

Luiss School of European Political Economy



# Nearshoring and Farshoring in Europe: implications for employment

**Filippo Bontadini, Valentina Meliciani, Maria Savona,  
Ariel Wirkierman**

Working Paper 7/2022

**LUISS**



September 27, 2022

This working paper is realized with the support of the Policy Planning Unit of the Ministry of Foreign Affairs and International Cooperation pursuant art 23-bis of Presidential Decree 18/1967. The opinions contained in this policy brief are solely those of the panelists and do not necessarily reflect the opinions of the Ministry of Foreign Affairs and International Cooperation.

## **Nearshoring and Farsharing in Europe: implications for employment**

**Filippo Bontadini<sup>1,3,4</sup> | Valentina Melinciani<sup>1</sup> | Maria Savona<sup>1,3</sup> | Ariel Wirkeriman<sup>2,3</sup>**

<sup>1</sup>Luiss – Libera Università Internazionale degli Studi Sociali Guido Carli

<sup>2</sup>IMS, Goldsmiths, University of London

<sup>3</sup>SPRU, University of Sussex

<sup>4</sup>OFCE – SciencesPo

### **Abstract**

This paper documents recent trends in the geographical distribution of value added across Global Value Chains (GVCs) and its relationship with employment in Europe. By combining a value chain and country-industry analytical perspectives, we find two concurrent processes setting Europe's participation in GVCs apart from the other two macro-regions, Asia-Pacific and the Americas. European value chains have increased the share of value added they import from within Europe – which amounts to *nearshoring* – while European country-industries have increased the share of value added they provide to extra-European value chains – which we refer to as *farsharing*. Finally, our econometric analysis finds that nearshoring has a positive effect on employment in the country of completion, while in contrast, farsharing shows no significant relationship with employment. We discuss these novel findings in light of the recent policy debate around nearshoring, highlighting the complexity of this phenomenon and the breadth of its implications for Europe.

## 1 | INTRODUCTION

Recently, several studies have investigated trends in globalisation, paying particular attention to the reconfiguration of global value chains. Overall, the literature finds no conclusive evidence of de-globalisation but rather a slowing down of the pace of globalisation relative to the ‘hyper-globalisation’ era (1986-2008) (Piatanesi and Arauzo-Carod, 2019; Antràs, 2020). Despite the extensive literature on globalisation trends and the revived interest in the topic due to the emergence of the Covid-19 pandemic (Baldwin and Evenett, 2020) and the war in Ukraine, empirical evidence on the employment impact of the reconfiguration of global value chains (GVCs) within and across regional areas is still missing.

The reconfiguration of global value chains can have important consequences on the distribution of employment across countries and sectors. Several contributions have examined the impact of offshoring on employment within trade models with labour market frictions producing different results (Hummels et al. 2018). On the one hand, offshoring can lead to the loss of offshored jobs, but on the other hand, it can increase efficiency, reduce labour costs and increase employment. Also, at the empirical level, the evidence is not clear-cut (Bramucci et al. 2021). Overall, the impact may vary according to the level of development of the source and destination country. Furthermore, while the literature on the employment impact of offshoring is rich, to the best of our knowledge, the consequences of *nearshoring* in particular on employment have not been addressed either theoretically or empirically. We can however draw on the offshoring literature to develop some conjectures on the mechanisms relating nearshoring to employment.

Theoretically speaking, it is reasonable to expect that as segments of production are relocated within Europe these should also have employment spillovers. Because we are looking at nearshoring, i.e. increases in value added sourcing within the same region but not the same country, the mechanism at play is a little less straightforward than what we would expect in the case of reshoring (i.e. bringing economic activity back to the domestic economy).

However, as production is relocated within the same region as the country of completion,<sup>1</sup> this is likely to spur further intermediate demand within the region and the country of completion itself. To illustrate this, we can use the example of Italian textiles. As the Italian textile GVC relocates the production of some intermediate components – such as the weaving of yarn into fabric – within Europe – such as in Poland – the production of these components will trigger intermediate demand – such as for chemicals to dye the threads – across Europe, including Italy itself, and will therefore generate more employment. It is these higher order effects that provide our theoretical intuition with the expectation that nearshoring should lead to higher employment within the country of completion.

---

<sup>1</sup> As we discuss more in detail further down, we identify GVCs by their country of completion, i.e. the country in which the production process fragmented along a given GVC is completed to obtain a final output. For example, the Italian textile GVC includes all final products from the textile industry that reach completion in Italy, but not the intermediate textile products that are produced in Italy and then sold off for further processing.

In order to study the evolution of GVCs and their impact on employment, this paper applies (and further refines) well-established input-output methodology (Foster-McGregor and Stehrer, 2013; Timmer et al., 2014; Los et al., 2015) to the – recently released – OECD Inter-Country Input-Output (ICIO) 2021 dataset.

We find very clear-cut results on Europe, suggesting two opposite trends on the source and destination sides of GVCs: Europe is increasingly sourcing value added from within the region (which we refer to as “nearshoring”) but exporting value added globally (a so-far understudied phenomenon which we term “farshoring”). We also explore, in an econometric setting, the relationship between these two phenomena and employment in Europe. We find a significant and positive effect of nearshoring on domestic GVC employment, while farshoring seems to be unrelated to employment dynamics in Europe.

## 2 | MEASURING VALUE ADDED AND EMPLOYMENT CONTENT OF TRADE

### 2.1 | Regional and global value added in trade

The key novelty of our approach is that we focus on two complementary aspects of GVC integration. First, we adopt an *input sourcing* perspective: using measures developed by Los et. al (2015), we look at where value chains in each region draw value-added contributions from and whether this comes from within (i.e. the Regional Foreign Value added Share, RFVAS) or outside (i.e. the Global Foreign Value Added Share, GFVAS) a country’s region.

Second, we adopt an *output destination* perspective: we look at the final destination of domestic value added and whether it contributes to value chains reaching completion within (i.e. Regional Foreign Subsystem Share, RFSUBS) or outside (i.e. Global Foreign Subsystem Share, GFSUBS) a country’s region.

The starting point to devise nearshoring and farshoring indicators is the world’s gross value added (GVA). Each monetary unit of gross output embodies an amount of value added. This amount of value added is generated by different countries and industries that all contribute to the production of final output. Hence, the value-added content of output can be distributed across and linked to each generating source of final demand, exhausting the total value added in the world economy.

To simplify our exposition, we consider a world economy made of 3 countries  $c, p, r$  and  $n$  industries in each of them, therefore a country-level, partitioned matrix view of the connection between value-added contributions and each activating source of final demand would be:<sup>2</sup>

---

<sup>2</sup> With regard to matrix notation: diagonalised vectors are indicated by the hat symbol, all vectors are column vectors, while row vectors are identified by prime.  $\iota$  is a summation vector populated by 1 of appropriate dimensions that sums across elements of another matrix or vector and  $\iota'$  is its transposed version, i.e. a row vector.

$$\hat{v}B\hat{f} = \begin{bmatrix} \hat{v}_c & 0 & 0 \\ 0 & \hat{v}_p & 0 \\ 0 & 0 & \hat{v}_r \end{bmatrix} * \begin{bmatrix} B_{cc} & B_{cp} & B_{cr} \\ B_{pc} & B_{pp} & B_{pr} \\ B_{rc} & B_{rp} & B_{rr} \end{bmatrix} * \begin{bmatrix} \hat{f}_c & 0 & 0 \\ 0 & \hat{f}_p & 0 \\ 0 & 0 & \hat{f}_r \end{bmatrix}$$

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

$$\hat{v}B\hat{f} = \begin{bmatrix} \hat{v}_c B_{cc} \hat{f}_c & \hat{v}_c B_{cp} \hat{f}_p & \hat{v}_c B_{cr} \hat{f}_r \\ \hat{v}_p B_{pc} \hat{f}_c & \hat{v}_p B_{pp} \hat{f}_p & \hat{v}_p B_{pr} \hat{f}_r \\ \hat{v}_r B_{rc} \hat{f}_c & \hat{v}_r B_{rp} \hat{f}_p & \hat{v}_r B_{rr} \hat{f}_r \end{bmatrix} \quad (1)$$

By looking at the global income matrix above, it is possible to 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. In technical terms, a country-GVC represents an *international* subsystem (Sraffa, 1960, p. 89) or vertically integrated sector (Pasinetti, 1973), in the sense that it is a unit of analysis comprising all direct and indirect input requirements to produce a given element of final output in the world economy.

It is now important to stress the difference between country-industry and country-GVC. The former refers to a given industry in a given country – much like in standard statistics – which produces both final and intermediate goods. The latter, instead, refers to the production of final goods (i.e. either consumption or capital goods) that reach completion in a given country-industry but also includes the value-added contributions from all other countries and industries across the world.

Looking back at our example of 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 the Italian textile industry.

In order to illustrate the above in a more clear and formal way, but 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 reaching completion in country  $c$ . Hence, the share of foreign value added (FVA) in final output can be measured by:

$$FVAS_c = \frac{l'(\hat{v}_p B_{pc} \hat{f}_c + \hat{v}_r B_{rc} \hat{f}_c)l}{l' \hat{f}_c} \quad (2)$$

Correspondingly, the off-diagonal block elements of the first block *row* of (1) represent country  $c$ 's value-added contributions to GVCs with countries  $p$  and  $r$  as country of completion. Hence, the share of domestic value added contributed to foreign value chains can be measured by:

$$FSUB_c = \frac{t'(\hat{v}_c B_{cp} \hat{f}_p + \hat{v}_c B_{cr} \hat{f}_r) t}{y_c' t} \quad (3)$$

where  $y_c$  stands for the value-added vector of country  $c$ .

If  $c$  (our country of reference here) and  $p$  belong to the same region, regional and global value-added contributions, respectively, are obtained as:

	<i>Value added sourcing:</i>		<i>Value added destination:</i>
<i>Regional:</i>	$RFVAS = \frac{t' \hat{v}_p B_{pc} \hat{f}_c t}{t' f_c}$	(4)	$RFSUB = \frac{t' \hat{v}_c B_{cp} \hat{f}_p t}{y_c' t}$
			(6)

<i>Global:</i>	$GFVAS = \frac{t' \hat{v}_r B_{rc} \hat{f}_c t}{t' f_c}$	(5)	$GFSUB = \frac{t' \hat{v}_c B_{cr} \hat{f}_r t}{y_c' t}$	(7)
----------------	--	-----	--	-----

By combining the measures of regional and global value added sourcing and destination we then define regional-to-global ratios:

$$NFVA = \frac{RFVAS}{GFVAS} \quad \text{and} \quad NFSUB = \frac{RFSUBS}{GFSUBS} \quad (8)$$

These two ratios capture the degree of regionalisation of value chains or industries, respectively. Hence, if NFVA is increasing (decreasing), the country-GVC is nearshoring (farshoring), whereas if NFSUB is increasing (decreasing), the country-industry is nearsharing (farsharing).<sup>3</sup>

## 2.2 | Employment in Global Value Chains

The approach detailed above can also be applied to devise measures of employment content of final output. In doing so, we can identify where each value chain generates employment: within the same country of completion, within the same region or outside the region. Conversely, we can also identify the proportion of employment in each country-industry that is activated by domestic, regional or global value chains.

We therefore formulate all previous indicators in terms of the employment content of final output. This amounts to replacing matrix  $\hat{v}$  with  $\hat{e}$  in equation (1), which is populated with employment, rather than value added, per unit of gross output. To illustrate what we mean here, we can look at the global employment matrix,  $\hat{e} B \hat{f}$ , which is the employment-based homologue of the global income matrix from equation 1.

<sup>3</sup> Regional aggregates may be obtained through weighted averages of country-level results, using final output for (RFVAS, GFVAS) and gross value added for (RFSUBS, GFSUBS) as weights, respectively.

$$\hat{B}\hat{f} = \begin{bmatrix} \hat{e}_c B_{cc} \hat{f}_c & \hat{e}_c B_{cp} \hat{f}_p & \hat{e}_c B_{cr} \hat{f}_r \\ \hat{e}_p B_{pc} \hat{f}_c & \hat{e}_p B_{pp} \hat{f}_p & \hat{e}_p B_{pr} \hat{f}_r \\ \hat{e}_r B_{rc} \hat{f}_c & \hat{e}_r B_{rp} \hat{f}_p & \hat{e}_r B_{rr} \hat{f}_r \end{bmatrix} \quad (9)$$

Taking again the perspective of country  $c$  and assuming that it is in the same region as country  $p$ , we can look at the first column of the matrix above to identify our components of interest from an *input sourcing* perspective.

The global employment matrix (9) provides us with key magnitudes. On the one hand,  ${}^l\hat{e}_c B_{cc} \hat{f}_c {}^l$  is the domestic employment generated by GVCs reaching completion in  $c$ . To be clear, in our example with the Italian textile value chain, this includes not only the employment within the Italian textile industry, but also in other Italian services (such as design, logistics, marketing) and manufacturing goods (such as chemicals to dye the textile, yarn or other intermediate goods). On the other hand,  ${}^l\hat{e}_p B_{pc} \hat{f}_c {}^l$  and  ${}^l\hat{e}_r B_{rc} \hat{f}_c {}^l$  quantify the employment imported from industries outside of the country of completion  $c$ . Given that country  $p$  is in the same region as  $c$ , the regional share of the employment content of final output is:

$$RFEMS = \frac{{}^l\hat{e}_p B_{pc} \hat{f}_c {}^l}{{}^l(\hat{e}_c B_{cc} \hat{f}_c + \hat{e}_p B_{pc} \hat{f}_c + \hat{e}_r B_{rc} \hat{f}_c) {}^l} \quad (10)$$

while the global share is:

$$GFEMS = \frac{{}^l\hat{e}_r B_{rc} \hat{f}_c {}^l}{{}^l(\hat{e}_c B_{cc} \hat{f}_c + \hat{e}_p B_{pc} \hat{f}_c + \hat{e}_r B_{rc} \hat{f}_c) {}^l} \quad (11)$$

Taking an *output destination* perspective, the rows of the matrix in equation (9) allow us to allocate employment across the value chains that activate it. Hence, the share of domestic employment in country  $c$  that is activated by regional value chains is:

$$RFSEMS = \frac{{}^l e_c B_{cp} \hat{f}_p {}^l}{{}^l(\hat{e}_c B_{cc} \hat{f}_c + \hat{e}_c B_{cp} \hat{f}_p + \hat{e}_c B_{cr} \hat{f}_r) {}^l} \quad (12)$$

While the share of domestic employment activated by value chains reaching completion outside the region is:

$$GFSEMS = \frac{{}^l e_c B_{cr} \hat{f}_r {}^l}{{}^l(\hat{e}_c B_{cc} \hat{f}_c + \hat{e}_c B_{cp} \hat{f}_p + \hat{e}_c B_{cr} \hat{f}_r) {}^l} \quad (13)$$

Following what we did for value added, we can compute the two following ratios to capture near/farshoring and near/farshoring in employment terms too:

$$NFEM = \frac{RFEMS}{GFEMS} \quad \text{and} \quad NFSEM = \frac{RFSEMS}{GFSEMS} \quad (14)$$

As above, if *NFEM* increases, nearshoring is afoot, meaning that the share of employment sourced from industries within the region of completion is increasing *vis-à-vis* the share coming from outside the region. If *NFSEM* decreases, then farsharing is taking place, meaning that -- for a given country-industry -- the share of domestic employment activated by extra-regional GVCs is increasing *vis-à-vis* employment contributions to intra-regional GVCs.

### 3 | NEARSHORING AND FARSHARING IN VALUE ADDED AND EMPLOYMENT

As evinced by the previous section, the computations described require the use of global input-output tables. We use the OECD Inter-Country Input-Output (ICIO) dataset – published in November 2021 – providing data for 45 industries (based on ISIC Rev. 4) across 66 countries, covering the 1995-2018 period.<sup>4</sup> We consider three macro-regions: the European Union (EU28), Asia-Pacific (AP) and North and Latin America (NLA).<sup>5</sup> We focus on GVCs articulated around manufacturing final output to compute foreign value added shares<sup>6</sup> and on manufacturing industries to compute domestic value-added contributions to foreign GVCs.<sup>7</sup>

The upper panel of Figure 1 reports the ratio between RFBAS and GFBAS, while the lower panel plots the two measures separately, looking at the trajectory of nearshoring over time. Figure 2 reports the same analysis using RFSUB and GFSUB, tracing the evolution of farsharing over the same period. We can see starkly different patterns emerging for each region, which we discuss in the remainder of this section.

#### 3.1 | Nearshoring and farsharing.

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 Figures 1 and 2, respectively.

The upward trend for NFVA in Figure 1 since 2012 in Europe and Asia-Pacific suggests that nearshoring is taking place in both regions. For Europe, this comes after a long-period of decline in the sourcing of regional *vis-à-vis* extra-European value added. In contrast, Asia-Pacific shows a rather stable and increasing trend until 2012.

Looking at the lower panel of Figure 1, we can see that this common nearshoring trend since 2012 has different drivers. In Asia-Pacific (bottom centre panel), it is the result of a sharp decline in global sourcing *vis-à-vis* a stagnant regional share. Because the share of foreign (i.e. regional plus global) and domestic value added amount to 1, these results suggest that domestic value added content has

<sup>4</sup> Data can be accessed at <http://oe.cd/icio>

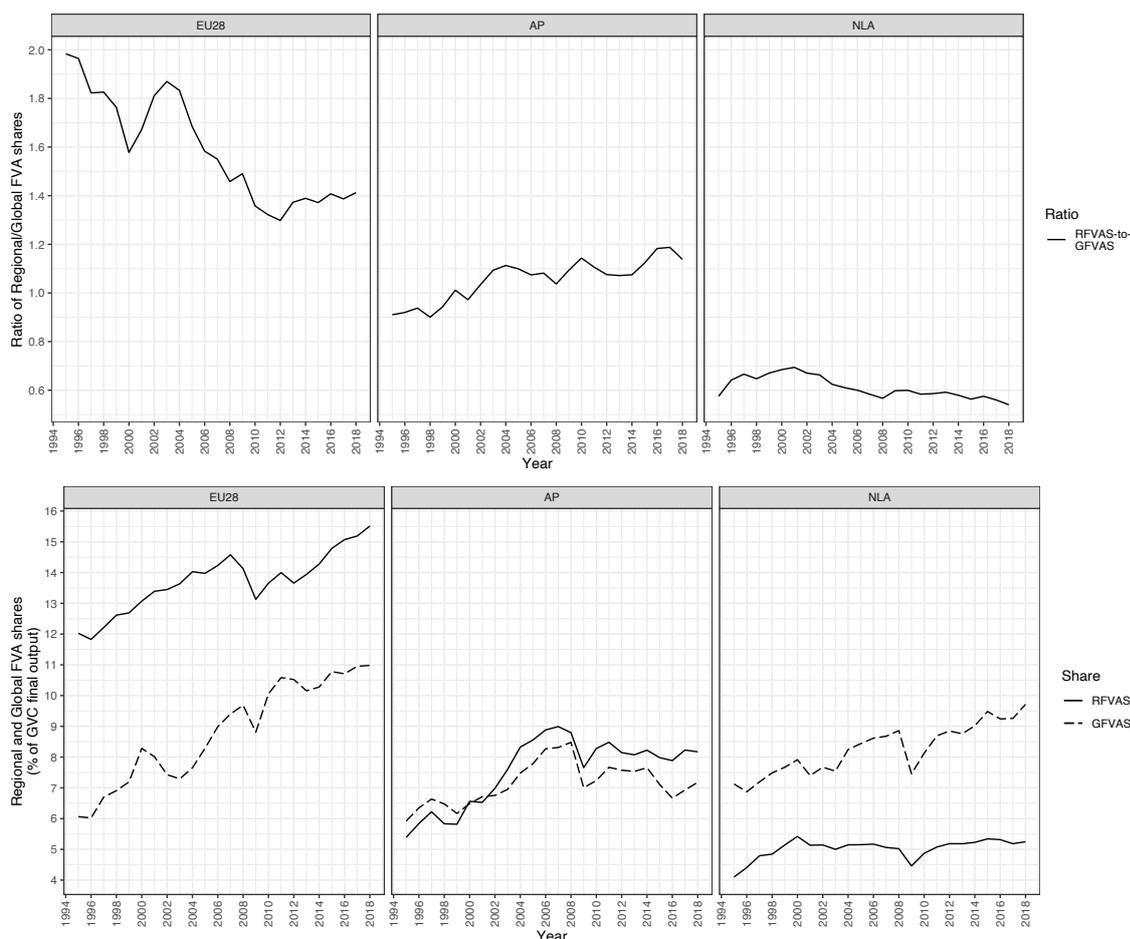
<sup>5</sup> EU28 considers 28 European countries, including Croatia and the UK; AP considers 18 countries: ASEAN Plus Six (i.e. including China, Japan, South Korea, India, Australia and New Zealand), together with Hong Kong and Chinese Taipei; NLA considers 9 countries: USMCA, together with Argentina, Brazil, Chile, Colombia, Costa Rica and Peru.

<sup>6</sup> 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).

<sup>7</sup> A manufacturing industry contributes to foreign GVCs for all final products (primary sectors and services included).

increased as a share of final output in Asian GVCs. In contrast, nearshoring in Europe is linked to a steady increase in the regional value added share that picks up in pace after 2012, while the global share grows less steeply after the same year.

Looking at the Americas, our results show a slowly declining trend for NFVA, with regional FVA remaining at relatively lower levels than for the other two regions, while the extra regional component steadily increases.



**FIGURE 1** 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.

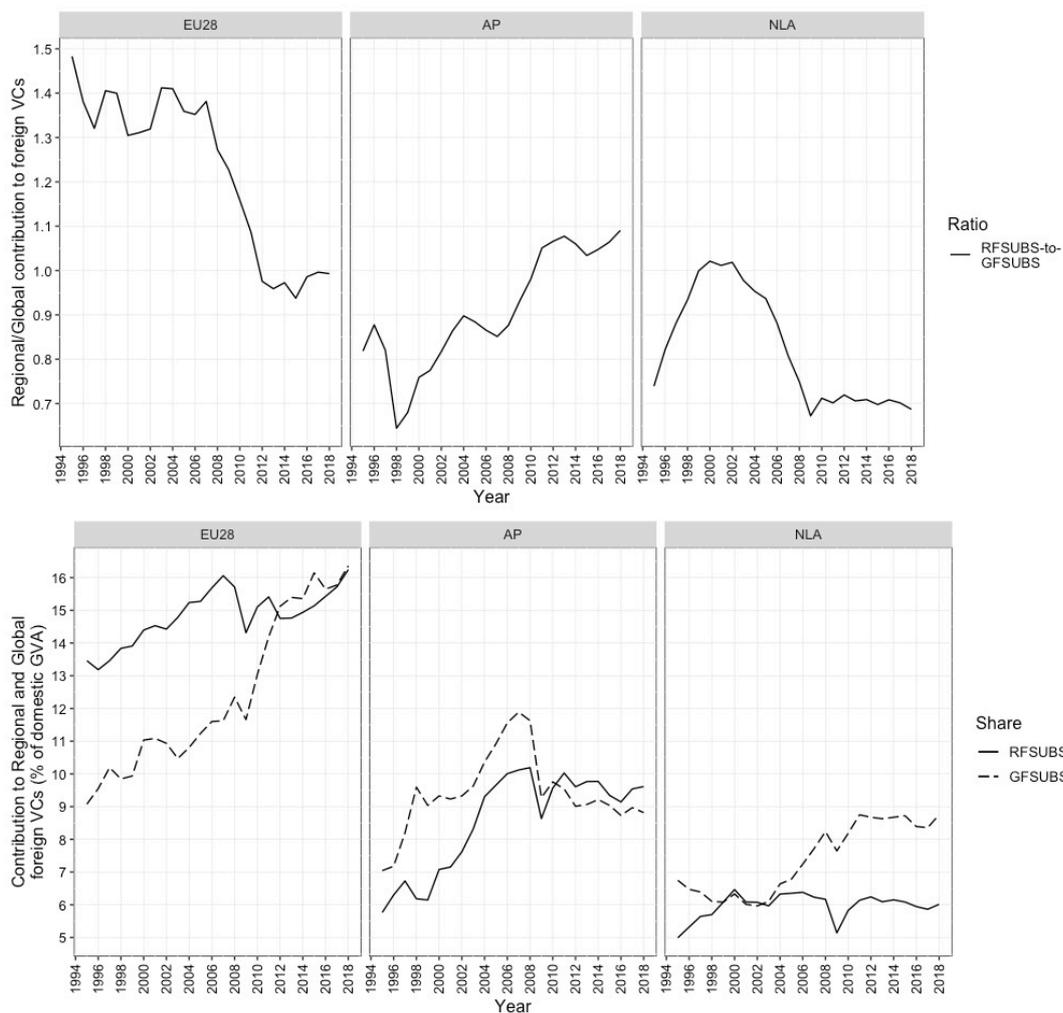
**Source:** Authors' calculations based on OECD-ICIO 2021 database.

When we turn to the regional-to-global destination of domestic value added in Figure 2, NFSUB in the Americas first increases starkly when NAFTA came into effect (1995-2000), 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, the Asia-Pacific region is characterised 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 the bottom-centre panel of Figure 2). This reflects the fact that this region has been able to rely on its countries' own domestic demand to absorb value added, especially in the aftermath of the global financial crisis of 2008, which is when the share of value added contributed to regional value chains, overtaking the share contributed to global value chains.

Europe shows 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, experiencing remarkable growth in the aftermath of the financial crisis in 2008 (GFSUBS in the bottom-left panel of Figure 2). 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”. In the next section we explore to what extent these trends in nearshoring and farsharing for Europe are also taking place when we use our employment-based measures.



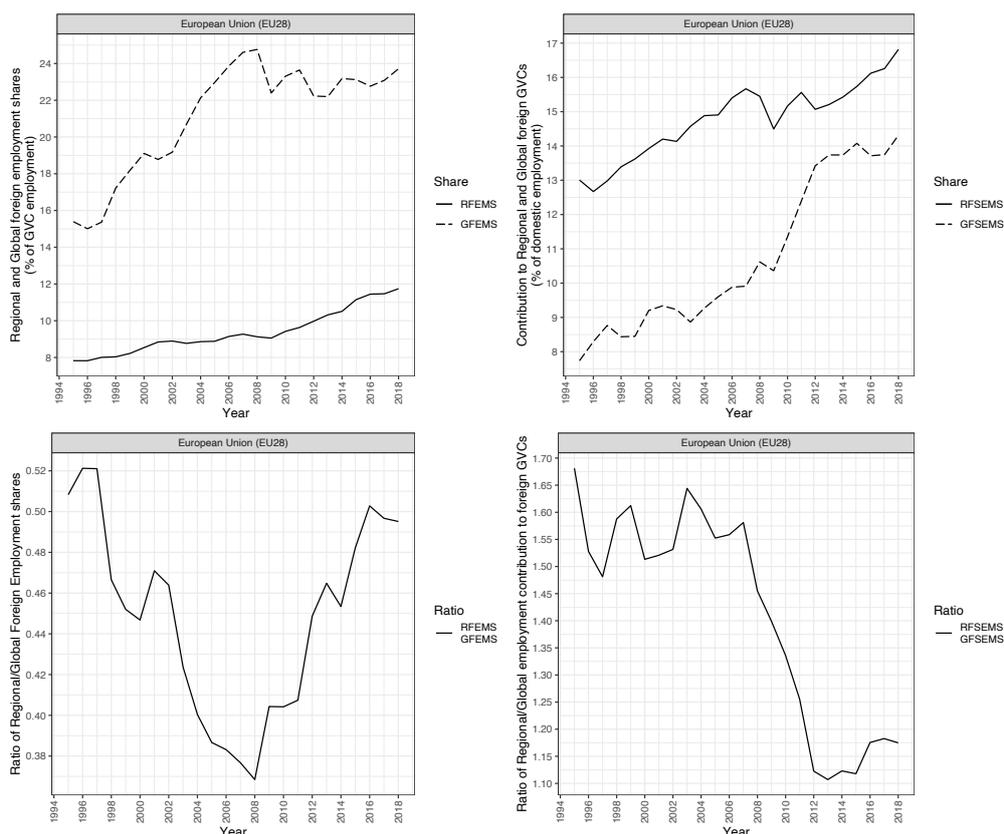
**FIGURE 2** Upper panel: Regional-to-Global ratio of value added contributed to foreign GVCs (NFVA); Lower panel: Share of domestic value added contributed to regional (RFSUBS) and global (GFSUBS) value chains.

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

### 3.2 | Nearshoring and farsharing of Employment in Europe

Trends in the employment content of final output in Europe reflect trends in value added but also differences in productivity across geographical areas. Figure 3 (upper left panel) shows that, from an *input sourcing* perspective, the Regional Foreign Employment Share (RFEMS) -- i.e. employment activated in Europe by European GVCs -- lies always below the Global Foreign Employment Share (GFEMS) despite the opposite being true for the foreign value added shares (Figure 3, lower panel). Therefore, Europe is sourcing the majority of value added from within the region, but the employment contribution from within the region is below that from outside the region. This means that the GVC activities carried out outside Europe are likely to be more labour intensive than those performed within Europe.

Looking at trends in the ratio of regional-to-global foreign employment shares, we find evidence of nearshoring also in the case of employment (Figure 4, lower left panel). The phenomenon is more pronounced than when looking at nearshoring in value-added terms and starts in 2008 with the financial crisis. This is probably due to both a stagnant global component of foreign labour contribution to European value chains and to a decrease in global labour requirements.



**FIGURE 3** Upper panel: Regional and global foreign employment (FEM) shares and domestic employment contributions to foreign GVCs (FSEM); Lower panel: Regional-to-Global foreign employment (FEM) shares and domestic employment contributions to foreign GVCs (FSEM).

**Note:** All value added and employment corresponding to primary industries has been excluded from the computations.

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

From an *output destination* perspective, the domestic employment contributions to foreign regional GVCs (RFSEMS) are always greater than to foreign global (GFSEMS) ones (Figure 3 upper right panel). This occurs also after 2011 when non-European value chains started absorbing more global than regional value added (see bottom panel Figure 2). Overall, also in the case of employment we find from 2008 to 2012 a clear phenomenon of farshoring (Figure 4 bottom right panel), with foreign non-European GVCs activating an increasing share of employment in European industries. This coincides with the financial crisis and the ensuing sovereign debt crisis in some European countries; during this period, the share of European employment activated by extra-European value chains skyrocketed, while the trend plateaued from 2013 onwards.

#### 4 | NEARSHORING AND EMPLOYMENT IN EUROPE: ECONOMETRIC EVIDENCE

From the evidence above, it appears that Europe's value-added sourcing is significantly more regionalised than its employment sourcing. However, nearshoring occurs both in terms of value added and employment. This provides additional justification to the policy discussions around the appeal of nearshoring manufacturing activities and its potentially beneficial employment effects, which we explore in more detail in this section.

In particular, we assess whether nearshoring in a given GVC leads to an increase in employment in the country of completion of the same GVC. As argued in the introduction, this may occur because, as production is relocated within the same region as the country of completion, this is likely to spur further intermediate demand within the region and the country of completion itself.

We test this conjecture within an econometric framework specified as follows:

$$y_{cjt} = \alpha + \beta \cdot \text{Nearshoring}_{cjt} + \sum_{cjt} \gamma' X_{cjt} + \eta_{ct} + \vartheta_{jt} + v_{cj} + \varepsilon_{cjt} \quad (15)$$

where  $y_{cjt}$  is either the domestic employment generated by GVC ending in country  $c$  and industry  $j$  at time  $t$  or its share of total employment generated by the same GVC. Using equation (9) and taking the perspective of country  $c$ , to formalise this we can express our outcome variables as follows:

$$\text{GVC Domestic Employment} = l' \hat{e}_c B_{cc} \hat{f}_c l$$

$$\text{GVC Domestic Employment share} = \frac{l' \hat{e}_c B_{cc} \hat{f}_c l}{l' (\hat{e}_c B_{cc} \hat{f}_c + \hat{e}_p B_{pc} \hat{f}_c + \hat{e}_r B_{rc} \hat{f}_c) l}$$

where  $l' \hat{e}_c B_{cc} \hat{f}_c l$  is the domestic employment generated by GVCs reaching completion in country  $c$ , expressed also as a share of total employment generated by those same GVCs.

$Nearshoring_{ijt}$  is computed as either NFVA from equation (8) or its two components from equations (4) and (5), capturing the regional and extra-regional share of value added sourced by the GVC, respectively. When we use NFVA, we also include as control in the vector  $X_{cjt}$  the share of domestic value added that the GVC sources from the country of completion. This is a measure of the GVCs' integration with foreign suppliers of value added and it is important for our analysis because -- as value chains integrate further with foreign suppliers -- this is likely to impact both our measures of nearshoring and employment, leading to possible omitted variable bias in our estimates.

Additional controls in vector  $X_{cjt}$  include the GVC's final output to account for size effects and two key measures of technology and labour market in the country of completion. These are the capital/labour ratio and its average wage, respectively, which we have computed from EUKLEMS & INTANProd data.<sup>8</sup>

Finally, we saturate our model with country-industry, country-year and industry-year fixed effects ( $v_{cj}, \eta_{ct}, \vartheta_{jt}$ , respectively) to account for country-industry idiosyncratic, time invariant effects, as well as changes affecting all industries within the same country (such as labour market reforms) or a given industry across all countries (such as sector level shocks in demand or supply), that would likely bias our estimates otherwise.

Concerning farsharing, it is less straightforward to have expectations on why and how the geographical destination of value added should influence the amount of employment generated within a given economy. Despite this, we are still interested in exploring this possibility in light of the increasing dependence of European country-industries on foreign GVCs as destinations of gross value added (see Figure 2) and the possible employment implications deriving from this.

Therefore, we replicate our analysis for nearshoring:

$$y_{cjt} = \alpha + \beta \cdot Nearsharing_{cjt} + \sum_{cjt} \gamma' X_{cjt} + \eta_{ct} + \vartheta_{jt} + v_{cj} + \varepsilon_{cjt} \quad (16)$$

Here, our outcome variable  $y_{cjt}$  is employment in country  $c$  and industry  $j$  at time  $t$ . This is measured as employment at the country-industry level and not the GVC level: it therefore includes workers involved in all production of the country-industry, i.e. of both final and intermediate goods. Looking back at equation (9), this would amount to  $l'(\hat{e}_c B_{cc} \hat{f}_c + \hat{e}_c B_{cp} \hat{f}_p + \hat{e}_c B_{cr} \hat{f}_r)l$ , i.e. the sum of the first row of matrix  $\hat{e}B\hat{f}$ .

$Nearsharing_{cjt}$  is measured as either NFSUB from equation (8) or its two components from equations (6) and (7), capturing the share of regional and extra-regional destinations of value added

<sup>8</sup> The capital/labour ratio is computed as the ratio between stock at constant prices of all tangible non-residential capital and hours worked in each country-industry. Average wages are the total wage bill divided by total hours worked. We compute the wage bill by adjusting the total compensation of employees by the inverse of the share that employees represent in total hours worked. In doing this we are making the standard assumption that employees and self-employed workers earn the same average wage.

produced by country-industry  $c_j$  at time  $t$ . Concerning the vector of controls  $X_{cjt}$ , we include the share of gross value added absorbed by domestic GVCs when we proxy farsharing with NFSUB (to capture the level of GVC integration of the country-industry) and the total gross value added of the country-industry to account for size effects. Other controls and fixed effects are unchanged from equation (15).

We present here our results using a standard OLS, although we are mindful that the relationship between employment and both nearshoring and nearsharing is likely to be fraught with endogeneity due to reverse causality. In order to account for this, we also carry out a difference GMM, finding robust results, which we report in an Appendix (see Tables 1A and 2A).

Table 1 reports the results on the relationship between the regional to global shares of foreign value added being sourced by GVCs and GVC domestic employment. We find a positive and statistically significant relationship. GVCs that increase the share of value added sourced regionally, relatively to that sourced from outside their region, experience an increase in domestic employment both as a share of total GVC employment (col. 1) and in absolute terms (col. 2). This confirms the conjecture we spelled out in the introduction of indirect employment effects deriving from nearshoring.

The share of value added GVCs source from the country of completion (i.e. the domestic value added share of final GVC output) also has a consistently positive effect on employment. This result is in line with the notion that offshoring (i.e. decreases in the share of domestic value added in a GVC's final output) in manufacturing GVCs has been associated with decreasing levels of employment. As expected, employment in the country of completion is larger when the country of completion provides a larger share of the GVC's final output.

The size of the GVC, captured by its final output, has a negative coefficient for domestic employment as a share of total GVC employment and a positive one on domestic employment in absolute terms. This is not as counterintuitive as it may seem at first glance. This result suggests that, as the size of GVC's final output increases, so does employment along the whole GVC, but more so outside the country of completion. This is because there is only so much employment that can be supplied within the country of completion. As a GVC grows in size, it then must source employment from outside the country in larger shares, hence the negative effect on the share of employment provided by the country of completion. The two other controls, capital intensity and average wages, show negative and statistically significant coefficients, as expected.

Column 3 in Table 1 looks at the relationship between country-industry employment and nearsharing, measured as the ratio between the share of gross value added absorbed by regional and global value chains. We find no statistically significant relationship, suggesting that the geographical make-up of value added destinations is not correlated with employment levels. The size of the country-industry, measured by its gross value added, has a positive relationship with the dependent variable, suggesting that larger country-industries also have larger employment levels. Capital intensity and average wages are both negatively correlated with employment, in line with columns 1 and 2 of Table 1.

In Table 2 we replicate the analysis by looking separately at the regional and global components of our two explanatory variables for nearshoring and nearsharing from Table 1. Consistently with previous results we find that the regional share of value added sourced by a GVC has a positive and statistically significant effect on domestic employment generated in the country of completion, while the global share of foreign value added sourcing has a negative and statistically significant effect on employment. All other control variables have signs consistent with Table 1, confirming the previous results.

Table 1 - Nearshoring, Farsharing and Employment in the EU - OLS

	GVC domestic employment share (ln)	GVC domestic employment (ln)	Country-industry employment (ln)
Nearshoring (log of regional/global)	<b>0.232***</b> (0.0180)	<b>0.0738***</b> (0.0165)	
Nearsharing (log of regional/global)			-0.00221 (0.0166)
Domestic value added share of final GVC output (ln)	0.839*** (0.0329)	0.409*** (0.0345)	
Share of GVA contributed to domestic GVCs (ln)			0.0522 (0.0366)
Final GVC output (ln)	-0.0579*** (0.00704)	0.874*** (0.00976)	
Gross value added (ln)			0.482*** (0.0164)
Capital/labour (ln)	-0.0429*** (0.0110)	-0.0311** (0.0137)	-0.237*** (0.0221)
Average wage (ln)	-0.0583* (0.0334)	-0.183*** (0.0373)	-0.256*** (0.0507)
Constant	-0.472*** (0.148)	-4.283*** (0.165)	-1.774*** (0.234)
Observations	4,146	4,146	4,146
R-squared	0.981	0.999	0.996

Nearshoring is the ratio of the regional and global value added as a share of a GVC's final output. Nearsharing is the ratio of the share of domestic value added absorbed by regional GVCs and the share absorbed by global (i.e. extra-regional) GVCs. Country-year, industry-year and country-industry FE are included; Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 2 - Nearshoring, Farshoring and Employment in the EU, computed separately - OLS

	GVC domestic employment share (ln)	GVC domestic employment (ln)	Country-industry employment (ln)
Regional value added share of final GVC output (ln)	<b>0.153***</b>	<b>0.183***</b>	
	(0.0250)	(0.0253)	
Global value added share of final GVC output (ln)	<b>-0.463***</b>	<b>-0.0766***</b>	
	(0.0229)	(0.0225)	
Share of GVA contributed to regional foreign GVCs (ln)			-0.0423*
			(0.0217)
Share of GVA contributed to global foreign GVCs (ln)			-0.0273
			(0.0198)
Final GVC output (ln)	-0.0877***	0.851***	
	(0.00867)	(0.00996)	
Gross value added (ln)			0.476***
			(0.0167)
Capital/labour (ln)	-0.0444***	-0.0393**	-0.234***
	(0.0147)	(0.0154)	(0.0222)
Average wage (ln)	0.00372	-0.158***	-0.251***
	(0.0336)	(0.0383)	(0.0501)
Constant	-1.096***	-4.013***	-1.854***
	(0.158)	(0.177)	(0.229)
Observations	4,146	4,146	4,146
R-squared	0.975	0.999	0.996

In this specification we include both the regional and global (extra-regional) components of value added sourcing and destination. Country-year, industry-year and country-industry FE are included; Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5 | DISCUSSION AND POLICY IMPLICATIONS

Our analysis provides a wealth of new evidence on GVC integration patterns in Europe and across the global economy. Three distinct patterns emerge. First, we observe a European model, characterised, on the one hand, by the increasing regionalisation of its foreign value-added sourcing (nearshoring) and, on the other hand, a globalisation of domestic valued- added contributions (farshoring). The evidence of nearshoring in Europe seems to be the effect of a faster increase in the regional share than the global share of sourcing. However, it remains to discern whether such trends will hold in the future and,

crucially, what exactly has triggered the reversal in this trend in 2012. A possible explanation for this is of course the end of the financial crisis in Europe, but a further in-depth analysis is needed on this front.

Second, in contrast to Europe, the Asia-Pacific area experiences relative regionalisation of input sourcing and a further increase in the absorption of its own value added after the global financial crisis (2008-2009) – i.e. nearshoring coupled with nearsharing (the opposite of farsharing). Finally, the Americas 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 regions.

At the moment, both the Covid-19 pandemic and the war in Ukraine suggest that, at least in some strategic areas, there are political reasons for concentrating production in GVCs geographically closer to final demand. Our analysis shows that such a trend has been afoot in Europe in the past decade. We also show, however, that European value added has been increasingly directed to extra-European value chains, increasing the continent's dependence on foreign GVCs, which we refer to as farsharing.

This has two key implications that warrant further research and policy discussion. First, it appears that, following the global financial crisis (2008-2009) and sovereign debt crisis in some European countries (2011), fiscal consolidation policy in Europe has contributed to shrinking demand from domestically articulated value chains. 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).<sup>9</sup>

The nearshoring and farsharing trends suggest the consolidation of a European export-led growth model involving an increase in intra-regional backward linkages and diversification towards extra-regional markets. While the perception of the fragility of GVCs to external shocks after the pandemic and the war in Ukraine has shifted the debate on the trade-off between efficiency and security in the direction of reshoring or nearshoring (Javorcik, 2020; Posen 2022; World Bank 2022), little attention has been paid to the destination of European value added.

Differently from Asia, where nearshoring is accompanied by an increasing domestic absorption of value added, Europe has become increasingly dependent on foreign demand. This requires a deeper analysis of the gains and losses for Europe of a process of further fragmentation of value chains into regional blocks. While Europe should be aware of the economic and political risks of the deceleration of globalisation and should defend multilateralism and contrast the new wave of protectionism, its capacity to play a geo-economic role requires a step forward in both common industrial and macroeconomic policies.

Finally, from an employment perspective, our econometric analysis finds a positive and statistically significant relationship between nearshoring and employment in the country of completion, while in contrast we do not find any statistically significant relationship with respect to farsharing. These results

---

<sup>9</sup> The evidence we present in this study is aggregated at the European level, masking, no doubt, a great deal of heterogeneity at the country and industry level. In our ongoing research we apply the methods outlined here to provide insights at a more granular level.

lend support to our conjecture that nearshoring can have beneficial effects on employment in Europe. However, this conclusion deserves further investigation to better detect which jobs are relocated in Europe as a consequence of nearshoring.

Overall, the results of this paper highlight that value added and employment are not always distributed in the same way along GVCs and that both aspects should be at the forefront of policy discussions on the future of GVCs.

## References

- Antràs, P., 2020. *De-Globalisation? Global Value Chains in the Post-COVID-19 Age*. Working Paper 28115. National Bureau of Economic Research.
- Baldwin, R.E., Evenett, S.J., 2020. *COVID-19 and Trade Policy: Why Turning Inward Won't Work*. CEPR Press, London.
- Bontadini, F., Melinciani, V., Savona, M., Wirkeriman, A. (2022) *Nearshoring and Farshoring in Europe within the Global Economy*. Working Paper, LUISS School of European Political Economy.
- Bramucci, A., Cirillo, V., Evangelista, R., Guarascio, D. (2021) *Offshoring, industry heterogeneity and employment*. *Structural change and economic dynamics* 56, 400-411.
- Foster-McGregor, N., Stehrer, R., 2013. *Value added content of trade: A comprehensive approach*. *Economics Letters* 120, 354– 357.
- Javorcik, B., 2022. *Global supply chains will not be the same in the post-Covid-19 world*, in Baldwin, R.E., Evenett, S.J., (Eds), 2020.
- Hummels, D., Munch J.R., Chong Xiang C. (2018). *Offshoring and Labor Markets*, *Journal of Economic Literature* 56, 981-1028.
- Los, B., Timmer, M.P., de Vries, G.J., 2015. *How global are global value chains? A new approach to measure international fragmentation*. *Journal of Regional Science* 55, 66–92.
- Pasinetti, L. L. (1973) *The Notion of Vertical Integration in Economic Analysis*. *Metroeconomica* 25(1), 1-29.
- Piatanesi, B., Arauzo-Carod, J.M., 2019. *Backshoring and nearshoring: An overview*. *Growth and Change* 50, 806–823.
- Polyak, P., 2021. *External enablers of eurozone austerity: exploring the link between the ease of suppressing domestic spending and trading partners' demand*. *New Political Economy* , 1–17.
- Posen, A., 2022. *The End of Globalization? What Russia's War in Ukraine Means for the World Economy*. *Foreign Affairs*, March 17, 2022.
- Reinhart, C.M., Reinhart, V., Trebesch, C., 2016. *Global cycles: Capital flows, commodities, and sovereign defaults, 1815-2015*. *American Economic Review* 106, 574–80.

Sraffa, P. (1960). *Production of Commodities by Means of Commodities*. Cambridge University Press, Cambridge.

Timmer, M.P., Erumban, A.A., Los, B., Stehrer, R., De Vries, G.J., 2014. *Slicing up global value chains*. *Journal of Economic Perspectives* 28, 99–118.

World Bank, 2022. *The Impact of the War in Ukraine on Global Trade and Investment*. Washington, DC. World Bank

**Appendix**

Table A1 - Nearshoring, Farshoring and Employment in the EU - GMM

	GVC domestic employment share (ln)	GVC domestic employment (ln)	Country-industry employment (ln)
GVC domestic employment share (ln t-1)	0.167*** (0.0578)		
GVC employment (ln t-1)		0.290*** (0.0577)	
Country-industry employment (ln t-1)			0.0427 (0.0890)
Nearshoring (log of regional/global)	<b>0.516***</b> <b>(0.0453)</b>	<b>0.139***</b> <b>(0.0482)</b>	
Nearshoring (log of regional/global)			0.0427 (0.0890)
Domestic value added share of final GVC output (ln)	0.302** (0.125)	0.574*** (0.118)	
Share of GVA contributed to domestic GVCs (ln)			<b>0.253**</b> <b>(0.108)</b>
Final GVC output (ln)	0.175*** (0.0550)	0.712*** (0.0367)	
Gross value added (ln)			0.293*** (0.0622)
Capital/labour (ln)	-0.178** (0.0833)	-0.0826 (0.0727)	-0.134 (0.162)
Average wage (ln)	-0.184** (0.0815)	-0.709*** (0.121)	-0.0187 (0.123)
Observations	3,809	3,809	3,809
Hansen test p-value	0.176	0.116	0.116

---

Nearshoring is the ratio of the regional and global value added as a share of a GVC's final output. Nearsharing is the ratio of the share of domestic value added absorbed by regional GVCs and the share absorbed by global (i.e. extra-regional) GVCs. Country-year, industry-year and country-industry FE are included; Robust standard errors in parentheses \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Table 2A - Nearshoring, Farshoring and Employment in the EU, computed separately - GMM

	GVC domestic employment share (ln)	GVC domestic employment (ln)	Country-industry employment (ln)
GVC domestic employment share (ln t-1)	0.0940 (0.0659)		
GVC employment (ln t-1)		0.259*** (0.0475)	
Country-industry employment (ln t-1)			0.145** (0.0690)
Regional value added share of final GVC output (ln)	<b>0.480***</b> <b>(0.0921)</b>	<b>0.172**</b> <b>(0.0703)</b>	
Global value added share of final GVC output (ln)	<b>-0.608***</b> <b>(0.0757)</b>	<b>-0.187***</b> <b>(0.0516)</b>	
Share of GVA contributed to regional foreign GVCs (ln)			-0.0178 (0.0941)
Share of GVA contributed to global foreign GVCs (ln)			-0.178 (0.114)
Final GVC output (ln)	0.198*** (0.0715)	0.660*** (0.0449)	
Gross value added (ln)			0.376*** (0.0668)
Capital/labour (ln)	-0.0163 (0.0923)	0.0366 (0.0645)	-0.121 (0.140)
Average wage (ln)	-0.00192 (0.139)	-0.456*** (0.106)	0.00332 (0.0851)
Observations	3,809	3,809	3,809
Hansen test p-value	0.270	0.996	0.0780

In this specification we include both the regional and global (extra-regional) components of value added sourcing and destination. Country-year, industry-year and country-industry FE are included; Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

