

The Social Effects of Global Trade

Quantifying Impacts Using Multi-Regional
Input-Output Analysis

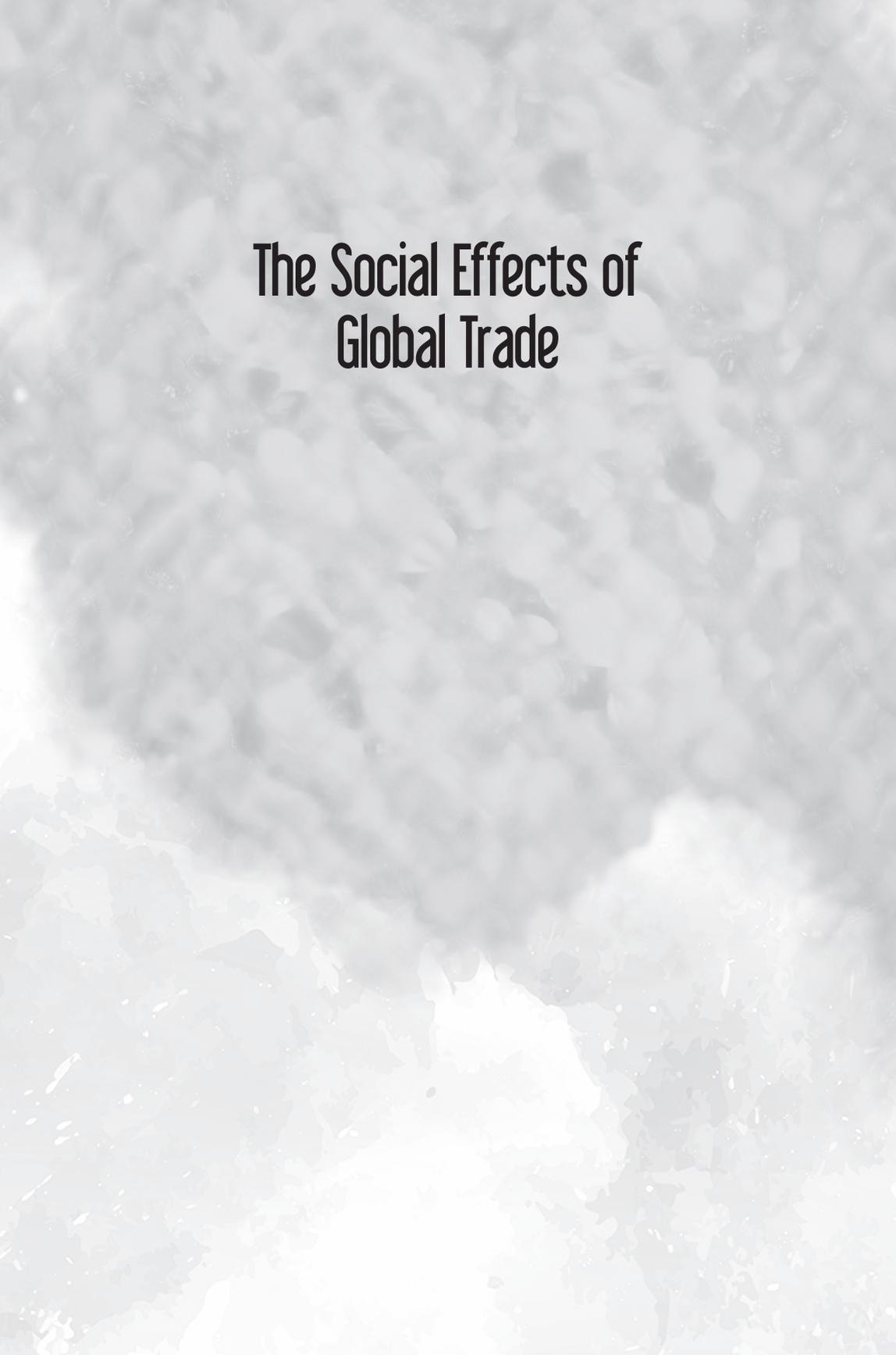
edited by

Joy Murray

Arunima Malik

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Foreword

Global trade has both liberated and put new constraints on the world and society. It allows a worker in China to help someone in Australia when that person's computer malfunctions. Global trade also provides a connection between a farmer in Peru and a consumer in Britain. The benefits that we can see can be massive. No longer are individuals limited by the market within which they are located—they can also reach the world quickly and relatively cheaply. With the opening of markets, so has the opportunity opened up for sharing knowledge, information and wealth. Technological leaps have been made more possible through globalisation and global trade. For example, countries in Africa, where citizens previously had limited access to banks and financial capital, have skipped over the brick-and-mortar stage of physical banks to go straight to online banking, requiring only a smart phone and Internet access. They are able to send money to family and friends, pay for goods and services, apply for a loan to start a new business and take payments for trade from around the globe.

However, there is also a darker side to international trade. Whereas once we understood how our food was grown, because we either did it ourselves or traded with someone in our local community, we are now often distanced from production. We don't really understand the production practices, the environmental impacts or how well people who are producing our food are being treated. Many consumer goods are a sum of their parts, and their parts could have been flown or shipped from anywhere in the world to central points for different stages of production and then redistributed around the world to waiting markets. Tracking and tracing trade can be hugely complex, requiring the use of both big data and small, local data sets. The complexity of global trade has increased significantly, with supply chains lengthening. As supply chains lengthen, they often become more complex and intertwined, looking more like supply webs than supply chains. There is a tendency for manual labour to be focused in certain countries and regions where labour is less expensive than developed countries and often regulations of industry are lower. These countries and industries become net

exporters of labour, where their own workers don't benefit from global trade either financially, for their health or well-being, or for social justice. Alternatively, the labour force will travel to where the work is, creating an often stateless group of people working in some of the poorest conditions in developing countries. Analysis shows a growth in consumption of goods in developed nations since the mid-1990s, and yet Oxfam's latest report into wealth distribution indicates that eight men hold wealth equivalent to the poorest half of the world's population.^a When I first started seriously researching the social impacts of global trade, the world's richest people could all fit into a double-decker bus. Now, in a relatively short space of time, they could fit into a minivan.

We rely on news services to tell us what the problem is, although in the post-truth world, with alternative facts thrown in for good measure, it is often difficult to understand what genuinely is the issue and how we, as consumers, academics, civil society, businesses or governments, can influence the problem being flagged to us. *The Social Effects of Global Trade: Quantifying Impacts Using Multi-Regional Input-Output Analysis* can help us address some of the fact deficit around the social impacts of global trade. Written in collaboration with leading authors from across the world, this book uses different forms of analysis to identify how labour, welfare and wealth flow with trade. Input-output analysis, life cycle assessment and social footprinting are all put to excellent use to help develop our understanding of the impacts of global trade beyond the headlines. Topics such as how trade impacts well-being, how trade can influence poverty reduction or inequality and the traceability of supply chains are all addressed here.

From an industry perspective, getting an accurate understanding of the social and environmental impacts of global supply chains for particular commodities is crucial. One cannot begin to resolve the complex issues of human rights, welfare, safety and inequality arising out of global supply chains without any understanding of the embodiment of labour in trade. Working in some of today's highest-profile industries for modern slavery, I know that nothing beats ground knowledge of the supply chain from sourcing through to production to distribution. However, getting that in-depth knowledge for a multitude of supply chains is rarely possible or

^a<https://www.oxfamamerica.org/explore/research-publications/an-economy-for-the-99-percent/>

practical. This book helps us understand the intricate links between society and trade and how analysis can lead to solutions.

Darian McBain

Global Director of Sustainable Development

Thai Union

February 2017

Foreword

In the village where I grew up, the social cost of living consisted largely of the loss of one's own reputation, or that of one's family, as a consequence of having done or said something at odds with the prevalent social norms. The food that we ate was mostly grown in our own garden or on regional farms and vineyards, paper came from the local factory and brown coal came from a nearby mine. For me, as a child there existed no such thing as a zucchini or a Japanese car, fair trade was an unknown concept and child labour was something everyone thought was normal, as far as I could see.

This situation has changed drastically. While in 1970 world trade amounted to about 10% of the world's GDP, this figure now stands at about 30% [1]. Similarly, rapid development of information and communication technology means that we are now informed about the social predicaments of people living in the most remote corners of the world. We know that just eight people own the same amount as half the world population [2], 10% of the world's population lives on less than \$1.90 a day [3] and more than two million people die each year as a result of occupational accidents or work-related diseases [4].

The contributions to this book demonstrate comprehensively how individual consumption by citizens of affluent societies is entwined with social impacts in less wealthy countries, how these impacts are often out of the consumers' sight (and mind?) and how international trade plays a decisive role in facilitating these impacts.

Increased knowledge entails increased responsibility. In his essay on famine, affluence and morality, Singer [5] writes on Bangladesh:

I shall argue that the way people in relative affluent countries react to a situation like that in Bengal cannot be justified; indeed, the whole way we look at moral issues—our moral conceptual scheme—needs to be altered, and with it, the way of life that has come to be taken for granted in our society. [. . .] If it is in our power to prevent something bad from happening, without thereby sacrificing anything of comparable moral importance, we ought, morally, to do it.

Interestingly, in interpreting the moral imperative thus formulated, Singer picks up on the aspect of proximity and distance:

For the principle takes, firstly, no account of proximity or distance. It makes no moral difference whether the person I can help is a neighbor's child ten yards from me or a Bengali whose name I shall never know, ten thousand miles away.

In a way, the research presented in this book quantifies this proposition. Through a complex network of international supply chains, our consumptive activities become implicated with individual illnesses, injustices and unmet needs far away from us. Through this book, we are now able to find out how our own lifestyles are linked with worrisome social conditions elsewhere. This knowledge, according to Singer, extends our moral responsibilities.

When Singer wrote his essay I was a young child and, as such, would not have been able to appreciate his point of view. Most probably, there also existed very limited if not no information for the villagers to find out where their oranges, coffee or clothes came from, had they been interested in knowing. Having read this book today, I can no longer pretend ignorance when visiting the next shopping complex.

Manfred Lenzen

Sydney

February 2017

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Preface

International Trade and Age-Old Dilemmas

On Saturday, 23 June 1888, a particularly cold summer's day in London, Annie Besant [1] wrote in the *Link*:

But who cares for the fate of these white wage slaves? Born in slums, driven to work while still children, undersized because underfed, oppressed because helpless, flung aside as soon as worked out, who cares if they die or go on the streets, provided only that the Bryant and May shareholders get their 23 per cent, and Mr. Theodore Bryant can erect statues and buy parks?

She was talking about the plight of women and girls who made matches. The phosphorous used to make the matches caused phosphorus necrosis of the jaw, known as *phossy jaw*, which was incredibly painful, disfigured the face, and in 20% of cases led to the death of the sufferer. Yellow phosphorus was banned in Sweden and the United States, but the British government argued that banning its use was a restraint on free trade.

Restraints on free trade are still a major bone of contention. Can one country tell another what its social and environmental regulations should be? Under World Trade Organization (WTO) agreements, can one country ban imports from another on grounds of *methods of production* as well as *quality of product*? In 1991 Mexico complained under the General Agreement on Tariffs and Trade (GATT) dispute settlement procedure that a US ban on imports of its tuna was unlawful. The United States had banned imports of Mexican tuna because the United States believed Mexican fishing methods had not met US dolphin protection standards. The panel reported to GATT members in 1991 that 'the US could not embargo imports of tuna products from Mexico simply because Mexican regulations on *the way tuna was produced* did not satisfy US regulations'.^a The reasoning behind the ruling was that one country could not impose

^ahttp://www.wto.org/english/tratop_e/envir_e/edis04_e.htm (accessed 14 September 2014); italics in the original.

its environmental, health, and social standards on another country even, as in this case, 'to protect animal health or exhaustible natural resources'. Twenty years on, the dispute remained unresolved, although by then it was mainly focused around what restrictions, if any, could be applied to the use of dolphin-safe labelling of imported Mexican tuna.^b

Three years after the United States banned tuna imports, Mexico entered into the North American Free Trade Agreement (NAFTA) with the United States and Canada, which, according to the International Monetary Fund (IMF),^c saw an average annual real per capita gross domestic product (GDP) growth in Mexico roughly half that of the rest of Latin America over the following 20 years. During that time Mexico's poverty rate fell only 8 percentage points compared with 20 for the rest of the region. Mexican corn could not compete with the highly subsidized US corn, putting around 2 million Mexican farmers and their families out of work and contributing to the flow of poor Mexicans into the United States looking for work. And while Mexico's official Gini coefficient suggested some slight improvement in overall equality, the combined net worth of 15 Mexican billionaires reported in the Forbes rich list reached \$150 billion.

At the same time another dispute was underway, this time between the European Union (EU), wanting to ban import of all seal products because of cruelty in the slaughter and skinning of seals, and exporters Norway and Canada, who were putting the argument to the WTO that banning their seal imports was discriminatory.

Whatever we think of today's free trade dilemmas, inter-country trade has been with us for centuries and has never been 'free'. There has always been a price to pay. However, who has paid that price has differed over time, place, and industry, as well as where you are in the supply chain. Around the same time as Annie Besant was writing in the *Link*, William Lever, later to merge with the Dutch company Unilever, began building a model village, Port Sunlight, for his workers in England. His workers' cottages had running water and indoor bathrooms. His village had schools, a swimming pool, a library and a theatre. But while his workers in England were faring

^bhttp://www.wto.org/english/tratop_e/dispu_e/cases_e/ds381_e.htm (accessed 14 September 2014).

^cWeisbrot, M., Lefebvre, S. and Sammut, J. (2014). *Did NAFTA Help Mexico? An Assessment after 20 Years*, <http://www.cepr.net/documents/nafta-20-years-2014-02.pdf>.

well, workers on his palm oil plantations in the Belgian Congo were toiling in horrific conditions, treated little better than slaves.

It seems it was a similar story for George and Richard Cadbury, who, whether by ignorance or by oversight, relied for several years on cacao from plantations in Sao Tome and Principe, which depended on slave labour [4]. Meanwhile, at home, motivated by a concern for working conditions, health and safety, education and training, and affordable housing, the Cadbury brothers were revolutionising industrial relations on a national scale. Their personal commitment took place alongside a parliamentary debate on child labour, education and working hours, all of which contributed to lasting improvements for workers in England.

Similar debates were also happening elsewhere. In their book *Ethics*, published in the United States in 1909, John Dewey and James Tufts [3] discussed the ethics of the economic life. They considered the moral costs of producing cheap goods.

The price of goods or service is not measurable solely in terms of other commodities or service; the price of an article is also . . . what it costs in terms of human life. . . . The introduction of machinery for spinning and weaving cotton cheapened cotton cloth, but the child labor . . . involving disease, physical stunting, ignorance, and frequently premature exhaustion or death, made the product too expensive to be tolerated. At least, it was at last recognized as too expensive in England; apparently the calculation has to be made over again in every community where a new system of child labor is introduced.

They could have added ‘in every age’, too. It seems that child labour is still with us, along with poor working conditions, exploitation of women and inequality of income. So also, at the other end of the spectrum, there are global companies committed to addressing such inequities, companies like today’s Unilever, partnering with non-government organisation (NGO) Solidaridad and being committed to improving the lives of 1 million workers in its supply chain^d [2].

^dIn November 2016 Amnesty International [2] reported that it was ‘highly likely that Unilever . . . [was] sourcing palm oil from refineries where palm oil has been directly supplied or, at the very least, been mixed with palm oil produced on plantations where there are severe labour rights abuses’. Such a finding points to the difficulties encountered in trying to trace supply chains and the importance of the work of researchers who develop techniques for doing just that and those who use those techniques to meticulously examine supply chains in order to uncover social consequences of trade.

Consumers, too, are contributing to public discourse on the ethics of trade and pressuring companies for greater transparency about where, by whom and under what conditions their goods and services are produced. And for those who ignore the ethical argument there is the question of social unrest and its consequences. Almost a century after Dewey and Tufts wrote their book, philosopher Peter Singer [5] discussed the possible consequences of inequality in his book *One World: The Ethics of Globalization*:

How well we come through the era of globalization (perhaps whether we come through it at all) will depend on how we respond ethically to the idea that we live in one world. For the rich nations not to take a global ethical viewpoint has long been seriously morally wrong. Now it is also, in the long term, a danger to their security.

At that time the UN's Department of Economic and Social Affairs would probably have agreed; in 2010 it released a paper 'The Inequality Predicament: Report on the World Social Situation, 2005'. The authors argued that inequality is a social justice issue as well as a threat to social, political and economic stability around the world. Addressing this inequality today is part of a continuous struggle; only the context changes as the passing of time makes yesterday's actors and events part of the context in which we act today.

Our book is a contribution towards understanding some of the threads that need to be untangled from the web of life, and examined, if we are to respond ethically to living in one world. We show how complex supply chains can be traced around the world and their social consequences exposed for good or ill. We follow commodities from producer to consumer, no matter how many countries they pass through in the production process or how complex that process is. Just as others have quantified the economic and environmental effects of doing business we quantify the social effects. For this we use input-output (IO) analysis. In illustrating the use of IO we hope to convince organisations of its value as a tool to examine the social effects of trade embodied in supply chains. We hope also that this book will be of use to students of economic, environmental and social sustainability in their quest for a cohesive story about global trade—its history, ethics, effects and extent. Moreover we hope this book provides an understanding of IO and its uses and provokes further study of the use of IO as a tool. To this end we collect together the work of academics in the forefront of using IO to analyse, account for

and report on the social consequences of trade within and between countries.

Organisation of the Book

The book is divided into four parts. Part I, 'Introduction', sets the scene. It provides the origins, context and some of the implications of today's global trade network, as well as a human rights and social justice perspective on supply chain responsibility. Part II, 'Input-Output Analysis', describes the tools that are the focus of this book, tools that we offer as a powerful technique for putting numbers to the supply chain responsibility described in Part I. It describes methods and models for examining the social pillar of the triple bottom line, helping companies identify and quantify inequalities so that they can address them. Part III provides case studies—some good news stories as well as issues—illuminated by researchers committed to unpacking the intricacies of complex supply chains. Part IV concludes the book, providing some thoughts on what the future of social analysis, assessment and reporting might hold for business.

Part I: Introduction

In Chapter 1 Christopher Wright provides a broad historical context for our work. He traces the origins of trade within a capitalist society before arriving at the issues of trade in today's highly globalised world. He discusses the growing inequality and environmental degradation that threaten our future. He ends with a plea for detailed quantitative studies of the highly complex trade data collected by local, national and global organisations. He suggests that recent developments in IO analysis make it ideally suited to the job.

In Chapter 2 Christine Nolan provides a human rights and social justice perspective on regulation of global supply chains. She discusses the question of responsibility, questioning where in this globalised world of business responsibility begins and ends, who is responsible and how responsibility can be shared among all the myriad players in such complex supply chains. Theories of responsibility are presented, and the idea of legal accountability is

discussed as a step towards regulation. Some examples of supply chain transparency legislation are given, illustrating how legal liability can be distributed up and down a supply chain and can become a mechanism for improving the human rights of vulnerable workers.

Part II: Input-Output Analysis

Chapter 3, written by Arne Geschke, provides an overview of how global social impacts can be identified and qualified. The methodology that is used is known as multi-regional input-output (MRIO) analysis, which is based on global accounting frameworks in combination with eligible social data. The author gives an overview of the concepts behind MRIO analysis and discusses which types of social data can be used for this approach. This chapter contains an introduction to the theoretical and methodological background that the case studies featured in this book are based on.

In Chapter 4, Catherine Benoît Norris, Gregory Norris, Yanyan Xiao and Joy Murray provide a means of tracking progress towards the Sustainable Development Goals (SDGs) launched by the UN using MRIO analysis combined with the Social Hotspots Database (SHDB). They take us step by step through the process of bringing together the Eora MRIO database and the SHDB and then provide a case study showcasing how governments and organisations might use this combined power to address human rights due diligence along supply chains.

Part III: Case Studies

In Chapter 5 Yanyan Xiao, from the University of Sydney, illustrates how non-additive social information can be manipulated into a form that can be used in social IO analysis. She uses national corruption indices and employment data by sector to estimate the corruption footprints of 189 nations. She finds that developed countries are net importers of corruption embodied in goods and services, while developing nations are net exporters of embodied corruption. Xiao's work reveals which commodities are the most highly implicated in

the flow of corruption. Such information can be useful to corruption fighters everywhere.

In Chapter 6 Rachel Reyes, from the University of Sydney, uses a global MRIO trade database in conjunction with information on social welfare to account for the social welfare associated with consumption of goods and services. Her results uncover inequality in terms of welfare of workers in rich and poor nations. Furthermore, Reyes argues the need for a metric for measuring a country's success beyond merely relying on GDP.

Chapter 7, written by Ali Alsamawi and Yanyan Xiao, examines the flow of employment embodied in imports and exports in the Arab region. They identify flows between one Arab nation and another as well as those between Arab nations and the rest of the world. They define what he calls the *employment footprints of nations* as a measure that includes the number of workers working for the domestic market plus the number of workers embodied in its traded imports. Such footprint information assists a country in identifying how much employment it requires in addition to its own workforce in order to satisfy the nation's consumption demand. Thus it can be useful in designing appropriate employment policy.

Moana Simas and Richard Wood, from the Norwegian University of Science and Technology, Trondheim, contribute Chapter 8, in which they examine the distribution of labour and wages embodied in European consumption. The authors discuss the impact of buying products such as food, clothing and electronics on wages, employment and, in particular, vulnerable employment, embodied in the supply chains of these commodities.

In Chapter 9 Yafei Wang and Lixiao Xu use a comprehensive sub-national IO table of China to calculate inequality footprints of the country's provinces. Their results uncover top importers and exporters of inequality embodied in the consumption of goods and services. They assert that inequality assessments are useful for understanding disparity in terms of income and wages and can inform future policy-making.

In Chapter 10 Simon Mair, Angela Druckman and Tim Jackson present us with an in-depth study of the Western European clothing

supply chain. Their analysis shows that while the Western European clothing supply chain could be considered 'fairer' because of globalisation, it can in no way be considered to be 'fair'. They find that workers in BRICS (Brazil, Russia, India, China and South Africa) countries are paid insufficient wages for a decent life.

Chapter 11 was written by Ruslan Lukach and José M. Reuda-Cantucho from the European Commission's Joint Research Centre, in Seville, Spain. They provide an overview of the main trends and patterns in income effects in global value chains driven by EU exports during 1995–2011. Their study allows examination of value added (income) per EU member state embodied in all EU exports. It shows the magnitude of interdependence within the EU and between the EU and the rest of the world's economy. The writers conclude that the single market is an important pillar of EU competitiveness in the global marketplace and contributes considerably to the well-being of the EU population.

In Chapter 12, Christina Prell, Klaus Hubacek, Laixiang Sun and Kuishuang Feng analyse effects of global trade on pollution and mortality. The authors interpret international trade as a network of interdependencies, in which each country's participation in international trade is represented by a level of integration within this network. Countries that are strongly interlaced in international trade are at the 'core' of the network, whereas countries with few economic ties outside their borders are situated in the network's 'periphery'. Using this classification, the authors then analyse whether core countries are able to outsource emissions from their home soil and whether this yields positive effects within the population. The authors find that for SO₂ emissions, the level of integration is positively associated with SO₂ emissions domestically, and even more so, within the international supply chain. Hence, 'core' countries are strong emitters at home and abroad. The authors further show that there is a strong negative correlation of a country's level of integration and the infant mortality rate—despite the higher domestic SO₂ emissions that were shown before. Hence, high emissions do not necessarily correlate to negative health risks, and the authors offer a number of explanations such as the pollution-wealth ratio to analyse their findings further.

Part IV: Social Effects of Global Trade in Standard Business Practice

Chapter 13, contributed by Graham Sinden, takes a step back from the case studies of the previous part and gives an overview of regulatory and non-regulatory initiatives concerning human rights issues along supply chains. While a number of states now have regulatory frameworks in place that specifically target human rights issues along supply chains outside their national territory, these regulations often have a specific focus (such as human trafficking and slave labour), and the term ‘supply chain’ is often lacking a clear definition. Non-regulative initiatives, mostly advocated by NGOs, often take a broader view and consider social issues along supply chains more broadly. Consequently, for businesses that are seeking to demonstrate their social responsibility, both regulatory and non-regulatory approaches are important and the interest in these is growing steadily. The author further discusses the challenges of quantifying social supply chain impacts and closes by remarking that social responsibility is already becoming a valuable non-financial performance measure for businesses and investors alike.

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