

# IARIW-ESCoE Conference

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

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### **Intangible Capital and Labor Productivity Growth – Sectoral-Level Evidence from the EU-15, 1995-2017**

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We analyze the impact of intangible capital on labor productivity growth (LPG) using sectoral data from the latest release of the harmonized 2019 EUKLEMS dataset. Analyzing an EU-15 country sample over a quarter of century from 1995 to 2017 we find a larger impact of intangible capital on LPG than the existing literature. Differentiating a pre-crisis, to a crisis and a recovery sample we find that the impact of intangible capital on LPG is in particular pronounced in times of economic recovery. Moreover, our results indicate that the impact of intangibles on LPG is stronger in market services than in the manufacturing sector. Overall, we conclude that intangibles have become a dominating factor for explaining the sectoral variance in LPG for EU economies.

#### Introduction

Intangible capital is viewed by many scholars as a key driver of economic performance in industries or economic sectors (Lev and Radhakrishnan 2005, Black and Lynch 2005). Van Ark et al. (2008) and Timmer et al. (2010) conclude that intangible-capital investments will most likely explain slower TFP growth in European market services and thus the productivity gap between the US and Europe. It is therefore of interest to analyze to what extent productivity growth differences across sectors among EU economies are driven by investments in intangible capital.

Only few econometric studies have been conducted focusing on the impact of intangible capital on LPG rates at the sectoral level among EU economies. Using sectoral data for an EU-14 country sample over the time period 1995-2010 from the 1st release of the INTAN-Invest, Corrado et al. 2016 find that intangible capital deepening explains 25% of LPG for both manufacturing and services sub-sectors. A follow-up study by Niebel et al. (2017) using sectoral data for an EU-10 country sample over the time period 1995-2007 from the INDICSER project finds a lower coefficient for intangible capital than the one found by Corrado et al. (2016) and the one found at the macro level by Roth and Thum (2013). In contrast to these two studies a study by Piekkola (2017) analyzing 21 EU economies and 58 sectors over the time period 2008-2013 and using data from the EU Use Tables finds a negative impact of intangibles on LPG. In contrast to Piekkola, a study by Adarov and Stehrer (2019) analyzing an EU-19 country sample + US + Japan over the time period 2000-2017 and utilizing the latest release of the 2019 EUKLEMS dataset finds that intangible have a positive impact on LPG in the post-crisis period.

Summing up, econometric evidence at the meso-level is still scarce and the existing one offers ambivalent results concerning the magnitude and direction of the impact of intangible capital on

LPG. In addition, none of the contributions have distinguished between pre-crisis times (1995-2007), times of crisis (2008-2013) and time of economic recovery (2014-2017). None has analyzed the impact of intangibles on LPG focusing on the individual sectors.

To shut further empirical evidence this study analyzes the impact of intangible capital on LPG at the sectoral level for an EU-15 country sample over nearly a quarter of century over the time period 1995 to 2017. Utilizing an overall number of 2450 sectoral observations, we find a positive and twice as large impact of intangible capital on LPG than the existing literature. Differentiating a pre-crisis (1995-2007), to a crisis (2008-2013) and a recovery sample (2014-2017) we find that the impact of intangible capital on LPG is in particular large in times of economic recovery evidencing that intangible capital has become the dominant driver of LPG. Our results indicate that intangible capital services growth in services sector industries impacts LPG more strongly than it does in the manufacturing sector. Once when we impose the homogeneity assumption on the production function estimations, we get the magnitudes for the elasticity of intangible capital comparable to those in the macro-level studies. Overall, we conclude that intangibles have become a dominating factor for explaining the sectoral variance in LPG for EU economies.

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