Water Use, Shadow Prices and the Canadian Business Sector Productivity Performance

By
Kaïs Dachraoui
dachkai@statcan.ca

and

Tarek M. Harchaoui
harctar@statcan.ca

Abstract: This paper develops a production framework that allows for self-supplied water intake, an unpriced 'natural' input. The framework is then exploited to estimate the corresponding water shadow prices and to assess the extent to which water impacts on the multifactor productivity performance of the Canadian business sector industries. Accounting for water intake leaves the aggregate business sector's multifactor productivity growth virtually unchanged over the 1981-1996 period, but it increases the productivity performance of the largest water-using industries by 0.7 percentage points on average. The shadow price of water intake amounted to \$0.73 m^3 and varied significantly across industries, thereby reflecting different willingness to pay. While the introduction of water recirculation, a kind of water recycling, does not alter in a significant way most of these results, it reduces the shadow price estimate to \$0.55 m^3 and improves its reliability particularly for the largest water-using industries. Water is found to be a substitute to capital and labour inputs, suggesting that more of these inputs are required to bring about savings in water use.