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“The Impact of Scotland’s Economy on the Environment: A Response”

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This is a short response to the paper by Moffatt et al (2005) which comments on some of our earlier work. Our work uses a specific Input-Output (IO) based technique, labelled a Neo-Classical Linear Attribution System (NCLAS), to measure the impact of domestic consumption on the domestic environment. We have presented this as an alternative to the currently popular Ecological Footprint approach.

The key point to be made is that there are more similarities than differences between these two approaches. In general, there is no incompatibility between environmental IO and the Ecological Footprint techniques. Both seek to attribute pollutant generation, resource use and environmental damage to elements of final demand and, as Moffatt et al (2005) show, a number of studies adopting the Ecological Footprint approach actively use IO accounts and methods. Further, if interest in the Ecological Footprint generates more and improved environmental data, this should also benefit IO environmental analysis. However, important differences between ourselves and Moffatt et al (2005) do remain.

The main conceptual difference between our approaches comes from the NCLAS procedure that we use for the IO environmental accounting.¹ As outlined in Moffatt et al (2005), the NCLAS method allocates the domestic output, and therefore the accompanying environmental damage, generated in the production of exports pro-rata to importing sectors and final demand activities. This generates an environmental accounting framework that rigorously attributes all domestic pollution, environment degradation and resource use to individual elements of private and public domestic consumption. However the “national Ecological Footprint” is derived from a similar accounting structure except that in this case the environmental costs embedded in the imports required directly or indirectly for domestic consumption are attributed to that consumption.

We agree with Moffatt et al (2005) that the two accounting methods are complementary. In aggregate both approaches will attribute total world comparable environmental damage to total world consumption, but they do so in different ways that give different results for individual consumption expenditures. They embody slightly different viewpoints. Further, whilst an aggregate Ecological Footprint can be calculated for the production in a particular area, such a procedure cannot allocate Footprint values to individual elements of domestic consumption.² This is the strength of the NCLAS approach

However, we disagree with Moffatt et al (2005) when they assert that the NCLAS approach is a short-cut method or a method that makes particularly restrictive assumptions. Further they are wrong to say that the “main incentive for its creation [is] that it absolves the researchers from obtaining specific import data”. In fact the main stimulus to devising the NCLAS method was finding that much of the pollution generated in Scotland and Jersey, for which the legislatures have formal responsibility, could not be attributed to domestic consumption using conventional (including Ecological Footprint) methods. Therefore if one’s concern is with the environmental impacts generated within a particular geographical area, the NCLAS accounting framework is the more useful.² Moreover, as Moffatt et al (2005) agree, it is precisely at this geographical level that environmental policy, even international policy, operates.

A second difference relates to the data problems associated with accurately measuring the national Footprint. We are, in general, much more sanguine than Moffatt et al (2005) about the reliability of existing environmental data. Further, we believe that the data problems associated with measuring the embedded environmental effects of imports are of a much higher magnitude than those involved in measuring domestic environmental effects. Moffatt et al (2005) seem to accept this. However, they assert that: “... it could be argued that the data used in the recent Scottish input-output studies are no more accurate or precise than those used in an Ecological Footprint studies.” However, they fail to provide supporting evidence for this argument.

Finally, despite the case presented in Moffatt et al (2005), we remain sceptical about the validity of combining all environmental impacts into one measure, standardised global hectares.

The Ecological Footprint is a very powerful pedagogic tool but in our view it is at present too crude to give practical policy advice. However, the NCLAS focuses on the policy relevant commitments using data that the associated governments have in their power to collect directly. Moffatt et al (2005) state that “... Ecological Footprint researchers are concerned with more than their own backyards.” Our response would be that there is plenty of environmental work to be done in our own backyard and that the NCLAS is the most appropriate accounting method to do it.

References

Moffatt, I., Wiedmann, T. and Barrett, J. (2005), The Impact of Scotland's Economy on the Environment: A Note on Input-Output and Ecological Footprint Analyses", Quarterly Economic Commentary, Fraser of Allander Institute, University of Strathclyde, Volume 29, No 1, pp29-34.

Endnotes

¹The value generated for the Ecological Footprint would in this case be equal to that calculated with the NCLAS IO system.

²Whilst the Ecological Footprint can be calculated in aggregate on a production basis, this cannot then be broken down and attributed to particular elements of domestic consumption.