

Accounting for Natural Capital in Mining MFP: Comparing User Costs for Non-Renewable Resources

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In productivity studies that account for the depletion of natural resources, a user cost of natural capital is required to construct capital service aggregates. The World Bank employed the unit resource rent as the user cost for valuing subsoil assets, a method also adopted by many National Statistical Agencies, including the Australian Bureau of Statistics. However, Diewert and Fox (2016) have shown that the unit rent method is equal to traditional user cost if expectations formed at the beginning of the period are realised. Using the Australian National Accounts, this article compares multifactor productivity estimates for the Mining sector of the Australian economy that accounts for subsoil assets under these two alternative user cost approaches. A preliminary comparison of the two methods revealed potential disadvantages of both, specifically their volatility and their tendency to become negative for at least some periods. Thus, the paper also explores alternative ways of calculating the traditional user costs to avoid the prevalence of negative user costs.