

## IARIW-ESCoE Conference

### “Measuring Intangible Assets and Their Contribution to Growth”

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#### **Global Value Chains and Intangible capital: a micro level productivity analysis**

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Globalization is radically transforming the organisation of production chains all over the world. Production is becoming more and more fragmented, allowing countries to specialize in specific stages of the production chain, relying on imports for materials, knowledge and other intermediates for stages for which they are not specialized. This type of production organisation is commonly referred as global value chain (GVC, henceforth), that can be defined as the full range of activities that firms and workers perform to bring a product from its conception to end use and beyond, that are carried out on a global scale and that can be undertaken by one or more firms (Gereffi and Fernandez-Stark, 2011; Hernandez and Pedersen, 2017). The benefits of GVCs in terms of higher production efficiency have been extensively studied in recent times, including various channels that consider more competitive input prices, greater product variety and economies of scale.

Besides the evaluation of the productivity gains that more interconnected economies yield, another strand of literature has tried to shed light on the main factors that favour GVC integration, analysing the effects of many factors such as infrastructures, tariffs, factor endowments, geography, political stability, liberal trade policies etc. (Fernandes et al., 2020). Among these factors, a prominent role is played by intangible capital. In fact, investment in intangibles helps considerably improving interconnectedness among countries. Think for example of ICT technologies, that allow producers located all over the world to stay continuously and easily connected regardless their distance. At the same time, intangibles are known to be an important driver of economic growth and the fact that the economies are becoming more and more knowledge based is enhancing this phenomenon. The mechanism through which intangibles affect both GVC and productivity have not been studied much in the literature. We aim at filling this gap, by hypothesising that intangibles not only affect productivity directly as productive factors, but also indirectly by favouring GVC integration. We carry out the analysis at micro level, on a panel of European firms. Given the difficulty to construct GVC measures at firm level, most of the econometric analyses are done at industry level. This is usually done by constructing backward and forward integration measures from Input-Output tables, that show how much an industry within a country provides intermediate inputs to other industries in other countries. Commonly, from Input-Output table data, units are treated as belonging to a huge world-wide network of intermediate input exchanges. Doing so, backward and forward GVC participation measures are computed using network analysis techniques and concepts (see, for example, Jona-Lasinio et al., 2019). Translating these measures at firm level is a more complicated task which relies on combining Input-Output table

information with ownership structure data of companies. Following Alfaro et al. (2019) and Di Urbino et al. (2018), we use the latter method relying both on firm level data taken from Orbis for firm level data, and on industry level Input-Output tables taken from the WIOD database (Timmer et al., 2015). The Orbis database allows us also to retrieve intangible capital investment information at firm level.

Via panel methods, we test the following hypotheses: a) intangible investment significantly enhances firms productivity; b) GVC integration also favours productivity; c) intangible investment favours GVC integration; d) intangibles mediate the relationship between GVC integration and productivity. The main novelty of our paper is the latter hypothesis. In fact, in the first three hypothesis we mainly seek for confirmation of what already stated by the literature, while the last explores the combined effect of the two. There are several possible ways through which the two can interact. First, intangibles can have a moderating role, meaning that for different levels of intangible investment the effect of participating to GVCs is different. Alternatively, a mediation effect can be explored. Since intangibles affect productivity and GVC participation and GVC also favours productivity, it is possible to hypothesise that intangibles have two effects on productivity: one direct as productive factors and one indirect via favouring GVC, that in turn boosts productivity.

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## References

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## Data sources

Orbis:

<https://orbis.bvdinfo.com/>

WIOD:

<http://www.wiod.org/>

Timmer, Marcel P., et al. "An illustrated user guide to the world input–output database: the case of global automotive production." *Review of International Economics* 23.3 (2015): 575-605