

# MTEI SEMINARS

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## "Upstream Regulations, ICT, R&D and Productivity: Panel Data Evidence for OECD Countries"

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### Abstract

(Preliminary, as of October 2012)

Competition –and policies affecting it– has been found to be an important determinant of productivity growth in recent empirical research. While most studies of the competition-growth link have considered the direct productivity impacts of the within sector or market competitive conditions, Bourlès et al. (2010) analyze the influence of competition on sectors producing intermediate inputs (called upstream sectors) for productivity outcomes in sectors using these inputs (called downstream sectors).<sup>1</sup> They find clear evidence that anti-competitive regulations in upstream sectors curb multi-factor productivity (MFP) growth downstream. Our present study tries to go one step further by investigating through which channels such effects are operating.

According to the endogenous growth theory, competition influences MFP through efficiency improvement incentives, and we should thus expect that upstream regulations would impact downstream productivity largely through their impacts on R&D and ICT investments. In order to check such proposition, we consider a three equations model consisting of a MFP equation similar to that in Bourlès and al., but with R&D and ICT capital as two explicit factors, together with two investment demand equations for R&D and ICT respectively. We also estimate this model on the same country\*sector unbalanced panel data as in Bourlès and al., that is for 14 OECD countries and 13 sectors, over the 18 year 1989-2006 period (2560 observations). In all three equations, upstream regulations are proxied for each country\*sector\*year by a 'regulatory burden' variable (REG) measured by interacting the intensity of use of the intermediate inputs from upstream sectors in downstream *i* sectors with the OECD product market regulations indicators in these upstream sectors (energy, transport, communication, retail, banking and

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<sup>1</sup> **Bourlès, R., G. Cette, J. Lopez, J. Mairesse and G. Nicoletti (2010):** "Do Product Market Regulations in Upstream Sectors Curb Productivity Growth? Panel Data Evidence for OECD Countries", NBER Working Paper, n° 16520, 2010. Forthcoming 2013 in *Review of Economics and Statistics*.

professional services). For identification purposes and robustness checks, we consider two (main) alternative specifications by including in the three equations not only fixed effects for country, sector and year separately, but also country-year interacted effects alone or jointly with sector-year interacted effects. We obtain reasonably plausible results by focusing on the long term parameters and relying on Dynamic Ordinary Least Squares estimators (DOLS).

To assess the potential economic significance of these results, we simulate the effects of an hypothetical policy in which regulation “lightest practices” are implemented immediately and completely as of 2007 in all sectors of all countries, where lightest practices are defined by the minimum level of anti-competitive upstream regulations observed in our sample. In such simulations the R&D and ICT capital stocks would increase in average and in the long term between 55% and 35% and 2% and 14% respectively, depending on our preferred specification. The corresponding impacts on multifactor productivity growth range between 6% and 3%, where about 75% and 40% proceed through the R&D and ICT channels.

When:

07 November 2012, 12h-13h30

Where:

[EPFL, Odyssea 4.03, VIP room](#)