Understanding Industry Contributions to Aggregate Productivity Growth

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Abstract

To understand aggregate productivity growth requires knowledge of the sources of this growth by industry. Yet different decomposition formulas can give very different estimates of sectoral contributions to productivity (de Avillez, 2012).

Is there one correct method to decompose aggregate productivity growth into its sectoral contributions, or are there a variety of legitimate methods, depending on assumptions and the purpose of the decomposition? The objective of this paper is to critically review the methods that have been developed to decompose aggregate productivity growth and discuss the properties of the estimates of industry contributions that come from these decomposition. A key issue is how price changes are factored into the decomposition formula.

References

- Balk, B.M. (2008), "On the Decomposition of Aggregate Productivity Change into Meaningful Components", unpublished paper, Rotterdam School of Management, Erasmus University, April 4 draft.
- de Avillez, R. (2012), "Sectoral Contributions to Labour Productivity Growth in Canada: Does the Choice of Decomposition Formula Matter?", *International Productivity Monitor*, Number 24, Fall, 97-117.
- Domar, Evsey (1961). "On the Measurement of Technological Change". *Economic Journal* 71 (December): 701-729.
- Diewert, W.E. (2004), "On the Tang and Wang Decomposition of Labour Productivity into Sectoral Effects", pp. 67-76 in *Price and Productivity Measurement*, Volume 6, Index Number Theory, W.E. Diewert, B.M. Balk, D. Fixler, K.J. Fox and A.O. Nakamura (eds.), Victoria: Trafford Press.
- Diewert, Erwin (2013) "Decomposition of Productivity Growth into Sectoral Effects," paper presented at IARIW-UNSW conference on productivity, Sydney, Australia, November http://www.iariw.org/papers/2013/Diewert_Paper2.pdf
- Stiroh, Kevin J. (2002). "Information Technology and the U.S. Productivity Revival: What Do the Industry Data Say?" *American Economic Review* 92, No. 5 (December): 1559-1576.
- Tang, J. and W. Wang (2004), "Sources of Aggregate Labour Productivity Growth in Canada and the United States," *Canadian Journal of Economics* 37, 421-444.