

Incorporating Natural Capital into A Computable General Equilibrium Model for Scotland

Topic: IO modeling: Computable General Equilibrium Modeling and Social Accounting Matrices

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Research Question: Natural capital encompasses those assets which are provided by nature and which are valued by economic actors. As such, there is a clear analogy between natural and other assets, such as labour and capital, which are routinely included in models of national economies. However, the valuation of natural assets, to the extent that they are included in such models, is typically wrapped up in physical capital along with land values or not valued at all. This could be simply a measurement problem – natural capital might be difficult to appropriately disaggregate from other capital – or because they provide non-market goods which are not included within traditional measures of economic output. The purpose of this paper is to set out – both conceptually and practically – how natural capital can be added to a computable general equilibrium model. Method/Data: We focus on the conceptual differences that should reflect such an extension and we explore the empirical implementation of our approach through the addition of an agriculture biomass ecosystem services flow to a CGE model of the Scottish economy. This paper specifies the CGE model development as well as including some illustrative simulations. Novelty: The natural capital extended CGE model allows us to track the impact of disturbances, including policy changes, on the economy and environment and therefore on sustainable development. In the longer term comprehensive coverage of natural capital stocks and ecosystem services will allow us to track the impact of disturbances, including policy interventions, on Green GDP and Genuine Savings, as well as on aggregate and sectoral economic activity.