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Global inequities and emissions in Western European textiles and clothing consumption

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ABSTRACT

Rising demand for cheaper textiles and clothing in Western Europe is well documented, as are changes in the Textiles and Clothing industry's globalised production structure. We apply a sub-systems global multi-regional input–output accounting framework to examine the sustainability implications of meeting Western European demand for textiles and clothing goods between 1995 and 2009. Our framework estimates environmental and socio-economic impacts of consumption in a consistent manner and shows where these occur both geographically and in the value chain. The results demonstrate that Western European textiles and clothing consumption remains dependent on low-cost labour from Brazil, Russia, India and China (BRIC), principally in the Textiles and Clothing and Agricultural sectors. Conversely, we show that the wage rate for BRIC workers in the global value chains serving Western European textiles and clothing consumption has risen over time but remains low relative to the wage rate paid to Western European workers. Likewise, we find that profits are increasingly generated within BRIC and that they are now at comparable levels to those generated in Western Europe. We find a slight overall decrease in the amount of carbon emitted in the production of textiles and clothing goods for Western Europe between 1995 and 2009. However, the trend is not linear and the importance of different underlying drivers varies over the timeseries. We conclude by discussing the implications of these results for a more sustainable future for Western European textiles and clothing consumption.

1. Introduction

1.1. Sustainability, affluent lifestyles and macroeconomic structures

Sustainability means achieving a good and equitable life for all people within the ecological limits of a finite planet (Jackson, 2009, 2011). However, at present there are substantial inequities and environmental impacts embodied in the macroeconomic structures that support affluent consumer lifestyles in more economically developed countries (Alsamawi et al., 2014; Lenzen et al., 2012; Simas et al., 2014). Key factors influencing these inequities and environmental impacts are globalisation and changes in the consumption patterns of more economically developed countries (Kanemoto et al., 2014; Simas et al., 2014; Xu and Dietzenbacher, 2014). Textiles and clothing consumption in Western Europe is a prime example of a production–consumption system strongly affected by both changes in consumption and the geographies of production (Dicken, 2011; Dunford, 2004). Therefore, in this study we empirically examine how these factors have affected the equity and environmental impacts of global textiles and clothing production for the Western European market.

1.2. The textiles and clothing context: globalisation, fast fashion and sustainability

In 1995 the quotas restricting world trade in textiles and clothing goods began to be formally removed. Combined with a more general globalisation process this liberalisation of trade allowed for substantial movement of low skill, labour intensive parts of textiles and clothing value chains into developing countries (Dunford, 2004; Los et al., 2014; OECD, 2004). While job creation in developing countries is generally perceived to be beneficial, there remain questions around low wage rates, poor rights for workers and unsafe working conditions (Allwood et al., 2006; International Trade Union Confederation, 2014).

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The geographical shift in manufacturing is also likely to have caused a shift in the location of pollution. High level studies of global trade typically find that international trade has shifted pollution into developing countries that have used manufacturing and heavy industry to fuel their growth (Davis et al., 2011; Kanemoto et al., 2014; Peters et al., 2011b). Previous studies suggest that this could be the case for textiles and clothing consumption, reporting China to be the biggest source of carbon in the textiles and clothing value chains supplying consumers in a small sample of Western European countries (Andrew and Peters, 2013; Carbon Trust, 2011). However, these studies examine a single point in time and so it is unclear if this represents a displacement or an increase in global emissions. Likewise, we do not know how emissions from developing countries in textiles and clothing value chains are changing.

Furthermore, Western European textiles and clothing retailers now refresh their product lines much more frequently than in the past leading to lower prices and shorter lifetimes (Francois et al., 2007; Morris and Barnes, 2008; Schor, 2005). In turn, many brands have passed more risk and pressure to their developing country suppliers in order to further reduce both costs and lead times and thereby remain competitive (Morris and Barnes, 2008; Taplin, 2006). This has placed additional stress on already poor working conditions and is thought to have contributed to the collapse of the Rana Plaza complex (Taplin, 2014).

1.3. Aims and contributions

The aim of this study is to empirically assess both socio-economic and environmental sustainability aspects of Western European textiles and clothing consumption between 1995 and 2009. In the existing literature, environmental and socio-economic impacts along textiles and clothing supply chains are largely considered separately (e.g. Carbon Trust, 2011; Chen and Burns, 2006; Claudio, 2007; Sørensen, 2008; Tokatli et al., 2011) or analysed over short periods of time (Allwood et al., 2006; Andrew and Peters, 2013). Therefore we extend the existing literature by adopting a multi-factor approach to examine changes over a 15 year period. Moreover, we investigate how changes in Western European demand for textiles and clothing goods have affected each indicator at three different scales: the sum of impacts at every stage of production (production footprints) and the impacts that occur in both specific geographical regions and specific economic sectors. By investigating multiple sustainability factors at multiple scales we are able identify both winners and losers, to find tensions between different sustainability goals, and to suggest a win–win scenario moving forwards. Furthermore, looking over a fifteen year time period provides a richer understanding of mechanisms driving changes in the textiles and clothing value chain sustainability than is possible from single point in time studies.

Finally we make two methodological contributions. First, our use of sub-systems framing to improve the robustness of global multi-regional input–output (GMRIO) results is novel. Second, we contribute to the limited literature relating value added indicators (such as global value chain indicators (Los et al., 2014; Timmer et al., 2013b)) and consumption based accounting. This provides a solid link between a large section of the sustainability accounting literature and the most recent empirical work on globalisation.

The rest of the paper is structured as follows; Section 2 introduces key concepts and develops our accounting framework. Section 3 applies this framework to Western European textiles and clothing consumption and Section 4 makes suggestions for a more sustainable future for Western European Consumption of textiles and clothing. Section 5 summarises our main points and concludes.

2. Concepts and methods

2.1. Global value chains and production footprints

Value chains are the networks of value adding activity taking place between conception and delivery of a product. Where supply chains emphasise physical stages of production (Timmer et al., 2013a) value chains include design, marketing and financial services etc. (Feenstra and Hanson, 1996; Timmer et al., 2013b). Because the value chains of most industries now cross multiple national boundaries (Los et al., 2014) they are referred to as Global Value Chains (GVCs).

In macro or meso economic analysis GVCs are described in terms of national final production, so that the Western European textiles and clothing GVC refers to the global network of activity leading to the final goods sold by Western European textiles and clothing firms, no matter where in the world those goods are sold. Timmer et al. (2013b) propose two new indicators to assess impacts and contributions along GVCs defined in this way: global value chain income (GVC Income) and global value chain jobs (GVC Jobs). GVC Income is defined as the sum of all gross value added generated along a given global value chain while GVC Jobs is the total employment across the global value chain. Timmer et al. (2013b) use GVC Income and GVC Jobs to analyse fragmentation and competitiveness of European manufacturing industries. Their analysis confirms that European nations are increasingly service focused and that manufacturing is increasingly globally distributed. GVC indicators have sustainability implications because they reveal global, geographical and sectoral patterns in income and job creation. Moreover, the concept behind GVC Income or GVC Jobs type indicators is easily extended to other social and environmental concerns: we can construct a generic GVC Indicator as the sum of any given factor, for which we have data, across a GVC.

However, while GVC Indicators have sustainability implications we are interested primarily in the role played by consumers in a particular region. This approach is known as consumption based accounting and uses carbon or labour *footprints* (for example, Alsamawi et al., 2014; Druckman et al., 2008; Druckman and Jackson, 2009; Wiedmann et al., 2010). GVC indicators assess impacts occurring in the production stages of a products lifecycle and are therefore closely related to production footprints – a form of partial footprint analogous to a cradle-to-gate Life Cycle Assessment.

Our analysis makes use of production footprints, because they place the focus on the parts of a product's lifecyle that are upstream of consumers and retailers and are therefore the most appropriate way to examine the effect of changes in consumption and globalisation on production impacts. However, it is important to note that production footprints are not directly equivalent to GVC Indicators: GVC Income for Western European textiles and clothing is equal to the income generated producing goods eventually *sold by* the Western European textiles and clothing sector to consumers, wherever they may be in the world, whilst the Western European textiles and clothing income production footprint is equal to the sum of all income generated producing textiles and clothing goods then *purchased by* Western European consumers.

Because Western European consumers purchase textiles and clothing goods from many different countries, and the Western European textiles and clothing sector exports goods to consumers all over the world, the Western European textiles and clothing Income production footprint will be the sum of the proportion of the Western European textiles and clothing GVC Income stimulated by Western European consumption *plus* the proportion of the textiles and clothing GVC Incomes in the rest of the world that are stimulated by Western European consumption (Fig. 1). More generally, a production footprint is the sum of many GVC Indicators each

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