



Ottawa - June 28, 2012

CSLS Study on the Impact of ICT on the Productivity of Canadian Air and Rail Transportation

The Centre for the Study of Living Standards released today a major study entitled “The Impact of Information and Communication Technology on the Productivity of the Canadian Transportation System: A Macroeconomic Approach for the Air and Rail Sectors”. The report is posted at <http://www.csls.ca/reports/csls2012-07.pdf>.

The study, prepared for Transport Canada, provides a detailed analysis of ICT investment, ICT capital, and productivity trends in Canadian air and rail transportation, comparing these trends to those seen in U.S. air and rail transportation. It then evaluates the role of ICT as a productivity driver in these two sectors. Using industry-level data, we find that the standard neoclassical growth accounting framework does not adequately capture the importance of ICT on air and rail productivity. Econometric approaches using the same data also failed to yield meaningful results, mainly due to the small number of observations, but also possibly due to the level of data aggregation. It is suggested that future work on the topic should focus on econometric approaches using firm-level data or case studies. Key findings from the study are highlighted below.

- Labour productivity in Canadian air and rail transportation experienced robust growth in the 1997-2010 period (5.0 per cent per year and 3.4 per cent per year, respectively) compared to the business sector (1.3 per cent per year).
- ICT capital intensity growth (defined here as ICT capital stock per hour worked) has been very rapid in both the air and rail sectors (11.8 per cent per year and 12.1 per cent respectively), nearly twice that of the business sector (7.0 per cent).
- Using the standard neoclassical growth accounting framework, we find that ICT capital intensity accounted for only 2.6 per cent of labour productivity growth in both air and rail transportation during the 1997-2010 period, less than it accounted for in the business sector (15.0 per cent).

- The greater role of ICT capital intensity in explaining business sector labour productivity growth is due to the larger share of ICT capital compensation in total compensation at the business sector level.
- These results, however, are not conclusive. The standard assumptions of the neoclassical growth accounting framework (perfect competition, constant returns to scale, etc.) appear to be an ill fit to the realities of the air and rail transportation sectors, which are highly regulated.
- Econometric estimations using an MFP-based approach yielded coefficients that were not statistically significant, implying that there were no “excess returns” associated with ICT use in air and rail productivity.
- These econometric results should also be taken with a grain of salt. Since only annual data for the 1997-2010 period were available, the econometric estimations relied on very few observations. It is hard to reach any definitive conclusion on the impact of ICT on productivity growth when dealing with such a small sample. Furthermore, as previous literature has shown, the level of data aggregation matters, and industry-level data might not be appropriate to deal with this issue.
- In light of these facts, we make two recommendations. First, future studies on the impact of ICT on productivity growth should rely on firm-level data instead of industry-level data. Second, future studies should be less reliant on growth accounting and use econometric techniques or case studies instead.

For further information, please contact:

Andrew Sharpe
Executive Director
Centre for the Study of Living Standards
710-151 Slater Street
Ottawa, Ontario K1P 5H3
613-233-8891
Andrew.sharpe@csls.ca

The Centre for the Study of Living Standards (CSLS) is a national, independent, Ottawa-based not-for-profit research organization. Its primary objective is to contribute to a better understanding of trends and determinants of productivity, living standards, and economic well-being in Canada through research.