Integrating intangibles in global value chains: The Globalinto Input-Output Intangibles' Database

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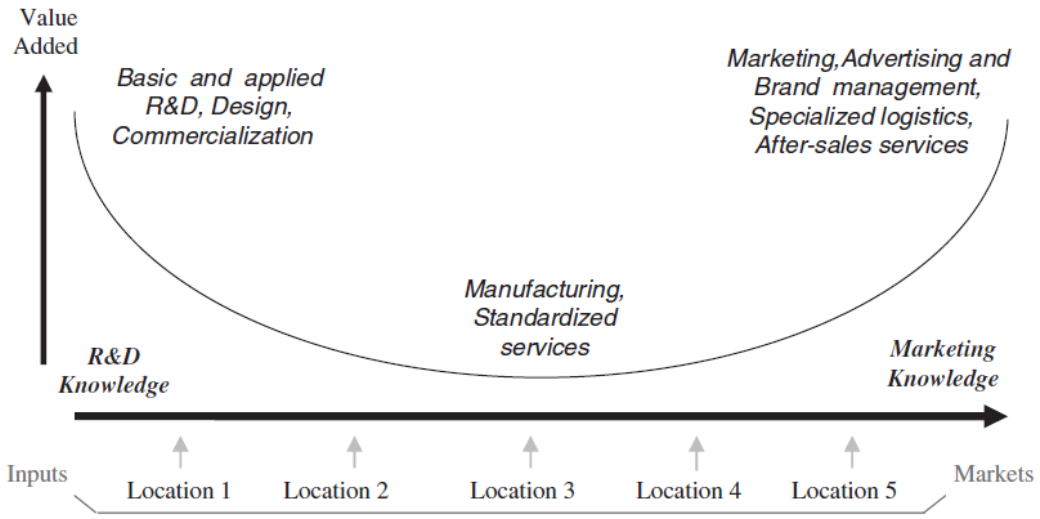
Intangible assets in global value chains

The famous ***smiling curve***



Source: Mudambi, 2008

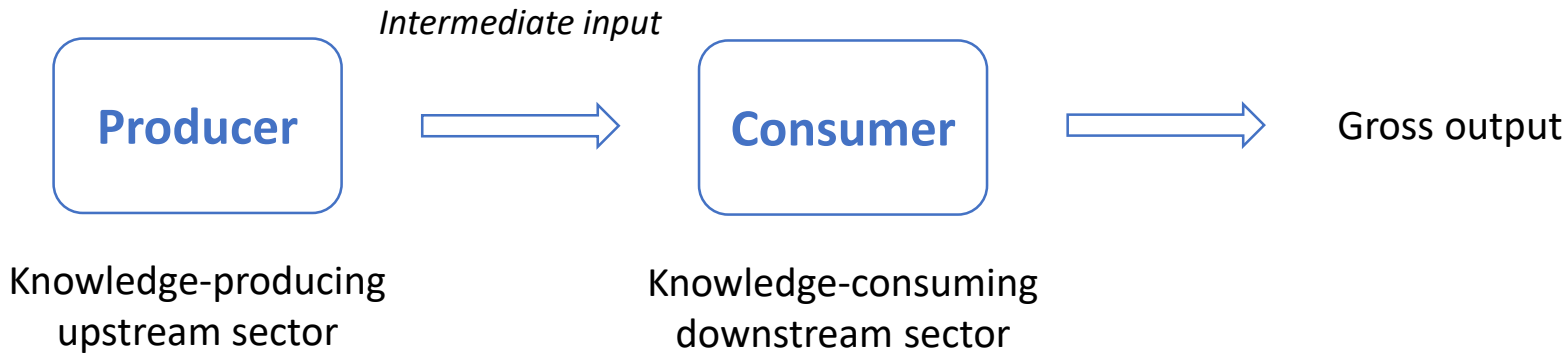
- Intangible assets are related with growth and dominant positioning in GVCs (Mudambi, 2008; Corrado et al., 2009; Niebel et al., 2017).
- Intangibles are the key drivers of the unequal value appropriation along the value chain:
  - Technological asymmetry between different economies (developed vs. developing).
  - The concept of the U-shaped ***smiling curve*** (Mudambi, 2008).
  - The prominent role of **services** and **knowledge assets,** i.e., **intangibles** (OECD, 2018).
  - The **stagnation** of **manufacturing industries** in the middle end.
  - The ongoing ***servicification*** as a response – also related with the digital transformation (Miroudot and Cadestin, 2017).

An ongoing servicification of manufacturing

- Manufacturing is under '**servicification**' (Miroudot and Cadestin, 2017; National Board of Trade, 2016)
  - Complementary production services
  - Bundled products (complements and substitutes)
  - In-house supporting activities
- Towards a unified goal: ***Increase the accumulation of value added in global networks***
- Advanced economies undertake knowledge and technology intensive manufacturing activities to secure their shares in the VA accumulation.
- How is this related with intangibles?

The knowledge producing sector concept of the GLOBALINTO database (GIOID) *(Dimas et al., 2022; Tsakanikas et al., 2022)*

- The framework is embedded within the input-output concept.
- GIOID identifies intangibles as **producer's services** (Miozzo and Soete, 2001; Guerrieri and Meliciani, 2005).
- They are produced by specific **knowledge producing sectors** [following the Corrado et al. (2009; 2013) paradigm] → KIS industries
- And consumed by **knowledge using industries** (in our case manufacturing industries)
- When these sectors are located in **different** economies this **knowledge transaction** crosses borders for **production purposes** → qualifies as a **GVC activity!**
- Key contribution of the database: **The origin dimension (domestic AND imported intangible inputs)**

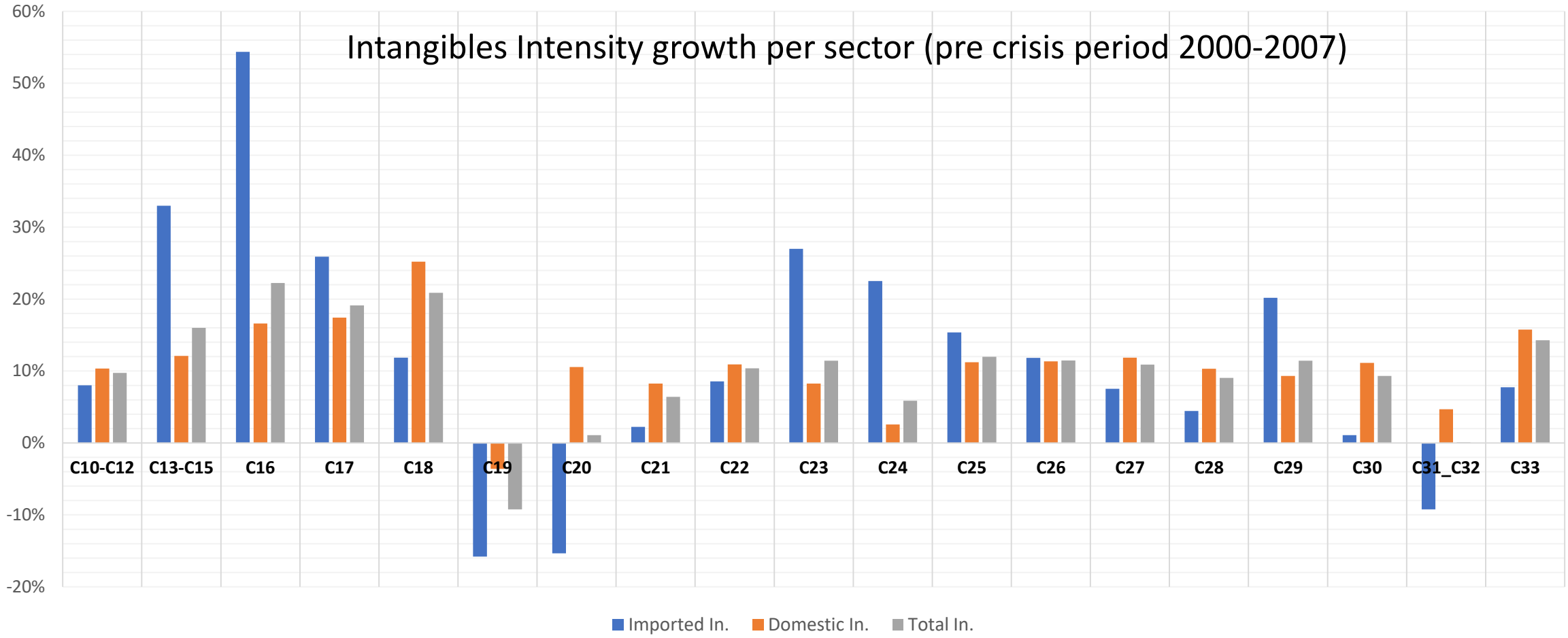


Intangible inputs in GIOID

- Intangible inputs data from GIOID are constructed based on raw data from the WIOD
  - *Provided by* NACE Rev. 2 KIBS sectors: **J62-J63** -Computer programming, consultancy and related activities; **M72** - Scientific R&D; **M73** Advertising and market research; **N** Administrative and support service activities;
  - *Made in* 42 countries (all EU members included) and RoW; Aggregates for BRIC, EA, EU27 aggregates
  - *Used by* 56 2-digit NACE Rev.2 sectors in each EU-27 economy and the UK.
  - *Time coverage*: 2000 – 2014
- Account for purchased intangible capital and not in-house production*.
- **Key novelty:** The origin dimension (domestic and imported intangibles).
- **International expansion**: data for Brazil, **Canada**, China, Rep. of Korea, **Japan**, and the **USA**.

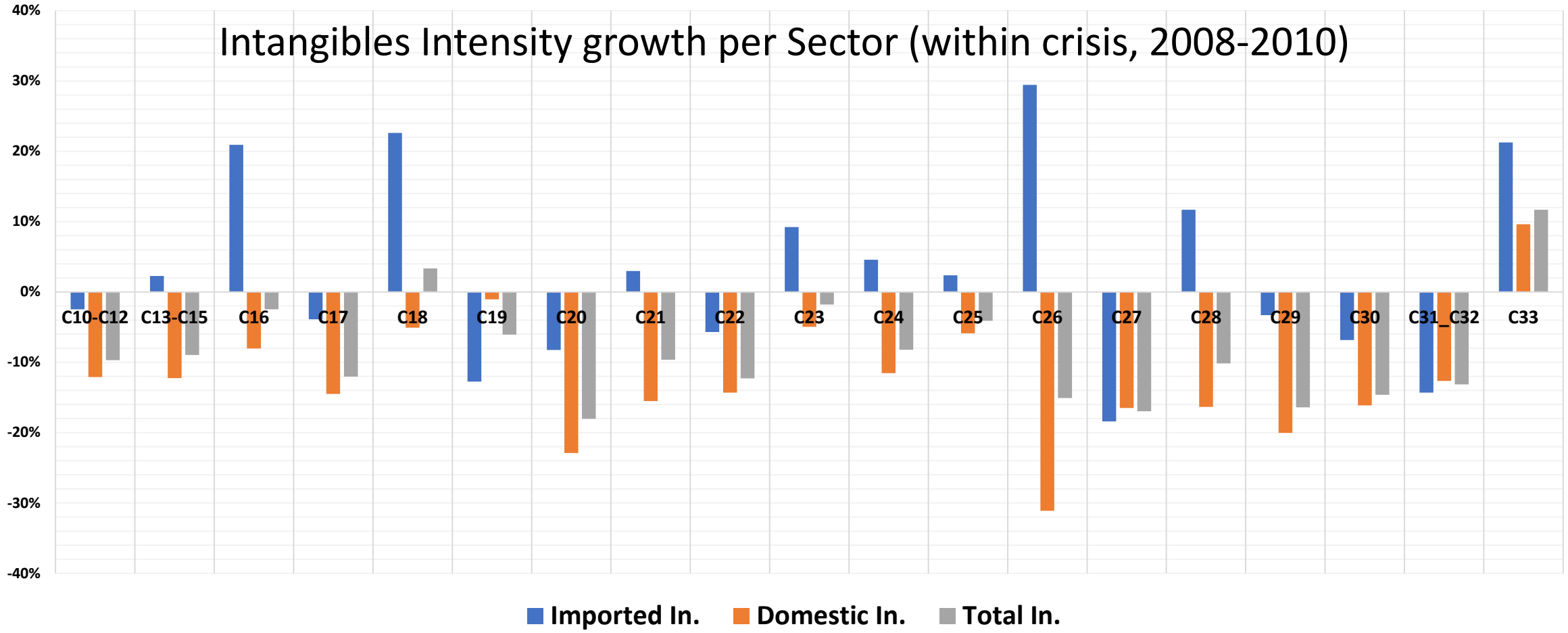
*as defined within the I-O concept, i.e., in-house production is each sector's primary factors production (labor and capital) while purchased factors correspond to the received intermediates by other sectors of the economy.

Increasing imported intangibles before the crisis in all EU man. sectors (especially in low tech sectors)



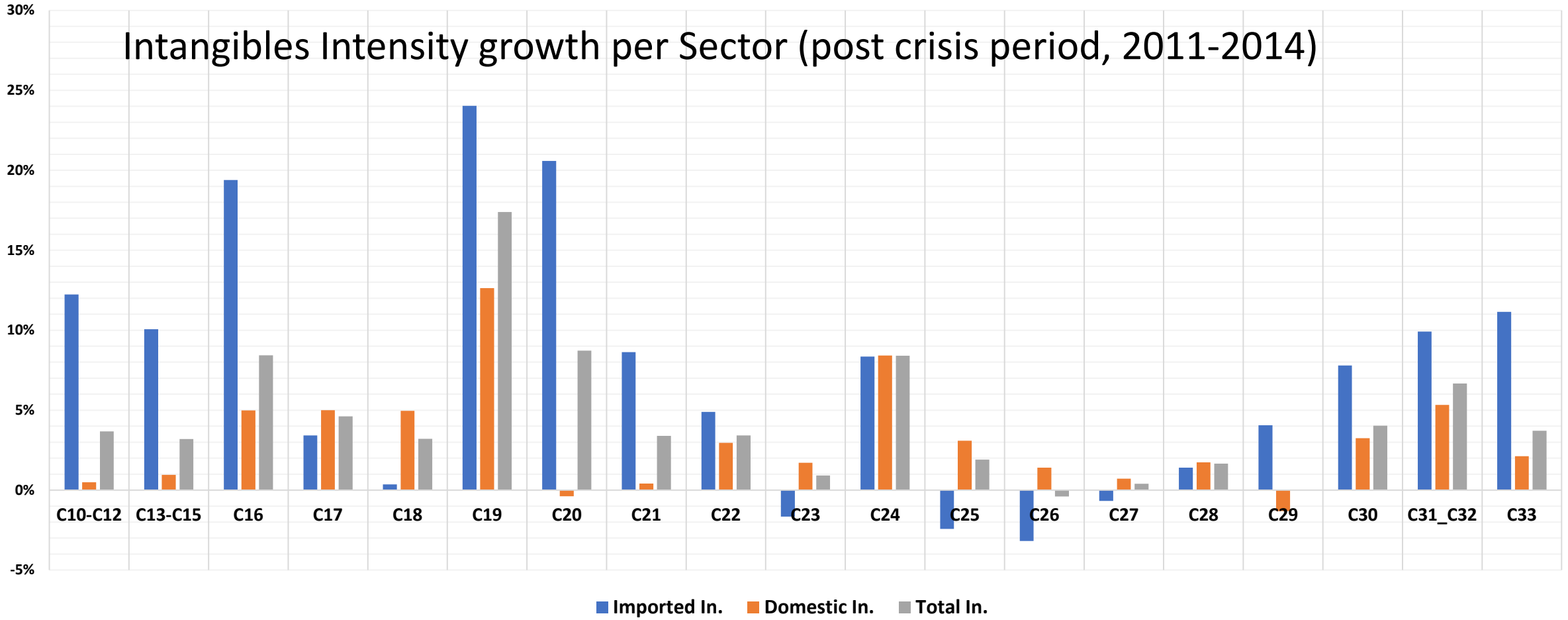
*__Note:__ Imported intangibles include intra-EU imports

Decrease of intangibles during the crisis



*__Note:__ Imported intangibles include intra-EU imports

Rebound of intangibles, especially imported



*__Note:__ Imported intangibles include intra-EU imports

Some empirical remarks *(Tsakanikas et al., 2022)*

- The novel I-O framework for the quantification of intangibles embeds them within the GVC context.
- **Intangibles' trade is on the rise** and provides evidence of a significant **increase in the knowledge content of production** for the EU's and the UK's manufacturing industries.
- Formation of **resilient cross-country knowledge linkages** that appear to be unaffected by the economic crisis.
- The **novel origin dichotomy** provides significant insights towards the better understanding of the linkage between intangibles, innovation and sector specialization in GVCs.
  - **Imported intangibles** have a positive link with **sector specialization** (i.e., share of VA to TO).
  - **Domestic intangibles** are related with **innovation**.
- There is a significant heterogeneity among different sectors and different countries that calls for country/sector specific case studies.

Policy implications: Knowledge linkages in GVCs

- The formulated domestic and international knowledge linkages outline the formation of local and international knowledge transfer networks.
- The dissemination of knowledge relies in strong user (manufacturing sectors)-producer (KIBS sectors) interactions.

Critical elements of national and international innovation systems *(Lundvall, 2010; Binz and Truffer, 2017).*

➢Our results consolidate the basis for a discussion revolving around industrial and innovation policy at the national and regional (EU) level.

➢Main focus: the co-development of manufacturing and services

Policy implications: Knowledge dissemination does not take place in the vacuum

- EU's future industrial policy should provide coherent frameworks that correspond to the rise of the intangibles and the regionality of the EU value chain:
  - ❖Secure investment in infrastructure and public intangibles, such as the quantity and quality of a highly-skilled labor force and well-functioning formal and informal institutions.
  - ❖Enhance intangible's production in the business sector (financial incentives to enterprises, tax relief, research subsidies) and establish collaboration routes for public-private sector joint initiatives.
  - ❖Foster cross-country collaborations under the scope of developing knowledge intensive goods and services.
  - ❖Devise custom-made adjustments that correspond to industry specific characteristics under common industry-level guidelines.
  - ❖Align individual policy agendas from different member states under a common umbrella framework for growth with special focus on the creation and diffusion of knowledge via intangibles.

Policy implications: The ABCs of GVC-oriented policies

- There is a need for a nexus of **trade**, **investment**, **industrial** and **innovation** policies that can **attract** and **retain intangible capital** in **GVCs**.
- Van Assche (2020) and Miroudot et al. (2021) provide a concept of **three categories** of **GVC-oriented policies** for **intangibles** that include:
  - ❖**A**ttractiveness policies that aim to strengthen the appeal of a location (economy) for intangible activities.
  - ❖**B**uzz policies that intend to internally reinforce the local production and innovation ecosystems.
  - ❖**C**onnectedness policies that aspire to strengthen the connections of the local economy with other foreign partners.

Policy implications: Integrating the empirical results in the framework

- **Attractiveness** implications:
  - Motivation for FDI in local knowledge-intensive service enterprises.
  - Stable business environment, high-quality institutions, robust and efficient infrastructure → fostering the development of a healthy innovation ecosystem.
  - Combined interventions in other policy areas: regulatory systems, intellectual property rights protection, taxation, etc.
- **Buzz** implications:
  - Networking policies and strengthening of knowledge linkages between domestic knowledge suppliers and manufacturing sectors.
  - Policy frameworks that support the development of new knowledge-intensive ventures.
  - Local knowledge capacity should be considered complementary to foreign knowledge.
- **Connectedness** implications:
  - Overlap between attractiveness and connectedness when it comes to attracting FDI.
  - Frameworks that facilitate trade interactions (both traditional and GVC trade), especially for the case of knowledge production linkages that cross borders.
  - Investment in communication infrastructure and the transportation network.

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Policy implications: Reorganizing GVCs in the Covid-19 aftermath

- **Attractiveness**, **buzz**, and **connectedness** policies will be particularly important in the context of the **economic recovery** after the **Covid-19 pandemic**.
- **Intangibles** are the main drivers of productivity and growth and are expected to be the **key elements** for countries trying to **recover** and/or **upgrade** into better stages that before.
- **Covid-19** already has significant implications in the **reorganization** of **GVCs**, and as firms reassess their **production locations**, these types of **policies** will become quite **relevant** in **attracting** and **maintaining intangible-intensive activities**.

Useful info for future applications

- GIOID is **open access** and available at **Mendeley data**:
  - Dimas, P., Stamopoulos, D., Tsakanikas, A., & Vasileiadis, M., (2021). GLOBALINTO Input-Output Intangibles Database, *Mendeley Data*, V1, doi: 10.17632/g9cdn9rmc2.1

- Comprehensive application of the dataset and how to cite:
  - Tsakanikas, A., Caloghirou, Y., Dimas, P., & Stamopoulos, D. (2022). Intangibles, innovation, and sector specialization in global value chains: A case study on the EU's and the UK's manufacturing industries. ***Technological Forecasting and Social Change***, *177*, 121488. https://doi.org/https://doi.org/10.1016/j.techfore.2022.121488
  - Dimas, P., Stamopoulos, D., Tsakanikas, A., & Vasileiadis, M. (2022). GLOBALINTO Input-Output Intangibles Database: Industry-level data on intangibles for the EU-27 and the UK. ***Data in Brief***, 107932. https://doi.org/https://doi.org/10.1016/j.dib.2022.107932

Thank you for your attention.

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