f}})\mathbf{1}$, exhausting total value added in the world economy (because $\boldsymbol{v}^T\boldsymbol{q} = \boldsymbol{y}^T\mathbf{1}$).

By carefully aggregating subsets of elements from global matrix $\widehat{\boldsymbol{v}}\boldsymbol{B}\widehat{\boldsymbol{f}}$, it is possible to distinguish the geographical source and destination of value added contributed by each country-industry (row) to each country-value-chain (column).

To simplify our exposition, for instance, we consider a world economy made of 3 countries c, p, r and n industries in each of them, so a country-level, parti-

[1] As regards notation, matrices are represented using boldface upper-case letters (e.g. $\boldsymbol{M}$), vectors with boldface lower-case letters (e.g. $\boldsymbol{v}$), all vectors are column vectors, and their transposition is explicitly indicated (e.g. $\boldsymbol{v}^T$). A vector with a hat (e.g. $\widehat{\boldsymbol{v}}$) indicates a diagonal matrix with each element of the vector on the main diagonal. Vector $\mathbf{1} = [1, \ldots, 1]^T$ is a column vector of appropriate dimensions that sums across elements of another matrix/vector.

tioned matrix view of $\widehat{v}\boldsymbol{B}\widehat{f}$ would be:

$$\underset{(=\widehat{v})}{\begin{bmatrix} \widehat{v}_c & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & \widehat{v}_p & \mathbf{0} \\ \mathbf{0} & \mathbf{0} & \widehat{v}_r \end{bmatrix}} \underset{(=\boldsymbol{B})}{\begin{bmatrix} \boldsymbol{B}_{cc} & \boldsymbol{B}_{cp} & \boldsymbol{B}_{cr} \\ \boldsymbol{B}_{pc} & \boldsymbol{B}_{pp} & \boldsymbol{B}_{pr} \\ \boldsymbol{B}_{rc} & \boldsymbol{B}_{rp} & \boldsymbol{B}_{rr} \end{bmatrix}} \underset{(=\widehat{f})}{\begin{bmatrix} \widehat{f}_c & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & \widehat{f}_p & \mathbf{0} \\ \mathbf{0} & \mathbf{0} & \widehat{f}_r \end{bmatrix}}$$

where v: value added per unit of gross output, $\boldsymbol{B}$: total (direct and indirect) input requirements per unit of output, and $\boldsymbol{f}$: final output. Therefore:

$$\widehat{v}\boldsymbol{B}\widehat{f} = \begin{bmatrix} \widehat{v}_c\boldsymbol{B}_{cc}\widehat{f}_c & \widehat{v}_c\boldsymbol{B}_{cp}\widehat{f}_p & \widehat{v}_c\boldsymbol{B}_{cr}\widehat{f}_r \\ \widehat{v}_p\boldsymbol{B}_{pc}\widehat{f}_c & \widehat{v}_p\boldsymbol{B}_{pp}\widehat{f}_p & \widehat{v}_p\boldsymbol{B}_{pr}\widehat{f}_r \\ \widehat{v}_r\boldsymbol{B}_{rc}\widehat{f}_c & \widehat{v}_r\boldsymbol{B}_{rp}\widehat{f}_p & \widehat{v}_r\boldsymbol{B}_{rr}\widehat{f}_r \end{bmatrix} \tag{1}$$

Inspecting the global income matrix (1), we may distinguish the geographical destination of value added contributed by each country-industry — identified along the rows — to each country-global-value-chain (GVC) — identified along the columns. Technically, a country-GVC represents an inter-country vertically integrated sector (in the sense of Pasinetti, 1973): it is a sectoral unit of analysis which includes total (i.e., direct and indirect) input requirements to produce one isolated element of final output vector $\boldsymbol{f} = [f_{jc}]$ of the global economy.

It is important to stress the conceptual difference between a country-industry and a country-GVC. The former refers to an industry in a given country, producing gross output to satisfy demand for both final and intermediate products. Its value added corresponds to an element y_{ic} (for industry i and country c) of GVA vector $\boldsymbol{y}$ of the world economy. The latter, instead, refers to an analytical disaggregation of the global economy into as many parts as there are elements f_{jc} (for product j and country c) in global final output vector $\boldsymbol{f}$. Each of these parts captures the value added contributed by all country-industries to produce the single final output element f_{jc}. Its value added corresponds to a weighted average of value added contributions by country-industries from across the world (i.e., $\sum_i \sum_r v_{ir} b_{ir,jc} f_{jc}$). Hence, the country-GVC includes the

final output of a country-industry, but also the value added contributions from all other countries and industries across the world required to produce that final output.

For example, if we consider Italian textiles, the production of the textile industry in Italy includes both cloth that is used for production by other industries and t-shirts that are sold as final products. The Italian textile GVC instead only includes t-shirts sold as final goods but it includes the value added of design, yarn, dyes and cotton (and other intermediates) coming from outside of the Italian textile industry, either from within Italy or off-shored components from around the world.

Therefore, in what follows, when we look at the different geographical sources of value added supplied to a country-GVC (column of matrix (1)), we adopt an input sourcing perspective, and the country-GVC is our granular unit of analysis. Instead, when we look at the different geographical destinations of domestic value added supplied by a country-industry (row of matrix (1)), we adopt an output destination perspective, and the country-industry is our granular unit of analysis.

Without any loss of generality, we adopt the perspective of country c. The off-diagonal block elements of the first block *column* of (1) represent value added contributions by countries p and r to GVCs articulated by country c.[2] Hence, the share of foreign value added (FVA) in final output can be measured by:

$$\texttt{FVAS}_c = \frac{\mathbf{1}^T(\widehat{\boldsymbol{v}}_p \boldsymbol{B}_{pc} \widehat{\boldsymbol{f}}_c + \widehat{\boldsymbol{v}}_r \boldsymbol{B}_{rc} \widehat{\boldsymbol{f}}_c)\mathbf{1}}{\mathbf{1}^T \boldsymbol{f}_c}$$

Correspondingly, the off-diagonal block elements of the first block *row* of (1) represent country c's value added contributions to GVCs articulated by countries p and r. Hence, the share of domestic value added contributed to foreign

[2] By the term 'articulated', we mean that the final output is completed in and sold by country c.

value chains can be measured by:

$$\texttt{FSUBS}_c = \frac{\mathbf{1}^T(\widehat{v}_c \boldsymbol{B}_{cp} \widehat{f}_p + \widehat{v}_c \boldsymbol{B}_{cr} \widehat{f}_r)\mathbf{1}}{\boldsymbol{y}_c^T \mathbf{1}}$$

From the perspective of country c, if c and p belong to the same region, regional and global *foreign* value added contributions, as well as domestic contributions to regional and global *foreign* GVCs, respectively, are obtained as:

Regional (c and p)	Global (r)
$\texttt{RFVAS}_c = \frac{\mathbf{1}^T \widehat{v}_p \boldsymbol{B}_{pc} \widehat{f}_c \mathbf{1}}{\mathbf{1}^T f_c}$	$\texttt{GFVAS}_c = \frac{\mathbf{1}^T \widehat{v}_r \boldsymbol{B}_{rc} \widehat{f}_c \mathbf{1}}{\mathbf{1}^T f_c}$
$\texttt{RFSUBS}_c = \frac{\mathbf{1}^T \widehat{v}_c \boldsymbol{B}_{cp} \widehat{f}_p \mathbf{1}}{\boldsymbol{y}_c^T \mathbf{1}}$	$\texttt{GFSUBS}_c = \frac{\mathbf{1}^T \widehat{v}_c \boldsymbol{B}_{cr} \widehat{f}_r \mathbf{1}}{\boldsymbol{y}_c^T \mathbf{1}}$

The novelty of our approach is that we focus on two complementary aspects of GVC integration. On the one hand, following Los et al. (2015), we look at where value chains in each region draw value added contributions from and whether this comes from within ($\texttt{RFVAS}_c$) or outside ($\texttt{GFVAS}_c$) a country's region (input sourcing perspective). On the other hand, complementing Los et al. (2015), we look at the final destination of domestic value added and whether it contributes to value chains articulated within ($\texttt{RFSUBS}_c$) or outside ($\texttt{GFSUBS}_c$) a country's region (output destination perspective).

Therefore, the ratios:

$$\texttt{NFVA}_c = \frac{\texttt{RFVAS}_c}{\texttt{GFVAS}_c} \qquad \texttt{NFSUB}_c = \frac{\texttt{RFSUBS}_c}{\texttt{GFSUBS}_c} \tag{2}$$

capture the degree of regionalisation of value chains or industries, respectively, of country c.

Hence, if $\texttt{NFVA}_c$ is increasing (decreasing), country c is nearshoring (farshoring), whereas if $\texttt{NFSUB}_c$ is increasing (decreasing), the country is near-

sharing (farsharing).

Regional aggregates may be obtained through weighted averages of country-level results, using final output for FVAS and gross value added for FSUBS as weights, respectively. Hence, for a region composed of countries c and p, the share of intra-regional foreign value added ($\texttt{RFVAS}_{cp}$) and the domestic contribution to intra-regional value chains ($\texttt{RFSUBS}_{cp}$) are obtained, respectively, as:

$$\texttt{RFVAS}_{cp} = \texttt{RFVAS}_c \frac{\mathbf{1}^T \boldsymbol{f}_c}{\mathbf{1}^T(\boldsymbol{f}_c + \boldsymbol{f}_p)} + \texttt{RFVAS}_p \frac{\mathbf{1}^T \boldsymbol{f}_p}{\mathbf{1}^T(\boldsymbol{f}_c + \boldsymbol{f}_p)}$$

$$\texttt{RFSUBS}_{cp} = \texttt{RFSUBS}_c \frac{\boldsymbol{y}_c^T \mathbf{1}}{(\boldsymbol{y}_c^T + \boldsymbol{y}_p^T)\mathbf{1}} + \texttt{RFSUBS}_p \frac{\boldsymbol{y}_p^T \mathbf{1}}{(\boldsymbol{y}_c^T + \boldsymbol{y}_p^T)\mathbf{1}}$$

A similar procedure is followed to compute extra-regional, global shares $\texttt{GFVAS}_{cp}$ and $\texttt{GFSUBS}_{cp}$, obtaining degrees of relative value added regionalisation as:

$$\texttt{NFVA}_{cp} = \frac{\texttt{RFVAS}_{cp}}{\texttt{GFVAS}_{cp}} \qquad \texttt{NFSUB}_{cp} = \frac{\texttt{RFSUBS}_{cp}}{\texttt{GFSUBS}_{cp}}$$

In what follows, we use indicators NFVA and NFSUB, as well as their regional and global components, to analyse near/farshoring and near/farsharing trends in the global economy.

3 Results and Discussion

Our computations require a set of global input–output tables. We use the OECD Inter-Country Input-Output (ICIO) dataset – published in Nov-2021 – providing data for 45 industries (based on ISIC Rev. 4) across 66 countries, covering the 1995-2018 period.[3] For region-level computations, we consider three macro-regions: the European Union (EU28), Asia-Pacific (AP) and North and Latin America (NLA),[4] focus is on GVCs articulated around manufacturing fi-

[3] Data can be accessed at http://oe.cd/icio

[4] EU28 considers 28 European countries, including Croatia and the UK; AP considers 18 countries: ASEAN Plus Six (i.e. including China, Japan, South Korea, India, Australia and New

nal outputs to compute foreign value added shares,[5] and on manufacturing industries to compute domestic value added contributions to foreign GVCs.[6]

3.1 Country-GVC and country-industry trends

As a first, preliminary approach, we explore the changes in regional and global fragmentation at the level of individual country-GVCs and country-industries. In this way, each individual GVC (when considering input sourcing) or industry (when considering output destination) has the same weight. This allows to highlight statistically significant trends across sectors and countries.

Figure 1 displays scatter plots of RFVAS and GFVAS across country-GVCs comparing 1995 *vis-à-vis* 2008, with each region in a different panel. If GVCs remained equally fragmented with respect to regional or global input sourcing (in value added terms), then the data points would cluster around the dashed 45-degree line. Instead, if observations tend to be above (below) the 45-degree line, regional – in the upper panel – or global – in the lower panel – fragmentation has increased (decreased). To visualise the trend, the figure reports the estimated slope of a linear regression through the origin and depicts the regression line, together with its corresponding confidence interval. If the confidence interval includes the dashed 45-degree line, then results may not be considered to be statistically significant.

Observing Figure 1, statistically significant trends include the larger increase in global – with respect to regional – fragmentation for GVCs across the EU28, the increase in regional fragmentation across GVCs in Asia-Pacific and of global fragmentation in the Americas.

These trends are in partial agreement with previous contributions covering

Zealand), together with Hong Kong and Chinese Taipei; NLA considers 9 countries: USMCA, together with Argentina, Brazil, Chile, Colombia, Costa Rica and Peru.

[5] This means that we only consider the production of *final* manufacturing goods. Recall, however, that a manufacturing GVC requires – directly and/or indirectly – inputs from *all* industries of an economy (primary sectors and services included).

[6] A manufacturing industry contributes to foreign GVCs for all final products (primary sectors and services included).

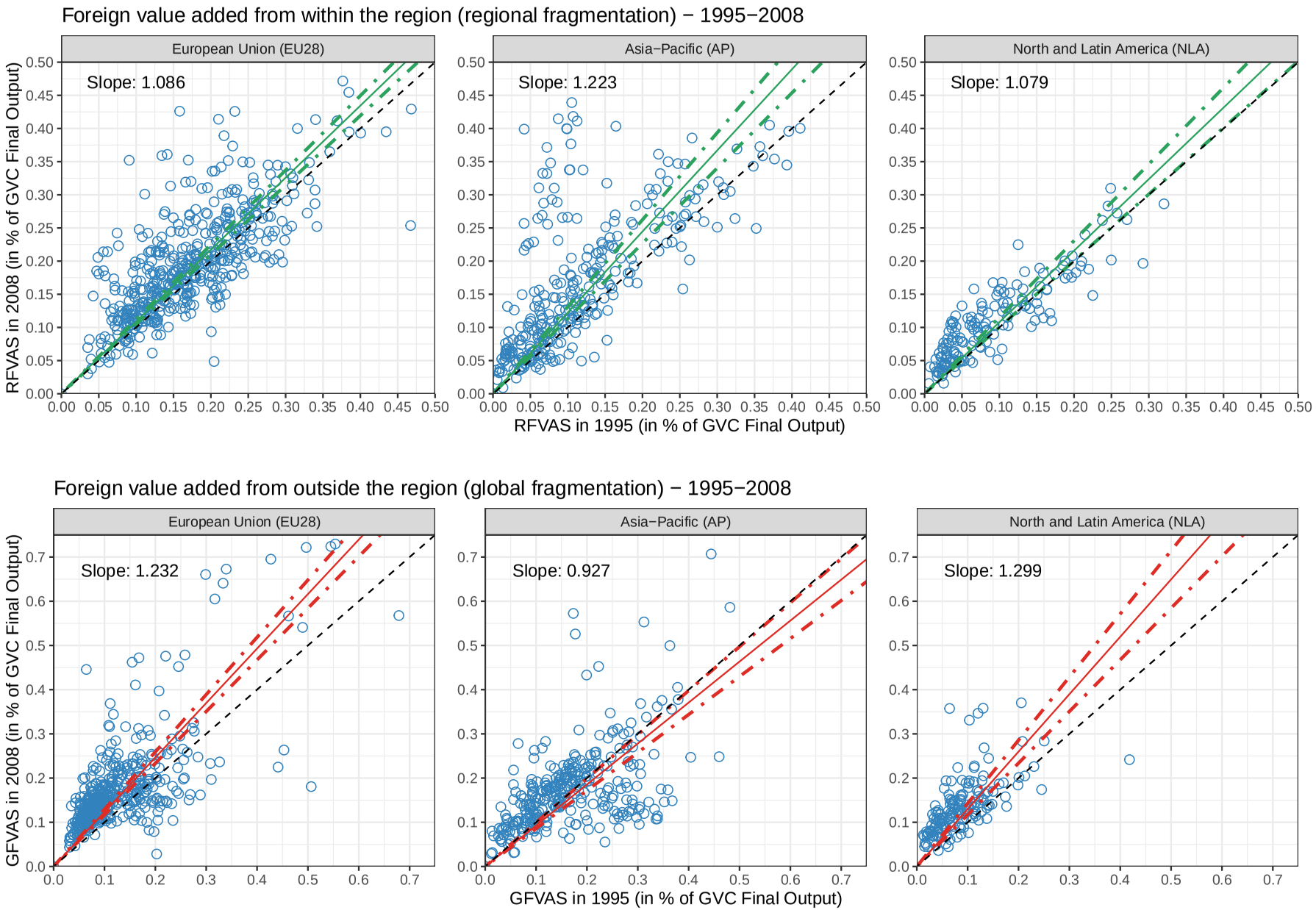
the period up to the global financial crisis (2008/09) (Los et al., 2015), where the faster pace of global *vis-à-vis* regional fragmentation was emphasised. However, our results evince that while this is the case for the EU28 and North and Latin America, GVCs across Asia-Pacific went in opposite direction, increasing regionalisation. This may be explained by the fact that our dataset substantially expands the coverage of countries in the Asia-Pacific region and, related to this, the important role of China as a source of intra-regional input demand. Hence, what in previous contributions might have been an increase in global sourcing (due to several countries from Asia-Pacific being included in a residual Rest of the World region), actually represents an increase in regional sourcing, once more countries from Asia-Pacific are explicitly identified.

Extending the time coverage, Figure 2 compares 2008 *vis-à-vis* 2018. In this case, EU28 has no major statistically significant changes in its fragmentation trends (other than a mild reduction in global fragmentation), Asia-Pacific sharply reduced global fragmentation, whilst GVCs across North and Latin America reduced regional fragmentation.

These results suggest a slowdown of global fragmentation for EU28 and Asia-Pacific and a marked reduction in regional integration across GVCs in the Americas. Hence, according to Figure 2, EU28 and Asia-Pacific GVCs have been *near*shoring, whereas those in North and Latin America have been *far*shoring. However, according to this cross-GVCs, unweighted picture, recent (2008-2018) nearshoring dynamics seems to be driven by a reduction in global fragmentation rather than an increase in regional input sourcing integration.[7] Instead, in the Americas, it is a reduction in regional integration what seems to drive the farshoring trend.

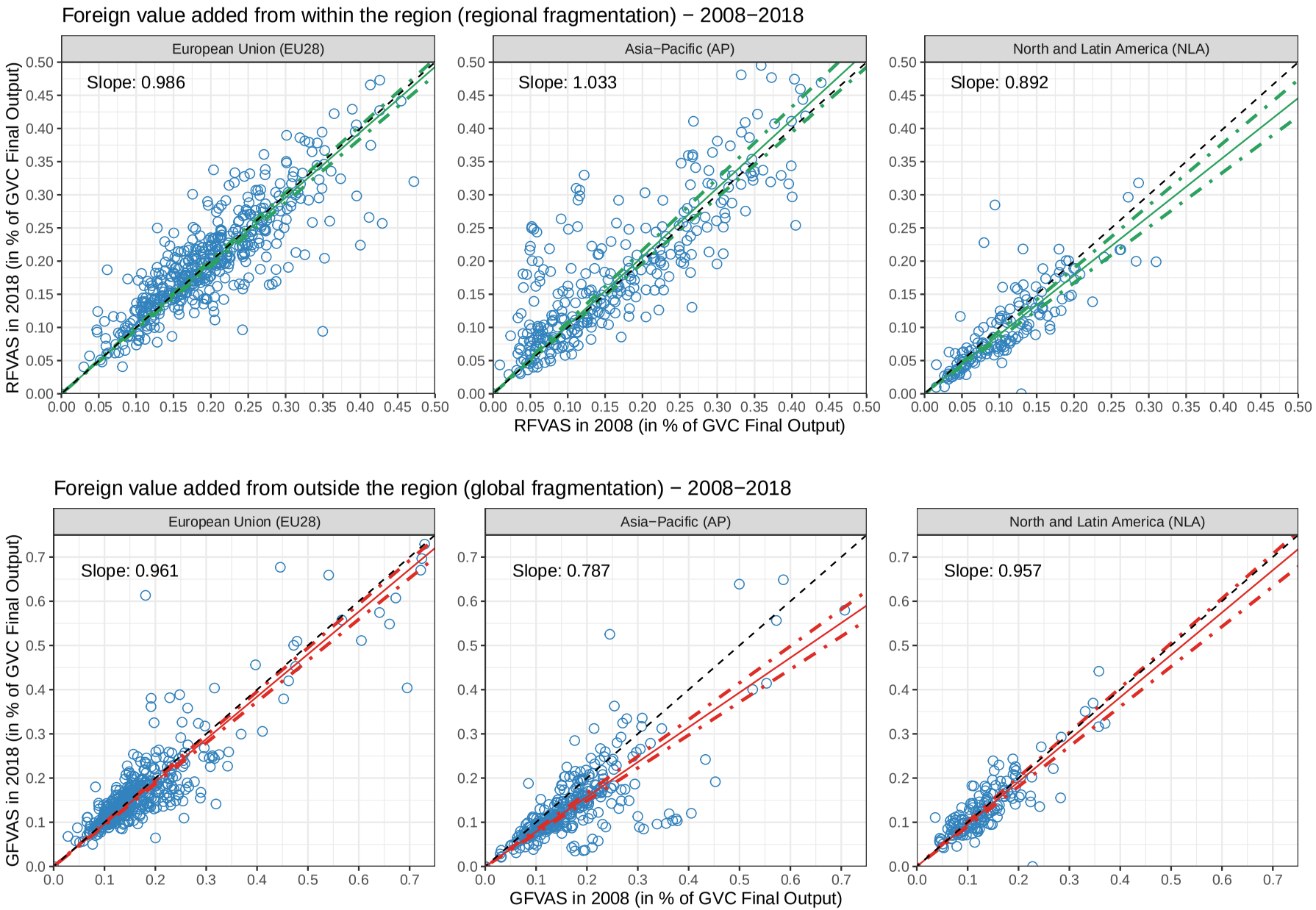
[7]The attentive reader might find this to contradict the macro-regional evidence for Europe in the next sub-section. However, there is no such contradiction: the lack of a statistically significant increase in regional input sourcing for the EU28 between 2008 and 2018 simply evinces that the recent trend towards input regionalisation started in 2012 and regional input sourcing in 2018 was still not significantly higher than that prevailing in 2008.

Figure 1: Regional and global input sourcing trends during hyper-globalisation (1995-2008)



Upper panel: Regional foreign value added (FVA) shares (`RFVAS`); *Lower panel*: Global FVA shares (`GFVAS`). *Source*: Authors' calculations based on OECD-ICIO 2021 database.

Figure 2: Regional and global input sourcing trends during slowbalisation (2008-2018)



Upper panel: Regional foreign value added (FVA) shares (`RFVAS`); *Lower panel*: Global FVA shares (`GFVAS`). *Source*: Authors' calculations based on OECD-ICIO 2021 database.

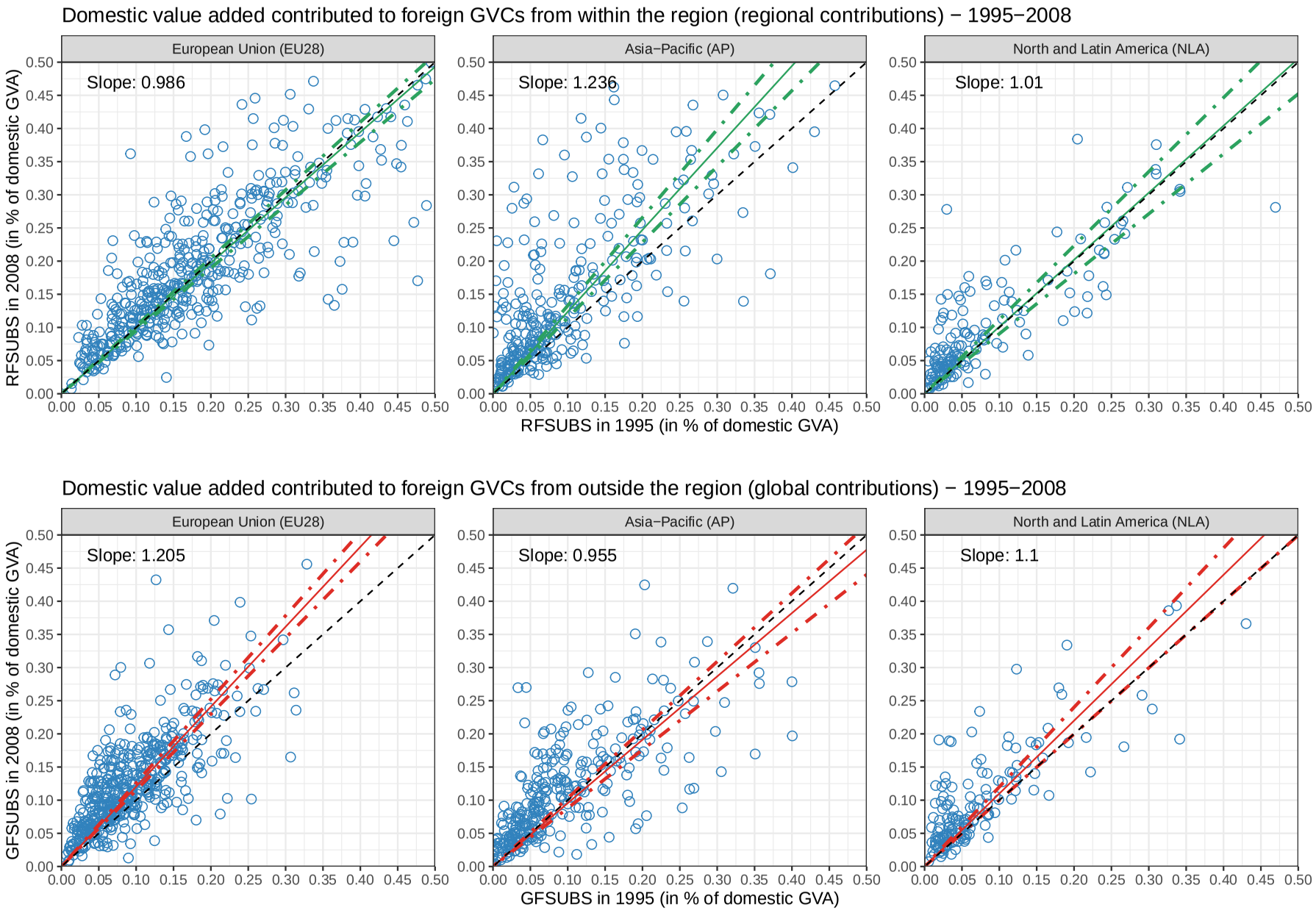
When it comes to output destinations of value added, Figures 3 and 4 display scatter plots of RFSUBS and GFSUBS across country-industries comparing 1995 *vis-à-vis* 2008 and 2008 *vis-à-vis* 2018, respectively, with each region in a different panel. The logic of the graphs is the same as with Figures 1 and 2, but referring to value added contributions by industry of origin, rather than foreign input sourcing by destination GVC.

During hyper-globalisation (1995-2008), European industries have expanded their contribution to global, i.e., extra-regional, GVCs, whereas those in Asia-Pacific evince the precise opposite pattern, i.e., regionalisation of value added exports. Industries in North and Latin America show a milder trend towards global output destinations. Hence, for this sub-period, the dynamics of input sourcing and output destinations of value added show similar results (i.e., globalisation in Europe and the Americas, as against regionalisation in Asia-Pacific).

Focusing on the more recent sub-period (2008-2018), the EU28 deepens its dependence on global GVCs demanding its output, whereas Asia-Pacific sharply reduces its dependence on extra-regional GVCs. For Europe, the dynamics in both sub-periods is driven by an increasing reliance on extra-regional GVCs, whilst in Asia-Pacific the hyper-globalisation sub-period shows greater regional integration, whereas the slowbalisation sub-period shows instead reduced exposure to global final demand. Finally, the Americas experience a mild decrease in intra-regional output destination of value added, showing the precise opposite pattern with respect to Asia-Pacific (globalisation followed by de-regionalisation *vis-à-vis* regionalisation followed by de-globalisation).

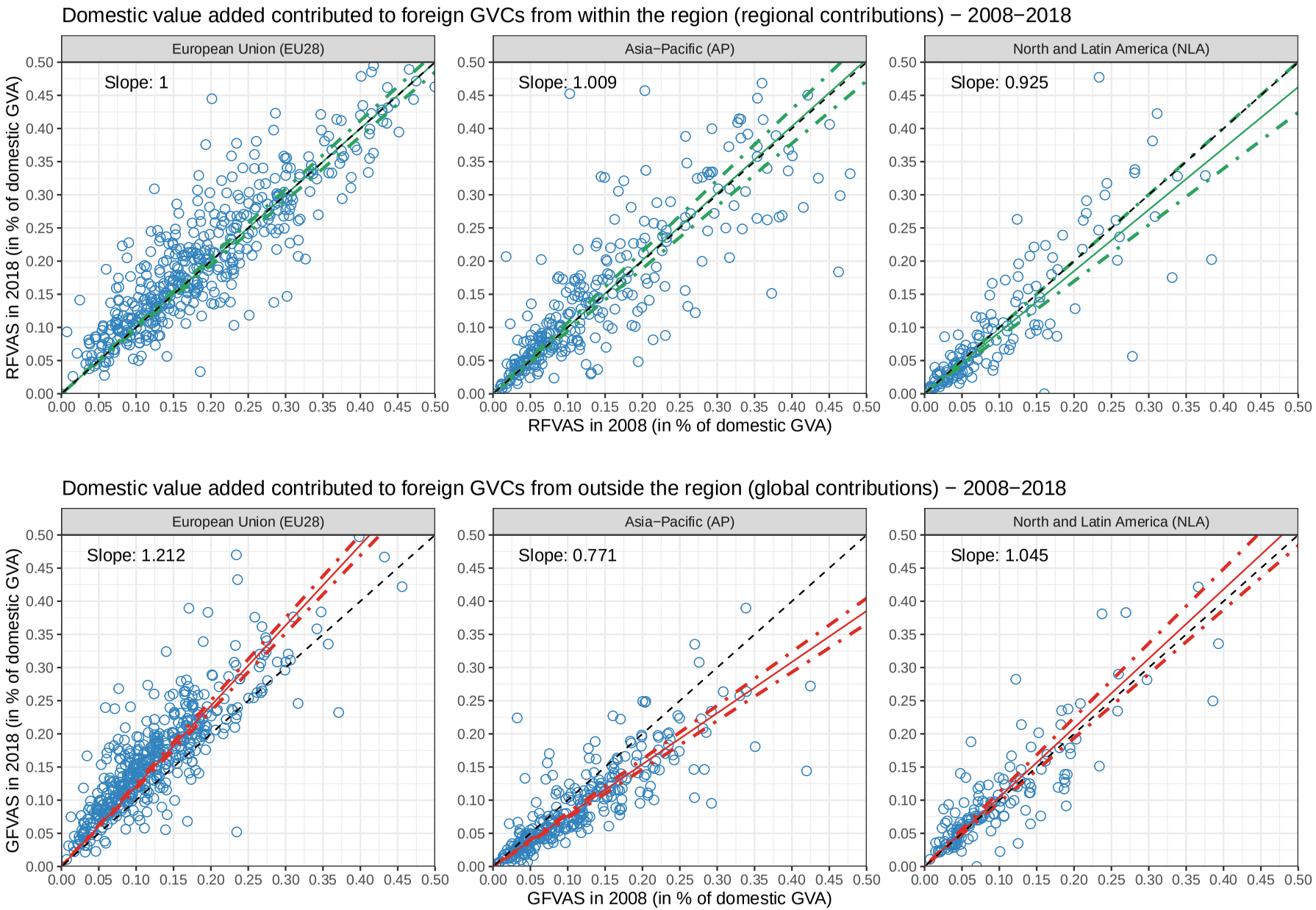
In what follows, we articulate these cross-sectoral, unweighted results into regional aggregates to depict the year-on-year evolution of input sourcing and output destination indicators introduced in section 2. This allows us to provide a clearer picture of regional dynamics, comparing regionalisation/globalisation levels and trends.

Figure 3: Regional and global output destination trends during hyper-globalisation (1995-2008)



Upper panel: value added contributions to regional foreign GVCs (FSUBS); *Lower panel*: value added contributions to global foreign GVCs (FSUBS). *Source*: Authors' calculations based on OECD-ICIO 2021 database.

Figure 4: Regional and global output destination trends during slowbalisation (2008-2018)

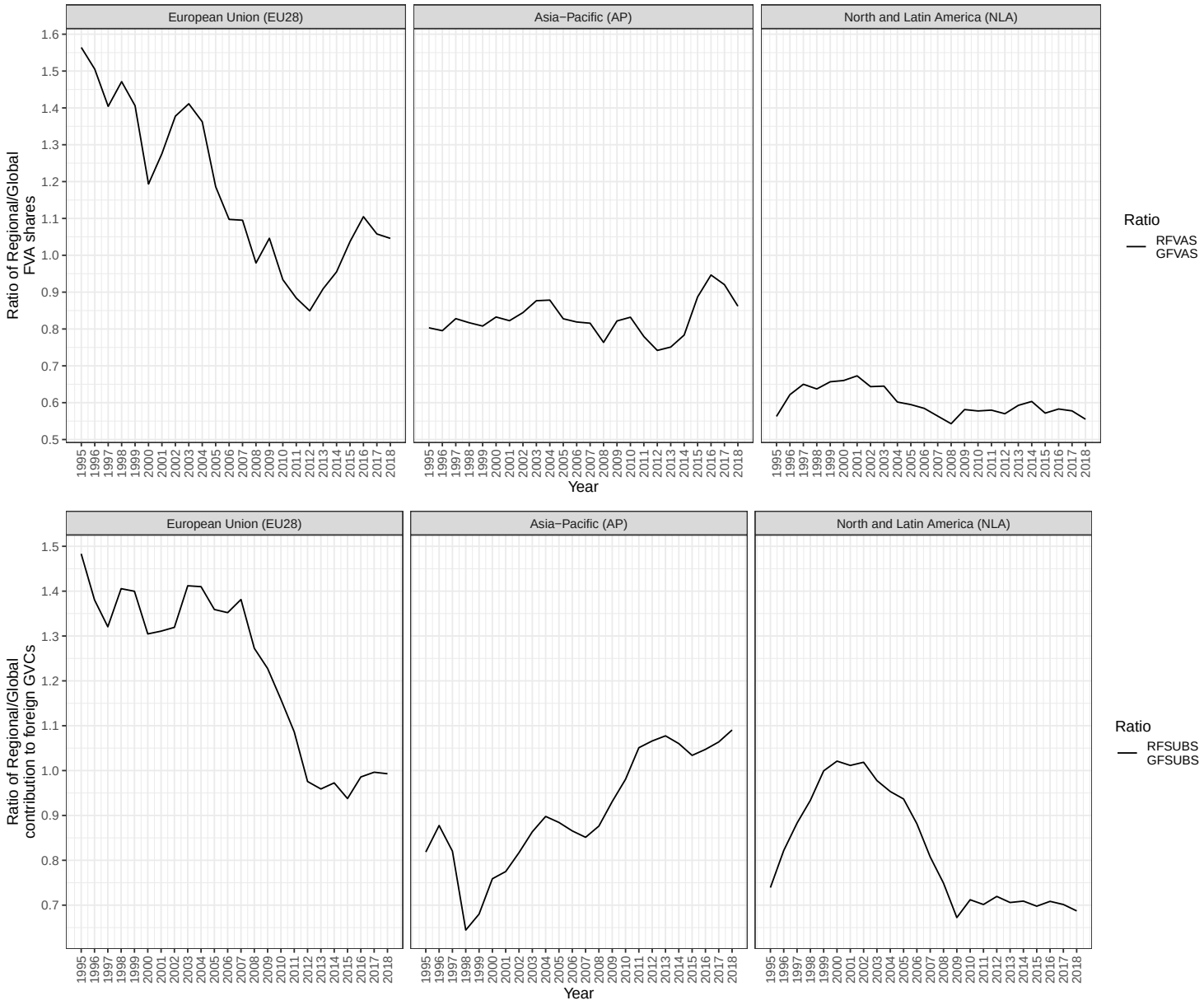


Upper panel: value added contributions to regional foreign GVCs (FSUBS); *Lower panel*: value added contributions to global foreign GVCs (FSUBS). *Source*: Authors' calculations based on OECD-ICIO 2021 database.

3.2 Regional trends

We first report in Figure 5 regionalisation *vis-à-vis* globalisation trends for foreign value added (i.e., input sourcing perspective) and domestic value added (i.e., output destination perspective) for each macro-region. Then, in Figure 6, we decompose regional and global components, to identify which one is predominantly driving the dynamics of the ratios depicted in Figure 5.[8]

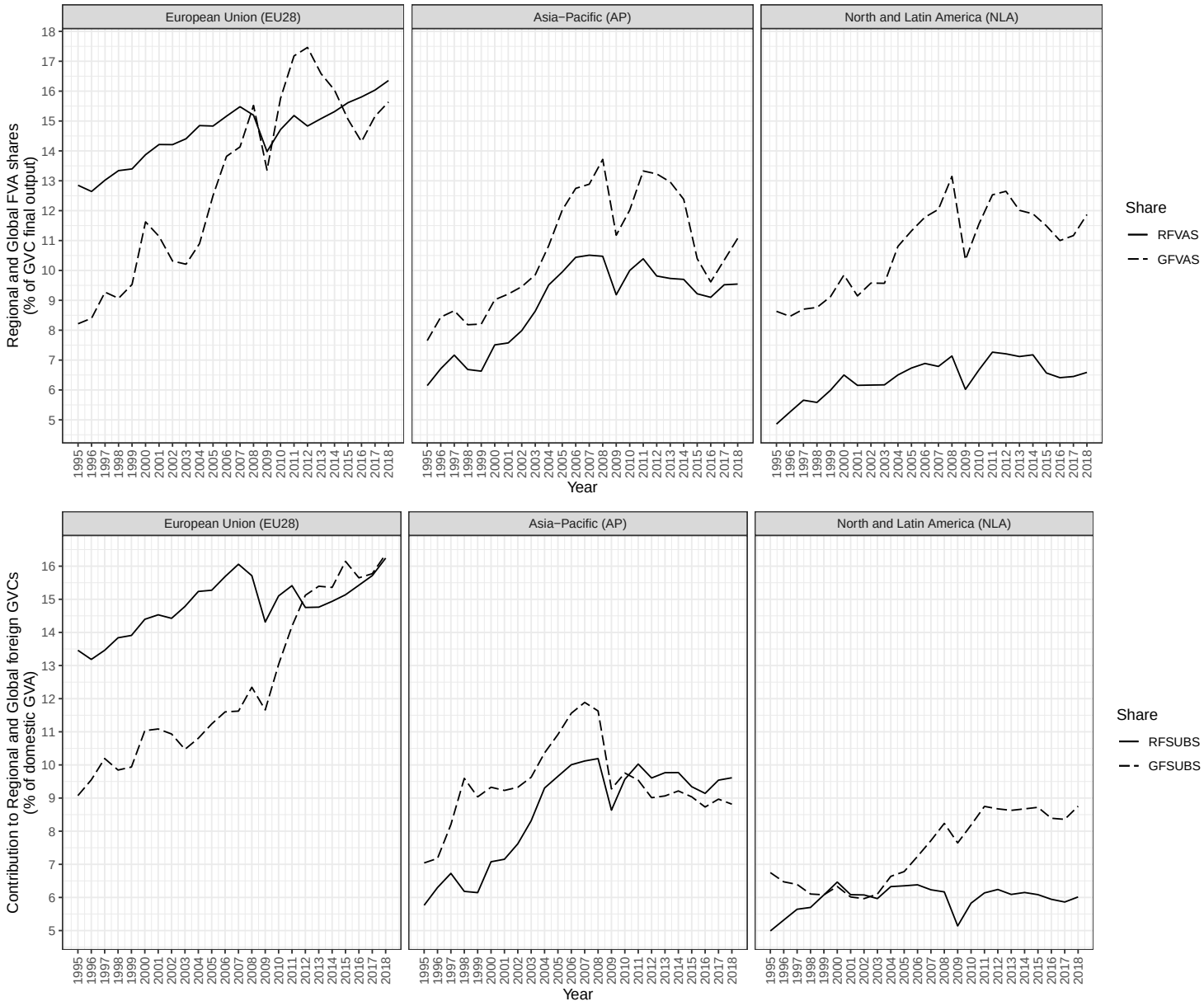
Figure 5: Regional nearshoring and nearsharing trends (1995-2018)



Upper panel: Regional-to-Global foreign value added (`NFVA`); *Lower panel*: Regional-to-Global contribution to foreign GVCs (`NFSUB`).
Source: Authors' calculations based on OECD-ICIO 2021 database.

[8]The results reported in this subsection are based on Bontadini et al. (2022).

Figure 6: Regional and global value added input sourcing and output destination trends (1995-2018)



Upper panel: Regional (`RFVAS`) and global (`GFVAS`) foreign value added (FVA) share of final output; *Lower panel*: Share of domestic value added contributed to regional (`RFSUBS`) and global (`GFSUBS`) value chains.
Source: Authors' calculations based on OECD-ICIO 2021 database.

The upper panel of Figure 5 reports the ratio between `RFVAS` and `GFVAS`, while the lower panel depicts that between `RFSUBS` and `GFSUBS`. These correspond to `NFVA` and `NFSUB` in Equation (2), respectively. Increases in these ratios reflect *nearshoring* of the sourcing of foreign value added and its homologue on the destination side, which we term as *nearsharing*, respectively.

We can see starkly different patterns for each region, with three key emerg-

ing findings.

3.2.1 Nearshoring in Europe and Asia-Pacific

First, Europe has a much higher level of intra-regional integration than both Asia-Pacific and the Americas; this is true when looking at either NFVA or NFSUB in Figure 5.

The upward trend for NFVA since 2012 in Europe and Asia-Pacific suggests that nearshoring is taking place in both regions. For Europe, this comes after a long-period decline in the sourcing of regional *vis-à-vis* extra-European value added. In contrast, Asia-Pacific exhibits a rather stable trend until 2012.

Looking at the upper panel of Figure 6, we can see that this common nearshoring trend since 2012 actually has different drivers. In Asia-Pacific it is the result of a sharp decline in global sourcing *vis-à-vis* a stagnant regional share, implying an increase in *domestic* value added content. In contrast, nearshoring in Europe is linked to a steady increase in the regional value added share coupled with a declining (though later rebounding) global share. Finally, the Americas show a slowly declining trend for NFVA, with regional FVA remaining at relatively lower levels than for the other two regions.

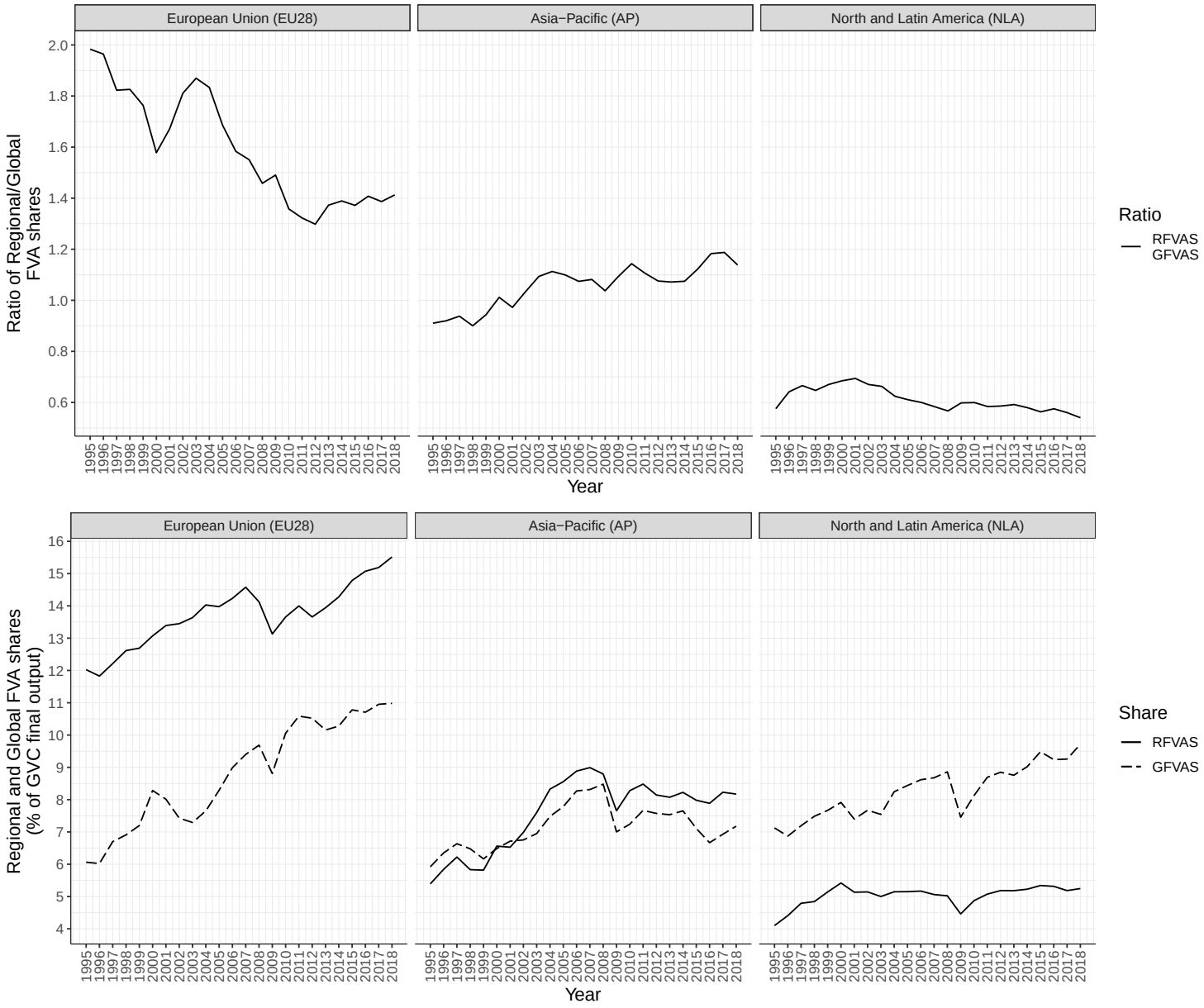
3.2.2 Commodity price super-cycle and global backward linkages

Looking at the upper panel of Figure 6, the synchronised rise (2002-2012), decline (2012-2016) and rebound (2016-2018) of the global FVA component (GVAS) across regions – though with different intensity – suggests the influence of a common driver, namely, the commodity price super-cycle (Reinhart et al., 2016).

As a robustness exercise, we recalculate regional and global FVA shares but exclude all value added contributions by primary industries from our computations, reporting results in Figure 7.[9]

[9]The inter-country input-output database used is only available in current prices, making

Figure 7: Nearshoring trends excluding value added contributions from primary industries (1995-2018)



Upper panel: Regional-to-Global foreign value added (`NFVA`); *Lower panel*: Regional (`RFVAS`) and global (`GFVAS`) foreign value added (FVA) share of final output.
Note: All value added corresponding to **primary industries** has been **excluded** from the computations. The upper panel of the figure replicates the upper panel from Figure 5, while the lower panel does the same for the upper panel from Figure 6.
Source: Authors' calculations based on OECD-ICIO 2021 database.

it impossible to disentangle price from volume effects. We therefore exploit the fact that price effects from primary commodities originate from a clear subset of industries to exclude these from our calculations. Please note that, by focusing on the industry of origin, rather than the final product around which a GVC is articulated, indicators `RFSUBS` and `GFSUBS` are unaffected by these recalculations, given that we already focus on *manufacturing* industries of origin contributing to all GVCs.

Notably, now the regional FVA share appears always above the global FVA component for Europe and Asia-Pacific (lower panel of Figure 7). This suggests that their relative dependence on extra-regional input sourcing fluctuates with commodity prices and, more importantly, signals a limited input substitutability capacity as prices increase. Hence, global backward linkages in value added terms are considerably affected by primary commodity prices.[10]

This notwithstanding, the upper panel of Figure 7 suggests that the nearshoring trend in Europe since 2012 persists, with no sign of it slowing down after 2016, even when the commodity price super-cycle is accounted for.

3.2.3 Farsharing in Europe

Third, when it comes to the (regional/global) destination of domestic value added – in lower panels of Figure 5 – `NFSUB` in the Americas first increases starkly when NAFTA came into effect, but steadily decreases as China joins the WTO (2001) and becomes a major player in the global economy, absorbing growing shares of American-produced GVA. Instead, nearshoring in Asia-Pacific is complemented by a relative increase in the regional destination of its domestic value added. This is mainly driven by a declining global share in combination with a stagnant regional share (`GFSUBS` and `RFSUBS` in Figure 6, respectively), reflecting the fact that this region has been able to rely on its countries' own domestic demand to absorb value added.

Europe exhibits yet a different pattern. On the one hand, non-European value chains have been absorbing an increasing share of value added produced within the continent (`GFSUBS` in the bottom-left panel of Figure 6). On the other hand, it took almost a decade for the share of European value added absorbed by European value chains (`RFSUBS`) to recover its pre-crisis level (2007). The combination of these two trends leads to what we refer to as *farsharing*.

To fully grasp the meaning of these trends in Europe, note that domestic

[10] While this is well beyond the scope of this work, our results do suggest that it may be prove challenging for Europe to get out of its dependence on Russian gas.

value added contributes to either foreign (regional/global) or domestically articulated GVCs.[11] It follows that a stable share of value added absorbed by European value chains – coupled with a sharp increase in domestic contributions to extra-regional ones (gradually replaced by intra-regional demand since 2012) – suggests that final demand from domestically articulated value chains has been particularly weak.

This has two key implications that warrant further research. First, it appears that, following the global financial crisis (2008/09) and sovereign debt crisis in some European countries (2011), fiscal consolidation policy in Europe has contributed to shrink demand from domestically articulated value chains, and the extent to which this has happened may have been underestimated by policy-makers across the continent. Second, in response to this, European country-industries have re-directed output towards extra-European value chains (Polyak, 2021).

The *nearshoring* and *farsharing* trends suggest the consolidation of a European export-led growth model involving an increase in intra-regional backward linkages and a diversification towards extra-regional markets. The current debate on the strategic importance of further geographically shortening European value chains should take into account the long-period increasing dependence of the area on foreign demand.

3.3 Intrinsic, sectoral and regional effects

The trends described in the previous subsection depict an aggregate outcome for each macro-region. We now explore the underlying determinants of these aggregate movements. That is, the degree to which the trends observed correspond to an intrinsic change in the ratio of regional-to-global foreign or domestic value added *within* a GVC or an industry, or instead, whether such aggregate evolution may be due to a change in the relative weight of sectors and/or countries in macro-regional aggregates. To do so, we perform a structural de-

[11] This is because `RFSUBS` and `GFSUBS` are shares of value added and, together with the share of value added absorbed by domestic value chains, they add up to 100%.

composition analysis (SDA) (Miller and Blair, 2022, Ch. 8).

The idea of SDA is that the change in the product of several determinants of a variable may be expressed as the sum of the changes in the individual variables composing the product, in order to uncover the contribution of each component to the overall change.

Consider the input sourcing perspective. For macro-region R, there would be *near*shoring when:

$$\Delta\texttt{RFVAS}_R - \Delta\texttt{GFVAS}_R > 0 \tag{3}$$

i.e., the change in regional foreign value added *net* of the change in global foreign value added was positive.

If we explicitly considered time periods $t = 0$ and $t = 1$, for $\Delta\texttt{RFVAS}_R$ in (3) we would have:

$$\begin{aligned}\Delta\texttt{RFVAS}_R &= \texttt{RFVAS}_R(1) - \texttt{RFVAS}_R(0) \\ &= \sum_{c\in R} \alpha_c(1)\cdot\omega_c(1) - \sum_{c\in R} \alpha_c(0)\cdot\omega_c(0)\end{aligned} \tag{4}$$

where $\alpha_c = \texttt{RFVAS}_c$ represents the regional foreign value added share of country c and $\omega_c = \dfrac{\mathbf{1}^T \boldsymbol{f}_c}{\sum_{r\in R}\mathbf{1}^T \boldsymbol{f}_r}$ is the share of country c's final output in its region R.

Expression (4) may be written as:

$$\begin{aligned}\Delta\texttt{RFVAS}_R &= \sum_{c\in R}\left[\alpha_c(1)\cdot\omega_c(1) - \alpha_c(0)\cdot\omega_c(1)\right] + \left[\alpha_c(0)\cdot\omega_c(1) - \alpha_c(0)\cdot\omega_c(0)\right] \\ &= \sum_{c\in R}\left(\alpha_c(1) - \alpha_c(0)\right)\cdot\omega_c(1) + \alpha_c(0)\cdot\left(\omega_c(1) - \omega_c(0)\right) \\ &= \sum_{c\in R}\Delta\alpha_c\cdot\omega_c(1) + \alpha_c(0)\cdot\Delta\omega_c\end{aligned} \tag{5}$$

But within each country, $\Delta\alpha_c$ may be decomposed as:

$$\begin{aligned}\Delta\alpha_c &= \alpha_c(1) - \alpha_c(0) \\ &= \sum_j \texttt{RFVAS}_{jc}(1)\cdot\theta_{jc}(1) - \sum_j \texttt{RFVAS}_{jc}(0)\cdot\theta_{jc}(0)\end{aligned} \tag{6}$$

where $\texttt{RFVAS}_{jc}$ represents the regional foreign value added share of GVC j in country c and $\theta_{jc} = \dfrac{f_{jc}}{\mathbf{1}^T\boldsymbol{f}_c}$ is the share of final output of product j in country c's final output.[12]

And proceeding analogously as we did for (4), expression (6) may be written as:

$$\begin{aligned}\Delta\alpha_c &= \sum_j \left[\texttt{RFVAS}_{jc}(1)\cdot\theta_{jc}(1) - \texttt{RFVAS}_{jc}(0)\cdot\theta_{jc}(1)\right] + \\ &+ \sum_j \left[\texttt{RFVAS}_{jc}(0)\cdot\theta_{jc}(1) - \texttt{RFVAS}_{jc}(0)\cdot\theta_{jc}(0)\right] \\ &= \sum_j (\texttt{RFVAS}_{jc}(1) - \texttt{RFVAS}_{jc}(0))\cdot\theta_{jc}(1) + \texttt{RFVAS}_{jc}(0)\cdot(\theta_{jc}(1) - \theta_{jc}(0)) \\ &= \sum_j \Delta\texttt{RFVAS}_{jc}\cdot\theta_{jc}(1) + \texttt{RFVAS}_{jc}(0)\cdot\Delta\theta_{jc}\end{aligned} \tag{7}$$

[12] To see that $\alpha_c = \texttt{RFVAS}_c = \sum_j \texttt{RFVAS}_{jc}\cdot\theta_{jc}$, note that, for the case of a two-country region (c and p), we have:

$$\texttt{RFVAS}_{jc} = \frac{\mathbf{1}^T\widehat{\boldsymbol{v}}_p\boldsymbol{B}_{pc}\widehat{\boldsymbol{f}}_c\mathbf{1}_j}{f_{jc}} = \frac{\mathbf{1}^T\widehat{\boldsymbol{v}}_p\boldsymbol{B}_{pc}\mathbf{1}_j f_{jc}}{f_{jc}} = \mathbf{1}^T\widehat{\boldsymbol{v}}_p\boldsymbol{B}_{pc}\mathbf{1}_j$$

where $\mathbf{1}_j$ is a column selector vector. Hence:

$$\sum_j \texttt{RFVAS}_{jc}\cdot\theta_{jc} = \sum_j \mathbf{1}^T\widehat{\boldsymbol{v}}_p\boldsymbol{B}_{pc}\mathbf{1}_j\cdot\frac{f_{jc}}{\mathbf{1}^T\boldsymbol{f}_c} = \frac{\mathbf{1}^T\widehat{\boldsymbol{v}}_p\boldsymbol{B}_{pc}\sum_j\mathbf{1}_j f_{jc}}{\mathbf{1}^T\boldsymbol{f}_c} = \frac{\mathbf{1}^T\widehat{\boldsymbol{v}}_p\boldsymbol{B}_{pc}\sum_j\widehat{\boldsymbol{f}}_c\mathbf{1}}{\mathbf{1}^T\boldsymbol{f}_c} = \texttt{RFVAS}_c = \alpha_c \quad \square$$

Therefore, introducing (7) in (5) and rearranging terms, we have:

$$\begin{aligned}\Delta\texttt{RFVAS}_R = &\sum_{c\in R}\left[\sum_j \Delta\texttt{RFVAS}_{jc}\cdot\theta_{jc}(1)\right]\cdot\omega_c(1)+\\ &+\sum_{c\in R}\left[\sum_j \texttt{RFVAS}_{jc}(0)\cdot\Delta\theta_{jc}\right]\cdot\omega_c(1)+\\ &+\sum_{c\in R}\texttt{RFVAS}_c(0)\cdot\Delta\omega_c \qquad (8)\end{aligned}$$

Proceeding analogously for the global FVA component for region R, $\Delta\texttt{GFVAS}_R$ in (3), we may compute:

$$\begin{aligned}\Delta\texttt{GFVAS}_R = &\sum_{c\in R}\left[\sum_j \Delta\texttt{GFVAS}_{jc}\cdot\theta_{jc}(1)\right]\cdot\omega_c(1)+\\ &+\sum_{c\in R}\left[\sum_j \texttt{GFVAS}_{jc}(0)\cdot\Delta\theta_{jc}\right]\cdot\omega_c(1)+\\ &+\sum_{c\in R}\texttt{GFVAS}_c(0)\cdot\Delta\omega_c \qquad (9)\end{aligned}$$

Combining the expressions for $\Delta\texttt{RFVAS}_R$ in (8) and $\Delta\texttt{GFVAS}_R$ in (9), we obtain a structural decomposition of (3):

$$\begin{aligned}\Delta\texttt{RFVAS}_R-\Delta\texttt{GFVAS}_R = &\sum_{c\in R}\left[\sum_j(\Delta\texttt{RFVAS}_{jc}-\Delta\texttt{GFVAS}_{jc})\cdot\theta_{jc}(1)\right]\cdot\omega_c(1)+\\ &+\sum_{c\in R}\left[\sum_j[\texttt{RFVAS}_{jc}(0)-\texttt{GFVAS}_{jc}(0)]\cdot\Delta\theta_{jc}\right]\cdot\omega_c(1)+\\ &+\sum_{c\in R}[\texttt{RFVAS}_c(0)-\texttt{GFVAS}_c(0)]\cdot\Delta\omega_c \qquad (10)\end{aligned}$$

However, structural decompositions are not unique (Dietzenbacher and Los, 1997) and expression (10) represents a *polar* form of the decomposition. Hence,

we may reverse time indices throughout to obtain the other *polar* form:

$$\begin{aligned}\Delta\texttt{RFVAS}_R - \Delta\texttt{GFVAS}_R = &\sum_{c\in R}\left[\sum_j(\Delta\texttt{RFVAS}_{jc} - \Delta\texttt{GFVAS}_{jc})\cdot\theta_{jc}(0)\right]\cdot\omega_c(0) + \\ &+\sum_{c\in R}\left[\sum_j[\texttt{RFVAS}_{jc}(1) - \texttt{GFVAS}_{jc}(1)]\cdot\Delta\theta_{jc}\right]\cdot\omega_c(0) + \\ &+\sum_{c\in R}[\texttt{RFVAS}_c(1) - \texttt{GFVAS}_c(1)]\cdot\Delta\omega_c \qquad (11)\end{aligned}$$

Finally, we combine (10) and (11) and compute a simple average for each component, to obtain an overall estimate of the intrinsic nearshoring, sectoral and regional effects, respectively:

$$\begin{aligned}\Delta\texttt{RFVAS}_R - \Delta\texttt{GFVAS}_R = &\underbrace{\sum_{c\in R}\left[\sum_j(\Delta\texttt{RFVAS}_{jc} - \Delta\texttt{GFVAS}_{jc})\cdot\langle\theta_{jc}\rangle\right]\cdot\langle\omega_c\rangle}_{\text{(Intrinsic nearshoring effect)}} \\ &+\underbrace{\sum_{c\in R}\left[\sum_j(\langle\texttt{RFVAS}_{jc}\rangle - \langle\texttt{GFVAS}_{jc}\rangle)\cdot\Delta\theta_{jc}\right]\cdot\langle\omega_c\rangle}_{\text{(sectoral effect)}} + \\ &+\underbrace{\sum_{c\in R}(\langle\texttt{RFVAS}_c\rangle - \langle\texttt{GFVAS}_c\rangle)\cdot\Delta\omega_c}_{\text{(regional effect)}} \qquad (12)\end{aligned}$$

where $\langle x\rangle = (x(0) + x(1))/2$ for each variable x.

As noted when introducing expression (3), if (12) is greater than zero, region R is nearshoring. But what the structural decomposition in (12) allows us to quantify is the separate contribution of three components to this overall result. That is, whether: (i) GVCs are intrinsically increasing the regional over global value added content in their final output ('intrinsic effect'), (ii) there is a shift in the sectoral composition of final output towards products with higher nearshoring ('sectoral effect'), and (iii) there is a shift in the regional composition of final output towards countries with higher nearshoring ('regional effect').

An analogous decomposition may be computed to study near*sharing*:

$$\begin{aligned}\Delta\texttt{RFSUBS}_R - \Delta\texttt{GFSUBS}_R = &\sum_{c\in R}\Bigg[\sum_j(\Delta\texttt{RFSUBS}_{jc} - \Delta\texttt{GFSUBS}_{jc})\cdot\langle\theta_{jc}\rangle\Bigg]\cdot\langle\omega_c\rangle \\ &\qquad\text{(Intrinsic nearsharing effect)} \\ &+\sum_{c\in R}\Bigg[\sum_j(\langle\texttt{RFSUBS}_{jc}\rangle - \langle\texttt{GFSUBS}_{jc}\rangle)\cdot\Delta\theta_{jc}\Bigg]\cdot\langle\omega_c\rangle + \\ &\qquad\text{(sectoral effect)} \\ &+\sum_{c\in R}(\langle\texttt{RFSUBS}_c\rangle - \langle\texttt{GFSUBS}_c\rangle)\cdot\Delta\omega_c \qquad (13) \\ &\qquad\text{(regional effect)}\end{aligned}$$

Expressions (12) and (13) were obtained for three sub-periods: 1995-2008, 2008-2012 and 2012-2018 for each of the three macro-regions considered. Results are reported in Tables 1 and 2 below.[13]

Table 1 shows that structural determinants of nearshoring at the macro-regional level are quite different across regions and sub-periods. For the European Union, the intrinsic component dominated across sub-periods, with a farshoring trend between 1995 and 2012 which is reversed between 2012 and 2018 (-1.69, -1.17 and 0.98 p.p. in Table 1). Note that the intrinsic component measures a weighted average across *all* country-GVCs of a macro-region. Hence, this does not mean that all GVCs in Europe went in one direction, but that those that globalised their input sourcing (between 1995 and 2012), as well as those that regionalised it (between 2012 and 2018), did so with such intensity that the aggregate intrinsic effect for the EU28 stands out as *the* key determinant. In comparative perspective, the intrinsic effect for European GVCs is stronger than for the other two macro-regions in both directions.

[13] All value added corresponding to primary industries has been excluded from the computations.

Table 1: Structural decomposition of nearshoring (ΔRFVAS - ΔGFVAS) into intrinsic, sectoral and regional components

(in percentage points, p.p.)

	European Union (EU28)				Asia-Pacific (AP)				North and Latin America (NLA)			
Period	ΔRFVAS - ΔGFVAS =	Intrinsic +	Sectoral +	Regional	ΔRFVAS - ΔGFVAS =	Intrinsic +	Sectoral +	Regional	ΔRFVAS - ΔGFVAS =	Intrinsic +	Sectoral +	Regional
1995-2008	-1.52	-1.69	-0.14	0.31	0.85	-0.05	-0.06	0.95	-0.81	-1.93	0.40	0.71
2008-2012	-1.30	-1.17	-0.13	0.00	0.26	0.48	-0.16	-0.06	0.17	0.01	0.07	0.09
2012-2018	1.40	0.98	0.42	-0.01	0.42	0.33	0.05	0.04	-0.80	-0.35	-0.30	-0.15
1995-2018	-1.43	-1.88	0.15	0.31	1.52	0.76	-0.17	0.93	-1.44	-2.27	0.18	0.65

Source: Authors' calculations based on OECD-ICIO 2021 database.

Table 2: Structural decomposition of nearsharing (ΔRFSUBS - ΔGFSUBS) into intrinsic, sectoral and regional components

(in percentage points, p.p.)

	European Union (EU28)				Asia-Pacific (AP)				North and Latin America (NLA)			
Period	ΔRFSUBS - ΔGFSUBS =	Intrinsic +	Sectoral +	Regional	ΔRFSUBS - ΔGFSUBS =	Intrinsic +	Sectoral +	Regional	ΔRFSUBS - ΔGFSUBS =	Intrinsic +	Sectoral +	Regional
1995-2008	-1.02	-1.27	-0.33	0.58	-0.16	1.20	-0.14	-1.22	-0.31	-0.59	-0.35	0.63
2008-2012	-3.73	-3.49	-0.18	-0.07	2.03	2.79	-0.01	-0.75	-0.37	-0.44	0.00	0.07
2012-2018	0.26	0.35	-0.07	-0.02	0.20	0.74	0.15	-0.68	-0.31	-0.10	0.13	-0.34
1995-2018	-4.49	-4.41	-0.57	0.49	2.07	4.73	0.00	-2.65	-0.98	-1.12	-0.22	0.36

Source: Authors' calculations based on OECD-ICIO 2021 database.

During the first sub-period (1995-2008), the intrinsic effect towards globalisation of European GVCs is (only) partially counteracted by a regional effect leading towards nearshoring (0.31 p.p. in Table 1), explained by the increasing weight in EU final output of Central and Eastern European countries (Czechia, Hungary, Poland, Romania, and Slovakia) which have, on average, a higher ratio of regional-to-global FVA. Moreover, during the third sub-period (2012-2018), the intrinsic nearshoring trend is further enhanced by a change in the European final output product mix (0.42 p.p. in Table 1). In particular, it stands out the sharp increase in EU final output of motor vehicle GVCs, which have one of the highest ratios of regional-to-global FVA. This sector is of outmost importance to explain the nearshoring trend in Europe since 2012. Hence, recent industry evolution pointing towards decreasing European competitiveness in the emerging market of electric vehicles *vis-à-vis* China should alert on the potential negative consequences for European input sourcing integration.

When it comes to Asia-Pacific, during the hyper-globalisation sub-period (1995-2008), the regional component dominates. This trend towards regionalisation may be explained by the rise of China and the decline of Japan (whose participation in regional final output increased by 26.44 p.p. and decreased by 30.44 p.p., respectively). While both countries globalised their input sourcing, the *level* of relative regional input sourcing of Chinese GVCs is notoriously superior to that of their Japanese counterparts, explaining the resulting trend towards regionalisation. For the following decade (2008-2018), the intrinsic effect dominated a continuous (and progressive) trend towards nearshoring in Asia-Pacific.

In contrast to the regionalisation trend of Asia-Pacific, the Americas experienced sharp intrinsic farshoring during hyper-globalisation (-1.93 p.p. in Table 1) and a combination of intrinsic, sectoral and regional effects leading towards further globalisation in the more recent sub-period (2012-2018). During the first sub-period (1995-2008), intrinsic farshoring was partially counteracted by regional and sectoral effects leading towards regionalisation (0.71 and 0.40 p.p. in Table 1, respectively). The regional effect was mainly due to the increasing weight in final output of Mexico and Brazil, with notoriously higher regional-

to-global FVA than the United States (whose weight in final output decreased). Instead, the sectoral effect was mainly due to the sharp decrease of textile GVCs in final output (-3.45 p.p., probably related to its substitution with final imports of textiles and apparel from Asia-Pacific), which had relatively low regional input sourcing integration.

Table 2 reports the structural determinants of trends in foreign output destinations of domestic value added at the macro-regional level. Also in this case there are differences across regions and sub-periods. During the hyper-globalisation period (1995-2008), the European Union experienced an intrinsic farsharing effect at the industry level (-1.27 p.p. in Table 2), only partially counteracted by a regional effect towards nearsharing (0.58 p.p. in Table 2). Similarly to the case of input sourcing, this latter regional effect may be explained by the increasing weight in EU GVA of Central and Eastern European countries which have, on average, a higher ratio of regional-to-global output destinations for domestic value added. This reflects the productive integration between formerly planned economies in Europe and core EU countries, such as Germany. At any rate, what is particularly striking for Europe is the sharp trend towards extra-regional output destinations as captured by the intrinsic component between 2008 and 2012 (-3.73 p.p. in Table 2). During this sub-period characterised by the great recession (2008-09) and the sovereign debt crisis (2011), EU industries have notoriously increased the extra-regional share of domestic value added, in the face of weakening European demand. There has been only a minor reversal of this trend since 2012.

As regards Asia-Pacific, there is a continuous opposition between two partially offsetting trends: an intrinsic effect pushing for nearsharing and a regional effect pushing for farsharing. During the hyper-globalisation sub-period (1995-2008) they almost coincide (1.20 and -1.22 p.p. in Table 2), with the regional effect towards more globalised value added exports mainly due to the increasing (decreasing) weight of China (Japan) in regional GVA. While China has drastically globalised its output destinations, Japan went in the precise opposite direction, regionalising its value added contributions. In fact, the negative sign of the regional effect is mostly explained — across sub-periods — by

this substitution of Japan with China in regional GVA. Within Asia-Pacific, it stands out the intrinsic nearsharing trend during 2008-2012 (2.79 p.p. in Table 2): it may be seen precisely as a response to the weakening demand during the crises crucially affecting the United States and Europe (2008-09 and 2011-12, respectively). In this way, industries from Asia-Pacific partially shielded against negative effective demand spillovers by increasingly regionalising value added destinations.

Finally, within North and Latin America, the intrinsic trend towards greater globalisation of domestic value added across sub-periods was only partially offset by a regional nearsharing effect explained by the increasing weight of Mexico and Brazil in regional GVA during hyper-globalisation (1995-2008). These two countries have a higher regional-to-global ratio for domestic value added destinations than the United States (whose weight in regional GVA declined up to 2012). In fact, the reversal in the sign of the regional effect in the most recent sub-period (-0.34 p.p. in Table 2) is explained by the increasing share of the US in regional GVA.

3.4 Zooming in to Europe: country and sectoral patterns

In what follows, we focus our attention on the European Union (EU28). In previous subsections, we have seen that Europe experienced processes of *farshoring* and *farsharing* during hyper-globalisation (1995-2008), which were partially reversed only since 2012. However, regional aggregates hide country and sectoral heterogeneities. Quantifying country- and industry-level differences helps to understand changes in productive processes across Europe.

We consider the country-level dimension first. Results for the input sourcing perspective are reported in Table 3, whereas those concerning output destinations of domestic value added are reported in Table 4.

While the trend towards a regionalisation of input sourcing between 2012 and 2018 occurs across all but two EU28 countries, it is driven by Central and Eastern European, as well as some Nordic countries (column `[11]`, Table 3).

Table 3: Regional and Global Foreign Value Added Shares (FVAS) in Final Manufacturing Output by Country (European Union, EU28)

		[1]	[2]	[3]	[4]	[5]	[6]	[7] = [1]-[4]	[8] = [2]-[5]	[9] = [3]-[6]	[10] = [8]-[7]	[11] = [9]-[8]
		Regional FVAS (RFVAS)			Global FVAS (GFVAS)			RFVAS - GFVAS (%-points)				
Country		1995	2012	2018	1995	2012	2018	1995	2012	2018	95-12	12-18
SVK	Slovakia	21.4	23.5	33.5	8.2	24.9	18.6	13.2	-1.4	14.9	-14.57	16.26
HUN	Hungary	17.1	29.7	34.5	7.9	18.1	15.5	9.3	11.6	19.0	2.31	7.46
CZE	Czechia	18.8	25.7	28.8	6.0	15.8	14.2	12.8	9.9	14.6	-2.89	4.68
HRV	Croatia	16.5	15.3	18.5	4.9	9.0	7.7	11.7	6.2	10.8	-5.41	4.58
ROU	Romania	9.2	11.7	15.0	4.3	6.2	6.9	4.8	5.5	8.1	0.65	2.61
POL	Poland	10.2	16.5	19.3	3.9	11.8	12.1	6.3	4.7	7.2	-1.59	2.50
FIN	Finland	15.0	15.1	15.8	7.5	13.8	12.1	7.6	1.3	3.7	-6.24	2.34
LTU	Lithuania	10.7	13.3	14.4	11.8	12.5	11.4	-1.1	0.8	3.0	1.85	2.21
SWE	Sweden	16.9	15.4	17.8	6.6	9.1	9.6	10.3	6.3	8.2	-4.00	1.96
PRT	Portugal	19.7	19.5	22.6	6.0	7.9	9.0	13.7	11.6	13.6	-2.06	1.96
ITA	Italy	10.7	11.0	13.0	5.6	8.9	9.2	5.1	2.1	3.8	-3.01	1.66
BGR	Bulgaria	5.2	15.3	17.2	7.5	14.1	14.6	-2.3	1.1	2.7	3.47	1.51
NLD	Netherlands	15.7	13.8	17.6	7.7	13.5	15.9	8.1	0.3	1.7	-7.74	1.34
EST	Estonia	20.9	25.2	24.3	12.9	20.1	18.0	8.0	5.1	6.3	-2.96	1.26
BEL	Belgium	26.1	22.1	24.3	8.7	11.0	12.1	17.4	11.0	12.2	-6.39	1.15
LUX	Luxembourg	16.6	32.0	32.6	18.2	15.4	14.9	-1.6	16.6	17.7	18.14	1.15
SVN	Slovenia	24.7	23.2	25.6	6.3	11.8	13.2	18.4	11.4	12.4	-7.03	1.05
DEU	Germany	8.8	11.4	12.3	5.3	9.9	9.8	3.5	1.6	2.5	-1.98	0.98
AUT	Austria	18.0	21.7	23.2	5.0	10.2	10.7	12.9	11.5	12.5	-1.43	0.97
GBR	UK	10.4	10.5	11.4	7.6	9.6	9.7	2.9	0.9	1.7	-1.99	0.86
ESP	Spain	14.2	12.4	14.2	5.8	9.0	10.1	8.4	3.3	4.1	-5.04	0.71
LVA	Latvia	11.3	18.0	17.8	10.1	10.0	9.2	1.2	8.0	8.5	6.79	0.59
DNK	Denmark	16.8	16.9	17.0	5.2	9.3	9.0	11.6	7.6	8.0	-3.93	0.40
FRA	France	11.5	13.0	15.0	5.6	9.7	11.3	5.9	3.3	3.7	-2.55	0.37
MLT	Malta	28.8	26.9	23.6	15.4	19.5	15.8	13.4	7.5	7.8	-5.98	0.31
IRL	Ireland	21.5	21.9	19.2	15.9	22.5	19.7	5.6	-0.6	-0.5	-6.15	0.09
CYP	Cyprus	16.2	14.6	14.4	18.2	9.9	10.0	-2.0	4.7	4.4	6.73	-0.30
GRC	Greece	7.4	7.3	8.0	3.4	8.1	9.7	4.1	-0.8	-1.7	-4.83	-0.92
EU28		12.0	13.7	15.5	6.1	10.5	11.0	6.0	3.1	4.5	-2.83	1.40

Note: All value added corresponding to primary industries has been excluded from the computations. Within-country sectoral shares are weighted with final output for each manufacturing product.
Source: Authors' calculations based on OECD-ICIO 2021 database.

This points to the importance of recent EU enlargement for productive integration. These countries at the top of Table 3 (from Slovakia to Sweden) have an average RFVAS of 22% in 2018 (EU28 weighted average is 15%) and an average GFVAS of 12% in 2018 (EU28 weighted average is 11%). Hence, it is the regional FVA component which is particularly higher than the EU28 average. In fact, in most of them, the regional component of FVAS is increasing between

2012 and 2018 (difference between columns [3] and [2] in Table 3) whilst the global component of FVAS is decreasing during the same sub-period (difference between columns [6] and [5] in Table 3).

In perspective, Europe experienced a sharp farshoring trend between 1995 and 2012, where overall FVAS greatly expanded but where the global component dominated (column [10] in Table 3). Since 2012, there was a deceleration in the growth of overall FVAS across most countries (computed as the difference between columns [3]+[6] net of columns [2]+[5] in Table 3), and it was the regional component that grew in most cases. Hence, in times of slowbalisation, regional integration becomes relatively stronger. This also suggests that *geographical composition* might impact (or be related to) the *degree* of international outsourcing: periods of faster offshoring are global in nature, whereas those of slower GVC integration are more regional across Europe.

When it comes to the output destination perspective, results suggest a strong and generalised globalisation of domestic value added exports between 1995 and 2012 (column [10] in 4), whose reversal since 2012 is also mostly due to Central and Eastern European countries (except for Malta and Belgium, column [11] in 4). In fact, there are some major countries (such as Italy and France) which further increased their share of extra-regional value added exports after 2012.

In comparison to the input sourcing perspective, note that: (i) the increasing reliance on extra-European final demand between 1995 and 2012 was more significant than the increasing sourcing of global inputs during the same sub-period (by comparing column [10] of Tables 3 and 4), and (ii) the reliance on foreign final demand as a buyer of domestic value added is proportionally higher than the domestic reliance on foreign inputs, especially for countries in the manufacturing core of Europe (by comparing columns [1]+[4], [2]+[5], [3]+[6] between Tables 3 and 4).

Hence, these points suggest that, if global final demand decelerates, the positive intra-European spillovers due to regional backward linkages (*nearshoring*-induced effects) might not become as effective as they could potentially

Table 4: Domestic value added contribution from Manufacturing Industries to Regional and Global Value Chains (VCs) by Country (European Union, EU28)

		[1]	[2]	[3]	[4]	[5]	[6]	[7] = [1]-[4]	[8] = [2]-[5]	[9] = [3]-[6]	[10] = [8]-[7]	[11] = [9]-[8]
		Domestic VA contribution to:										
		Regional VCs (RFSUBS)			Global VCs (GFSUBS)			RFSUBS - GFSUBS (%-points)				
Country		1995	2012	2018	1995	2012	2018	1995	2012	2018	95-12	12-18
MLT	Malta	20.6	13.9	13.9	11.5	28.0	22.2	9.1	-14.1	-8.2	-23.22	5.90
LVA	Latvia	19.4	21.6	25.9	6.5	14.8	15.1	12.8	6.8	10.9	-6.01	4.07
POL	Poland	13.3	19.3	22.8	4.8	11.1	11.6	8.4	8.2	11.2	-0.20	2.93
BGR	Bulgaria	14.7	17.4	21.5	12.1	15.1	16.6	2.6	2.3	4.8	-0.29	2.57
ROU	Romania	9.3	12.7	15.4	6.9	9.0	9.2	2.4	3.7	6.2	1.27	2.45
BEL	Belgium	26.7	24.6	27.8	11.7	16.2	17.0	15.1	8.4	10.8	-6.67	2.42
HRV	Croatia	9.7	9.6	12.5	3.4	9.4	9.9	6.3	0.2	2.6	-6.11	2.42
LTU	Lithuania	14.2	17.5	22.0	5.7	13.1	15.2	8.6	4.4	6.8	-4.18	2.41
EST	Estonia	25.9	25.9	26.3	9.4	19.2	18.0	16.6	6.7	8.3	-9.86	1.62
CZE	Czechia	21.2	27.6	28.1	6.0	14.4	13.5	15.2	13.2	14.6	-2.03	1.41
SVN	Slovenia	23.3	26.1	28.3	6.4	16.1	17.2	16.9	10.0	11.1	-6.96	1.15
DEU	Germany	10.9	13.9	15.1	8.6	17.4	18.0	2.3	-3.6	-2.9	-5.87	0.64
PRT	Portugal	14.3	17.1	18.4	5.5	11.8	12.5	8.8	5.3	5.8	-3.47	0.51
SWE	Sweden	20.4	16.9	18.0	15.1	19.4	20.1	5.3	-2.5	-2.1	-7.75	0.42
NLD	Netherlands	23.7	22.4	24.4	11.0	14.7	16.3	12.7	7.7	8.1	-5.05	0.41
ESP	Spain	10.8	13.8	15.2	6.2	11.6	13.0	4.6	2.1	2.3	-2.49	0.13
GBR	UK	11.9	8.9	8.4	10.6	12.4	11.9	1.3	-3.6	-3.5	-4.85	0.07
GRC	Greece	7.8	8.9	13.0	5.4	11.5	15.5	2.5	-2.6	-2.5	-5.02	0.05
ITA	Italy	10.5	11.1	12.2	8.3	13.1	14.2	2.3	-2.0	-2.1	-4.31	-0.03
FRA	France	12.8	12.6	14.9	8.4	14.1	16.5	4.4	-1.4	-1.6	-5.85	-0.15
HUN	Hungary	17.2	28.1	29.2	5.3	15.2	16.5	11.9	12.9	12.7	0.98	-0.26
AUT	Austria	20.4	22.8	24.5	10.4	17.9	19.9	10.0	4.9	4.6	-5.08	-0.27
LUX	Luxembourg	42.7	38.2	39.6	14.7	19.8	21.6	28.1	18.4	18.0	-9.67	-0.41
FIN	Finland	23.8	16.0	17.3	14.7	20.1	22.1	9.1	-4.1	-4.7	-13.20	-0.64
SVK	Slovakia	30.9	33.0	32.6	6.6	14.8	15.4	24.2	18.2	17.2	-6.03	-1.03
DNK	Denmark	16.2	14.5	14.8	11.0	16.1	17.6	5.2	-1.6	-2.8	-6.81	-1.14
CYP	Cyprus	7.0	7.6	8.0	7.6	7.4	9.3	-0.6	0.2	-1.3	0.76	-1.49
IRL	Ireland	22.5	18.2	16.9	14.5	23.1	26.7	8.1	-5.0	-9.8	-13.03	-4.87
EU28		13.5	14.8	16.2	9.1	15.1	16.4	4.4	-0.4	-0.1	-4.75	0.25

Note: Within-country sectoral shares are weighted with gross value added for each manufacturing product.
Source: Authors' calculations based on OECD-ICIO 2021 database.

be, given that activating European production increasingly requires extra-European final demand (the *farsharing* constraint).

To complement the analysis, we explore the sectoral nature of nearshoring and farsharing trends in Europe. Which are the sectors leading relative regionalisation or globalisation of input sourcing and output destinations?

Table 5: Foreign Value Added Shares in Final Output of Manufacturing Products (European Union, EU28)

		[01]	[02]	[03]	[08]	[09]	[10]	[11]= [09]-[08]	[12]= [10]-[09]	[13]
		Foreign Value Added Share (FVAS)			Regional-to-Global FVAS					FINO
		1995	2012	2018	1995	2012	2018	95-12	12-18	2018
Global Value Chain (GVC)		(in %)	(in %)	(in %)	(ratio)			(%-points)		(in %)
16WOD	Wood products	14.52	20.01	21.42	2.11	1.63	1.85	-0.49	0.22	0.76
17PAP	Paper & Printing	18.58	21.93	23.64	2.49	1.80	2.00	-0.69	0.20	1.67
23NMM	Non-metal Min. Prod.	12.74	17.75	19.70	2.12	1.24	1.45	-0.88	0.20	1.09
24MET	Basic metals	22.75	30.77	32.31	1.75	1.12	1.27	-0.63	0.15	0.58
29MTR	Motor vehicles	24.76	32.17	33.96	2.53	1.78	1.92	-0.75	0.14	17.56
22RBP	Rubber & Plastics	19.63	26.55	29.30	2.35	1.67	1.78	-0.68	0.11	1.86
19PET	Petroleum products	12.72	19.74	20.46	1.12	0.41	0.52	-0.71	0.11	5.28
25FBM	Fabricated metal prod	17.94	22.39	23.83	2.19	1.42	1.52	-0.77	0.09	3.70
26CEQ	ICT Equip.	24.61	32.28	32.53	1.21	0.79	0.88	-0.43	0.09	5.07
20CHM	Chemical products	18.42	28.06	28.17	2.23	1.44	1.52	-0.79	0.08	3.90
10FOD	Food products	13.87	18.79	20.92	2.15	1.60	1.66	-0.55	0.06	21.89
28MEQ	Mechanical Equip.	18.99	24.74	26.32	1.99	1.41	1.47	-0.58	0.06	10.85
31OTM	Other Manufacturing	16.15	20.98	22.73	1.93	1.28	1.34	-0.65	0.06	7.46
27ELQ	Electrical Equip.	18.50	27.11	29.43	1.74	1.27	1.31	-0.47	0.04	3.75
21PHA	Pharmaceuticals	12.73	22.51	26.85	1.95	1.16	1.19	-0.79	0.03	5.93
13TEX	Textile products	18.67	21.32	22.18	1.99	1.10	1.10	-0.89	0.00	4.31
30TRQ	Transport Equip.	22.93	29.79	35.32	1.48	1.06	1.04	-0.41	-0.03	4.34
	Average/Total	18.15	24.52	26.42	1.96	1.31	1.40	-0.66	0.09	100.0

Note: All value added corresponding to primary industries has been excluded from the computations. Within-sector country shares are weighted with final output for each country.
Source: Authors' calculations based on OECD-ICIO 2021 database.

Table 5 reports results at the sectoral level from the input sourcing perspective. It is noticeable that (a cross-country, weighted average of) all European GVCs have globalised input sourcing between 1995 and 2012 (column [11] in Table 5), whilst all (but one) of them have reversed this trend between 2012 and 2018 (column [12] in Table 5). The top five sectors leading the recent nearshoring trend are wood and paper products (16WOD and 17PAP), construction inputs (23NMM), basic metals (24MET) and motor vehicles (29MTR). Of these, it is this latter sector which makes a sizeable impact due to being the second most important product in European manufacturing final output (column [13] in Table 5). Indeed, across sectors, it is the motor vehicle GVC which stands out as key for European intra-regional input integration.

By comparing columns [10] and [13] of Table 5, it may be observed that, for relatively small sectors (less than 6% of final output), there is an inverse

relationship between the ratio of regional-to-global FVAS and the sectoral final output share. However, the relationship becomes a direct one for larger sectors (at least 6% of final output). This is a point of caution for policy-making: regional input integration may be occurring either in several sectors with little aggregate weight or in few very important sectors. Policies promoting EU's Open Strategic Autonomy (Kroll, 2024) may be of a different kind if focused on few large European value chains (such as mechanical equipment and motor vehicles) or on multiple smaller sectors (such as wood and paper products, rubber and plastics and food products).

Table 6: Domestic value added contribution to Foreign GVCs from Manufacturing Industries (European Union, EU28)

		[01]	[02]	[03]	[08]	[09]	[10]	[11]= [09]-[08]	[12]= [10]-[09]	[13]
		Contribution to Foreign GVCs (FSUSB)			Regional-to-Global FSUBS					GVA
		1995	2012	2018	1995	2012	2018	95-12	12-18	2018
	Industry	(in %)	(in %)	(in %)	(ratio)			(%-points)		(in %)
24MET	Basic metals	50.41	64.85	64.59	1.62	1.02	1.20	-0.60	0.18	3.49
29MTR	Motor vehicles	17.50	26.37	27.28	1.91	1.08	1.24	-0.84	0.16	11.79
30TRQ	Transport Equip.	24.99	27.32	28.60	0.82	0.66	0.78	-0.17	0.13	2.91
22RBP	Rubber & Plastics	26.96	43.82	46.57	1.93	1.33	1.43	-0.60	0.10	4.40
25FBM	Fabricated metal prod.	23.66	32.67	35.16	1.39	0.97	1.04	-0.42	0.08	8.46
23NMM	Non-metal Min. Prod.	20.72	28.76	32.32	1.48	1.08	1.15	-0.40	0.07	3.38
16WOD	Wood products	22.55	31.29	35.70	2.18	1.27	1.34	-0.90	0.06	1.74
28MEQ	Mechanical Equip.	23.14	30.51	33.07	1.08	0.75	0.78	-0.34	0.04	10.63
27ELQ	Electrical Equip.	25.91	35.12	40.04	1.27	0.92	0.94	-0.35	0.02	4.46
20CHM	Chemical products	42.14	55.62	58.86	1.51	0.94	0.92	-0.57	-0.01	7.40
31OTM	Other Manufacturing	12.13	17.97	21.40	1.03	0.90	0.88	-0.13	-0.02	8.27
17PAP	Paper & Printing	29.36	34.23	36.37	2.31	1.31	1.29	-1.00	-0.03	3.72
21PHA	Pharmaceuticals	16.31	26.71	30.06	0.79	0.58	0.55	-0.21	-0.03	6.11
26CEQ	ICT Equip.	25.41	31.08	36.17	1.40	0.83	0.78	-0.57	-0.05	5.20
10FOD	Food products	7.13	11.21	12.63	2.21	1.73	1.59	-0.48	-0.14	12.23
19PET	Petroleum products	19.56	32.82	35.91	1.07	1.06	0.85	-0.01	-0.21	2.56
13TEX	Textile products	13.13	15.82	18.55	1.72	1.04	0.82	-0.68	-0.23	3.25
	Average/Total	23.59	32.13	34.90	1.51	1.03	1.03	-0.49	0.01	100.0

Note: Within-sector country shares are weighted with gross value added for each country.
Source: Authors' calculations based on OECD-ICIO 2021 database.

When it comes to the output destination perspective, Table 6 reports mixed results concerning the reversal of the farsharing trend which was pervasive between 1995 and 2012. While industries accounting for 51% of GVA regionalised value added exports since 2012, the remaining activities further increased their reliance on extra-European final demand (column [12] in Table 6). Industries nearsharing between 2012 and 2018 include transport equipment (29MTR

and 30TRQ), capital goods and their components (25FBM, 27ELQ and 28MEQ) and diffused intermediate inputs (24MET, 22RBP, 23NMM, 16WOD). Hence, this could be related to a recovery of European investment *vis-à-vis* final consumption, as industries producing key consumer products (such as textiles and apparel, food products, pharmaceuticals) increased their reliance on extra-European buyers between 2012 and 2018.

At any rate, a striking feature of the comparison between Tables 5 and 6 is the consistently higher share of European value added *supplied* to foreign GVCs over the foreign value added *used* by European GVCs (the difference for each column `[01]`, `[02]`, `[03]` between Tables 5 and 6). In 2018, a bit over 26% of a unit of final output of a European country consisted of foreign value added, whereas in the same year, almost 35% of domestic value added was activated by foreign final demand (column `[03]` in Tables 5 and 6). This highlights the export-led nature of European production.

3.5 Nearshoring gains in Europe

The trends described so far provide insights about the evolution and compositional changes in the foreign value added content of inputs and the domestic value added content of foreign final output across Europe. However, a key policy question remains: What are the gains from *nearshoring* for Europe?

In this subsection we provide a first-order, back-of-the-envelope approximation to nearshoring gains and the policy debates (and options) that this quantification attempt may trigger.

Previous subsections made clear that the nearshoring trend for Europe started around 2012, in the aftermath of the sovereign debt crisis in some European countries. Moreover, we conceptualised nearshoring as the regionalisation in the geographical origin of the value added content of a (monetary) unit of final output. Hence, the *change* in the difference between the regional and global shares of final output (RFVAS-GFVAS, introduced in section 2), quantify the replacement of extra-European with intra-European value added between

two time periods. With this in mind, for instance, if the increase in regional over global foreign value added between 2012 and 2018 was 1 percentage point of final output, we may multiply this 1 p.p. by the average level of final output between 2012 and 2018, in order to approximate the monetary amount of net income that has been nearshored.

Applying this logic, Table 7 reports nearshoring gains for the EU28 between 2012 and 2018. Column [03] in Table 7 comes from column [11] in Table 3. Each row of column [04] in Table 7 has been obtained by operating with Table 7 columns as follows: $([01] + [02])/2 \times ([03]/100)$. Columns [05] and [06] of Table 7 report the proportional distribution of (i) total value nearshored (column [05]) and (ii) average (between 2012 and 2018) final manufacturing output by country (column [06]).

Overall, the substitution of global with regional value added contributions implied an increase in Euorpean income of almost USD 50 bln across 6 years (2012-2018), i.e. approximately USD 8.3 bln per year, on average. As regards its distribution across countries, it is crucial to note that the value nearshored in column [04] of Table 7 represents the additional European value added that each country activates on others, rather than the value added it receives. Hence, we are quantifying the *backward linkages* that each country triggers when their GVCs regionalise input sourcing.

To begin with, Germany and Italy trigger 35.5% of the European value nearshored (column [05] of Table 7), while they represent 41.3% of Euroepan manufacturing final output (column [06] of Table 7). Hence, more than USD 1 in 3 of value added nearshored in Europe has been activated by demand from German and Italian GVCs.

Interestingly, the top four Central and Eastern European countries in Table 7, Slovakia, Czechia, Hungary and Poland, activate almost 32% of European value nearshored (column [05] of Table 7) while they represent only 8.1% of European manufacturing final output (column [06] of Table 7). Therefore, these economies play a key role in European productive integration: they trigger a notoriously higher proportion of value added nearshored across Europe

Table 7: Manufacturing final output, difference between regional and global foreign value added shares and estimated value of output nearshored (2012-2018, European Union, EU28)

		[01]	[02]	[03]	[04]	[05]	[06]
		Manufacturing Final Output		RFVAS - GFVAS	Approx. Value Nearshored (12-18)		Manuf. FINO
		2012	2018	12-18			<12-18>
Country		(10^9 USD)		(%-points)	(10^9 USD)	(%)	(%)
DEU	Germany	960.14	991.86	0.98	9.54	19.20	27.57
ITA	Italy	485.58	487.65	1.66	8.09	16.29	13.75
SVK	Slovakia	31.80	34.35	16.26	5.38	10.83	0.93
CZE	Czechia	69.10	82.33	4.68	3.55	7.14	2.14
HUN	Hungary	44.61	48.34	7.46	3.47	6.98	1.31
POL	Poland	123.40	140.03	2.50	3.29	6.63	3.72
GBR	UK	328.53	324.07	0.86	2.80	5.64	9.22
NLD	Netherlands	151.08	166.97	1.34	2.12	4.28	4.49
SWE	Sweden	96.43	85.62	1.96	1.79	3.60	2.57
ESP	Spain	231.51	243.41	0.71	1.69	3.40	6.71
FRA	France	417.47	390.02	0.37	1.49	3.00	11.41
ROU	Romania	41.60	56.16	2.61	1.28	2.57	1.38
BEL	Belgium	102.26	100.23	1.15	1.17	2.35	2.86
FIN	Finland	48.63	41.55	2.34	1.06	2.13	1.27
PRT	Portugal	43.82	48.11	1.96	0.90	1.81	1.30
AUT	Austria	80.26	86.63	0.97	0.81	1.64	2.36
HRV	Croatia	11.93	9.56	4.58	0.49	0.99	0.30
LTU	Lithuania	12.49	11.21	2.21	0.26	0.53	0.33
BGR	Bulgaria	13.14	13.88	1.51	0.20	0.41	0.38
DNK	Denmark	49.06	53.02	0.40	0.20	0.41	1.44
SVN	Slovenia	11.47	13.32	1.05	0.13	0.26	0.35
IRL	Ireland	71.28	135.01	0.09	0.09	0.18	2.91
EST	Estonia	5.00	5.39	1.26	0.07	0.13	0.15
LUX	Luxembourg	4.12	3.63	1.15	0.04	0.09	0.11
LVA	Latvia	4.06	4.17	0.59	0.02	0.05	0.12
MLT	Malta	1.46	1.32	0.31	0.00	0.01	0.04
CYP	Cyprus	1.74	1.77	-0.30	-0.01	-0.01	0.05
GRC	Greece	32.40	25.39	-0.92	-0.26	-0.53	0.82
	Total	3474.37	3604.98		49.67	100.00	100.00

Note: All value added corresponding to primary industries has been excluded from the computations. Within-country sectoral shares are weighted with final output for each manufacturing product.
Source: Authors' calculations based on OECD-ICIO 2021 database.

with respect to their weight in manufacturing final output. In fact, across almost all Central and Eastern European (as well as Nordic) countries in Table 7, their contribution to activating European nearshored value is proportionally

higher than their share in European manufacturing final output.

The fact that the reported value nearshored (in column [04] of Table 7) reflects backward linkages — triggered by each activating country regionalising input sourcing — suggests that policy-making may need to be approached from a 'European' perspective, in order to be effective. For instance, what might be the interest of the German or Italian policy-maker in pushing for input sourcing regionalisation, if the quantified gains imply value added generated (and appropiated) elsewhere in Europe? The point, which deserves further research and granular quantification, is that by nearshoring value, European countries may benefit from second (and higher) order productive spillovers, triggered by the nearshoring of their trade partners towards them.

At any rate, the fact that European value chains are tightly interconnected may call for policy initiatives which envisage an acknowledgement of (and, potentially, a reward for) the positive externalities exerted by those European countries regionalising input sourcing.

4 Summary of findings and concluding remarks

This paper provided a novel picture of foreign value added sourcing and domestic value added contributions across the world's three main macro-regions: the European Union, Asia-Pacific and North and Latin America.

Our analysis provides a wealth of new evidence on GVC integration patterns in Europe and across the global economy. Three distinct regional dynamics emerge. First, we observe a European model, characterised, on the one hand, by an increasing (since 2012) regionalisation of input sourcing in value added terms (which we label *nearshoring*) and, on the other hand, a (mildly reverting) long-period globalisation of domestic valued added contributions (which we label *farsharing*).

Second, and in contrast to Europe, the Asia-Pacific macro-region undergoes a continuous (and progressive) relative regionalisation of input sourcing and

a further increase in the absorption of its own value added after the global financial crisis (2008/09) -— i.e., nearshoring coupled with nearsharing. Finally, countries composing the North and Latin America macro-region have, by far, the lowest level of GVC regionalisation, both in terms of input sourcing and of domestic value added destinations, in stark contrast with the other two macro-regions.

A granular, unweighted country $\times$ sector perspective supports the key trends found at the aggregate, macro-regional level (especially in relative, i.e., regional-to-global, terms). In particular, we found that the reversal of the long-period input sourcing globalisation trend in Europe has not yet reached its pre-2008 level of regionalisation by 2018, making apparent the limited extent of nearshoring so far.

Our structural decomposition exercise shows that the structural determinants of nearshoring/nearsharing at the macro-regional level are quite different across regions and sub-periods. The increasing weight in EU's final output of Central and Eastern European countries, as well as that of motor vehicle GVCs, are factors pushing towards input sourcing regionalisation in Europe. At the same time, from an output destination perspective, the sharp decrease in intrinsic regionalisation between 2008 and 2012 shows how EU industries dramatically increased the extra-regional share of domestic value added, in the face of weakening European demand.

In Asia-Pacific, the trend towards regionalisation of input sourcing may be explained by the rise of China and the decline of Japan, as the level of relative regional input sourcing of Chinese GVCs is higher than that of their Japanese counterparts. From an output destination perspective, industries from Asia-Pacific partially shielded against negative effective demand spillovers from Europe and the United States by increasingly regionalising value added destinations, especially between 2008 and 2012.

Zooming in to Europe allows us to enrich our results. First, while the trend towards a regionalisation of input sourcing between 2012 and 2018 occurs across most EU28 countries, it is driven by Central and Eastern European

countries, evincing the importance of recent EU enlargement for productive integration. Moreover, our results imply that in times of slowbalisation, regional integration becomes relatively stronger, suggesting that the geographical composition of international outsourcing might be related to its the pace: periods of faster off-shoring are global in nature, whereas those of slower GVC integration are more regional. However, the reliance on foreign final demand as a buyer of domestic value added is proportionally higher than the domestic reliance on foreign inputs, especially for countries in the manufacturing core of Europe. Hence, if global final demand decelerates, the positive intra-European spillovers due to regional backward linkages (*nearshoring*-induced effects) might not become as effective as they could potentially be, given that activating European production increasingly requires extra-European final demand (the *farsharing* constraint).

This paper represents a first step towards understanding recent trends in the geographical distribution of value added flows in the world economy, both from input sourcing and output destination perspectives. However, additional work needs to be undertaken.

First, the evidence of (recent) nearshoring in Europe may be attributed to a faster increase in regional (relative to global) foreign input sourcing. However, it remains to be seen whether these trends will consolidate in the years to come and, crucially, what exactly has triggered the reversal towards regionalisation since 2012. A possible candidate to explain this could be the partial recovery from the financial crisis in Europe, but further in-depth analysis is needed on this front.

Second, the *nearhsoring* and *farsharing* trends suggest the consolidation of a European export-led growth model involving an increase in intra-regional backward linkages and a diversification towards extra-regional markets. The former is in part related to Europe's dependence on primary commodities and their price fluctuations, although our analysis suggests that nearshoring persists when these price fluctuations are accounted for. Hence, further research is needed to identify its underlying drivers. As regards farsharing, it remains

unclear the extent to which it is the result of enhanced competitiveness and/or innovation within European industries, or simply the lagged outcome of weak domestic demand in the aftermath of recent crises, pushing European activities to turn to extra-European GVCs.

Third, our use of the terms near/farshoring and near/farsharing as verbs, as if they referred to conscious actions by firms in the global economy might be misleading. We are simply providing descriptive evidence, supported by a structural accounting framework, of changes in empirical ratios. Understanding firm-level determinants to explain how these country-industry and country-GVC results come about is a challenge that needs to be taken up in future research.

Finally, overcoming data limitations could improve the robustness of the results obtained. For instance, a longer time span (covering more recent years) for our inter-country input-output (ICIO) dataset would allow us to assess the pervasiveness of the identified trends. Also, an ICIO database with data in previous-year-prices, may allow for a better separation of price and volume effects, potentially driving results.

Acknowledgements

This paper has been funded by the Unit for Analysis, Planning, Statistics and Historical Documentation, Directorate General for Public and Cultural Diplomacy, Italian Ministry of Foreign Affairs and International Cooperation in line with Art. 23 of the Presidential Decree n.18/1967. Opinions are solely those of the authors and do not reflect those of the Ministry of Foreign Affairs and International Cooperation.

Statements and Declarations

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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