

CarbonCAP Think Piece for 1st Meeting 7-9 October 2014, Cambridge

Jim Skea

28 September 2014

“What are the best next steps that we in the MRIO community in general, and as the CARBONCAP team in particular, can and should do to improve to ensure the technical (MRIO) foundation of consumption-based accounting is firm?”

Introduction

This short paper is not written by an MRIO practitioner. My interest is in how carbon accounting that is not restricted to the territorial approach can gain traction in the policy world. The question that most interests me is what is needed for consumption-based accounting approaches to become “fit for policy purpose”. This needs two things – the policy world must offer an opening and accounting practitioners must develop techniques and methods that are usable in demanding policy environment.

The counterfactual: an ideal world

The reason that carbon accounting is a problem is that carbon is not accounted for. Accounting can be defined as the “systematic and comprehensive recording of transactions and the process of summarizing, analysing and reporting these transactions”. MRIO is about summarizing, analysing and reporting - but it doesn't cover the vital step of recording, key alone recording that is systematic and comprehensive. If we were to put in large data capture processes at the company level, as we do with financial transactions, we could account for and tax “carbon added” in the same we do financial “value added”. Differences in the carbon-intensity of specific supply chains would be accounted for and companies would be incentivised to seek out low carbon suppliers. Data would be supplied to national authorities who could then report consumption-based accounts to the UNFCCC. Perfect harmony, no need for MRIO but absolute fantasy.

The task for carbon accounting is more strictly the *estimation* of embedded carbon at some level of sectoral aggregation. Approximation and “rough justice” for specific low-carbon supply chains are inevitable and need to be kept within bounds if there is to be practicable application.

When has consumption/life-cycle based accounting proved usable?

If we extend the scope of thinking beyond MRIO approaches to cover life-cycle thinking more broadly, including incomplete bottom-up LCA approaches, examples of application can be found. It is notable that LCA approaches have gained wider application than MRIO. It is also helpful to distinguish between “soft” and “hard” policy applications. “Soft” applications can be of a voluntary nature or the information generated is used contextually to inform decision-making. “Hard” applications involve compulsion and establish, or would establish, quantitative criteria, emission targets/caps and/or tariffs/taxes.

The adoption of the GHG Protocol is a “soft” application of the bottom-up LCA approach by companies. Provisions in the EU Fuel Quality and Renewable Energy Directives regarding bioenergy

chains can be seen as “hard” applications of LCA. Notably, these allow factors for individual supply chains to override generic emission factors if sufficient evidence can be provided.

There appear to be only “soft” applications of MRIO approaches. For example, the UK now publishes “regular” consumption-based GHG accounts to contextualise the territorial accounts reported to the UNFCCC. But there is no serious policy proposition that they could be used to define “hard” targets.

The soft/hard distinction makes it clear that what is at stake can raise the hurdle for any consumption-based approach. If numbers are going to be used in earnest to influence the profitability of sectors and enterprises, techniques must be robust to challenge – and legal challenge is even more demanding than academic peer review.

Fit for policy purpose

In this section, I set out a number of criteria and hurdles that would need to be crossed if MRIO type approaches were to find application. I divide these into three categories: data; analytical techniques; and the user environment

Data

Accounting cycles under “hard” policy regime such as the Kyoto Protocol and the EU ETS are relatively short. Annex I countries provide data to the UNFCCC 16 months after the end of the year to which the data apply. Consumption-based data would need to be available on a similar timescale for policy purposes. Much MRIO data is interpolated (for example the UK has not produced I-O table since 2006). The quality of data collection and interpretation at the national level may have to improve considerably.

Analytical techniques and uncertainty

MRIO outputs are estimates rather than measurements (the “non-accounting” problem). Uncertainties arise from two sources – parametric uncertainties in specific quantitative assumptions and structural uncertainties associated with the modelling of regions and sectors. Parametric uncertainty can be systematically addressed through Monte-Carlo modelling. Structural uncertainty has not (as far as I know) been systematically explored to the same extent. For example, is it always the case that more detail will always lead to results that more closely match the “true” answer? These questions need to be addressed with a rigour that will stand up to legal scrutiny if MRIO is to find “hard” policy application.

User environment

Action relying on consumption-based accounting may be seen to infringe national sovereignty and has obvious interactions with international trade rules. There is a mature literature on this point which does not, however, make the issue go away.

For MRIO to be adopted, formal guidance would need to be developed for adoption by the UNFCCC, probably via the IPCC Task Force on National Greenhouse Gas Inventories. Such a process is long and technically challenging. The recent guidance on wetlands took nearly three years to prepare after the initial IPCC decision. It took four lead author meetings, two rounds of government and expert review and a full IPCC adoption/acceptance session to have it formalised. There is a requirement for

very robust science, as well as political will, to underpin such a process. No IPCC inventory guidelines have so far relied on economic as opposed to scientific/technical evidence. The MRIO challenge would need to get on to the IPCC radar as a prerequisite for action.

If the 2015 Paris UNFCCC meeting results in a legal agreement which is bottom-up rather than based on top-down quantitative commitments binding under international law, there are implications for consumption-based approaches. Would it make them irrelevant? Or would it be easier to follow a consumption-based approach if the consequences of failing to meet targets were to be reduced?

The question of equity across companies is also relevant. Sectoral approaches could result in “rough justice” for individual companies that have developed low-carbon supply chains. Failure to reward “early action” and/or the perception of collective punishment have proved to be sensitive issues in previous regulatory debates. The application of consumption-based approaches would probably need to be flexible enough (and therefore complicated) to gain acceptance.

Final thought

Consumption-based analytical approaches throw much light on changing patterns of GHG emissions. They have already proved their value in contextualising territorial-based emissions data and identifying the possibly perverse impacts of national policy interventions from a global perspective. The “hard” use of such approaches in an international climate regime places altogether higher demands for analytical rigour and the narrowing of uncertainty. This paper has suggested some areas that may be worthy of research attention.