

Analysing Effects of International Trade on Global Income and Employment

Ali Alsamawi

Joy Murray

Manfred Lenzen

Industries rely on people to produce their goods yet the social dimensions of innovation and efficiency, in themselves cornerstones of industrial ecology, are little understood (McBain, in press). By extending previous studies, such as those dealing with carbon, biodiversity, water, and ecological footprints, to include social responsibility – in this case we construct employment and income footprint accounts – we are bringing to businesses new ways of understanding ‘impacts, performance management, system design and innovation’ (Lenzen, in press; McBain, in press). The field of social footprinting provides quantitative, consistent and rigorous methods for calculation of the third pillar of the Triple Bottom Line (TBL). As a part of the Triple Bottom Line, the rationale for reporting on such indicators (employment and income) quite naturally falls within the corporate/national social responsibility ambit.

Using a new Multi-Regional Input-Output (MRIO) database (Lenzen et al. 2013; Lenzen et al. 2012), our study allows us to group the world’s nations into what we are calling ‘master’ countries that enjoy a lifestyle supported by others and ‘servant’ countries that support the lifestyle of ‘masters’. To this end, we calculate *global employment footprints* – these include a country’s domestic employment and that recruited along the supply chains of, and hence embodied in, its imported goods and services. Employment footprints can be compared with the domestic workforce to reveal either: how many workers a population needs, in addition to its own workforce, to satisfy its consumption through imports; or how many workers in a domestic workforce work for the sake of producing exports, in addition to satisfying the population’s own consumption. The former are net importers of employment, while the latter are net exporters. Continuing our metaphor, the population of the former countries occupy the role of ‘masters’ for whom foreign ‘servants’ work, while the population of the latter are servants to the masters. In addition we determine the *income footprints* of nations, which include a country’s domestic wages and those paid along the supply chains of, and hence embodied in, its imported goods and services. In combination

with the employment footprint we determine the average wages of the servants of master countries. This work allows us to divide the world into ‘master’ nations and ‘servant’ nations – in Adam Smith’s terms the ‘imposers’ and the ‘imposed upon’.

Our results allow us to group the world’s nations into ‘masters’ that enjoy a lifestyle supported by workers in other countries, and ‘servants’ that support the lifestyle of ‘master’ countries. We show that in 2010 employment footprints of all countries differed substantially from their own workforce footprints. Hong Kong, Singapore, the United Arab Emirates and Switzerland occupy the top-ranking positions of ‘master’ countries, while many African and Asian countries are ‘servants’. Our findings show that the commodities that are ‘servant-intensive’, such as electronics, agricultural products and chemicals, tend to have complex supply chains often originating in third world countries. The quantification of these master-servant relationships and the exposing of implicated supply chains could be of benefit to those concerned with Corporate Social Responsibility and committed to fairer trading or those developing policy around fair globalisation.

Lenzen, M. (in press). An outlook into a possible future of footprint research. *Journal of Industrial Ecology*.

Lenzen, M., D. Moran, K. Kanemoto, and A. Geschke. 2013. Building Eora: A global multi-region input-output database at high country and sector resolution. *Economic Systems Research* 25(1): 20-49.

Lenzen, M., K. Kanemoto, D. Moran, and A. Geschke. 2012. Mapping the structure of the world economy. *Environmental Science & Technology* 46(15): 8374–8381, <http://dx.doi.org/8310.1021/es300171x>.

McBain, D. (in press). Comment on the Role of Social Footprinting in Industrial Ecology. *Journal of Industrial Ecology*.