

Chapter 13

Ecologically Unequal Exchange: The Renewed Interpretation of Latin American Debates by the Barcelona School



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13.1 Introduction

Ecological approaches to unequal exchange were inspired by different critical perspectives that point out the negative effects of economic specialization and free trade on poor countries' development – in contrast to predictions postulated by the comparative advantage classical theory, or the neoclassical trade theory. Bunker's pioneer analysis (1985) on the exploitation of natural resources in the Brazilian Amazon, conducted in the 1970s, was built based on extensions and critical analysis of world systems, dependency, and unequal trade theories (Wallerstein, 1989, 2000; Frank, 1967; Emmanuel, 1972). The author argues that the extraction and export of natural resources from poor regions lacking political power to obtain better trade conditions or economic alternatives imply not only an unequal economic exchange but mainly a transfer of value incorporated in matter and energy to metropolitan centres.

Currently, different social theories still have influence on ecological studies of unequal trade, albeit with important variations. Jorgenson (2006) is based on the dependency theory and world-system analysis. Hornborg (1998, 2009, 2014, 2018) also investigates the asymmetric transfer of matter and energy from peripheries towards centres, but mainly by deepening the biophysical (and thermodynamic) view of the economy. Other current ecological analyses of unequal exchange (Clark & Foster, 2009; Foster & Holleman, 2014) maintain stronger roots in the Marxist labour theory of value.

This chapter investigates the innovative contribution brought by Barcelona School to the ecologically unequal exchange approach, which resulted from the interpretation and update of the Economic Commission for Latin America and the Caribbean (ECLAC) dependency theory, and Latin American environmental debates

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in the 1990s. Latin America is recognized for its original environmental perspectives. The colonial experience, the plundering of natural resources, and the maintenance of core-periphery inequalities constitute the basis for the emergence of a “popular environmentalism” and an autonomous environmental thought when compared to Global North perspectives (Martinez-Alier et al., 2016a; Pengue, 2017). Here, I discuss how Latin American environment and development debates were appropriated by Barcelona School and complemented with the biophysical view of unequal trade. The chapter is organized into four sections. After this introduction, I present the ECLAC’s and social movements’ key concepts and hypotheses around unequal exchange. Next, I discuss Barcelona School’s work, aiming to explore its foundations and contributions to analyse Latin America’s recent development. I end the chapter with some brief conclusions.

13.2 Unequal Exchange in Latin American Perspectives

In the late 1940s, Raúl Prebisch laid the foundations for Latin American structuralism, based on evidence that peripheral and core countries dealt with unequal conditions and opportunities when exchanging their products through international trade. In contrast to core economies, peripheries are specialized in the exploitation of natural resources based on cheap, easily imitated, and low-productivity technologies, which employ few workers and generate high unemployment and social inequality. Taking into account these structural features, Prebisch (1949) and Singer (1950) raised the hypothesis of a deteriorating trend for peripheral countries in the long run – in terms of trade – due to the decline in primary products’ prices when compared to industrial goods prices. As a direct consequence of this hypothesis, peripheral economies need to export increasing product quantities to core economies over time, just to maintain the same amount of imports.

Two dynamics explain this deterioration in terms of trade. First, while core economies (with oligopolistic industries, high productivity, and unionized workers) are able to appropriate productivity gains through higher wages and profits, peripheries (with production facing high competitiveness and wide supply of cheap labour) transfer productivity gains to core regions in the form of decreasing prices (Prebisch, 1949). Second, at certain levels of per capita income, the demand for industrialized goods (or services associated to them) tends to increase faster than the demand for raw materials, likely affecting relative prices in favour of the former (Prebisch, 2000 [1952]).

Although part of Latin American countries has undergone more or less intense industrialization processes since the middle of the twentieth century, global core-periphery dynamics remained unfavourable for countries in the region. ECLAC’s analyses indicate that international capital flows also played a role in reinforcing unequal exchange, by improving external accounts of the main core economies. In the early twentieth century, the United Kingdom benefited from the return on previous investments made abroad, paying for a third or more of its imports during the

1920s with rents derived from foreign investments (Prebisch, 1949). Starting in the 1960s, after the rise of the United States as a main core economy, an intense outflow of US capital substantially increased global financial liquidity. Latin America benefited from international capital inflows mainly after the rise of oil prices in 1973, which further expanded the global international liquidity, and the offer of cheap loans to peripheries. However, in face of oil-shock stagnation and inflationary pressures, the United States introduced restrictive monetary policies from 1979, which raised international interest rates. Peripheral indebted economies were no longer able to pay their debts or get new financing (Griffith-Jones & Sunkel, 1986; ECLAC, 2000 [1985]; Furtado, 1992).

Throughout the 1980s, countries in the periphery had to make huge socio-environmental sacrifices in order to honour external debt commitments, while undergoing harsh economic adjustments imposed by the International Monetary Fund and World Bank. The term “ecological debt” was coined by Latin American environmental justice organizations in the early 1990s, as a direct response to these adjustment programmes, which imposed sharp reductions in public expenditures and major exports increases. Social movements were opposed to paying the fast-growing external debt to rich countries with sacrifices to people and nature, while the Global North owned a much larger, 500-year historic ecological debt to the Global South. The political challenge was to ensure that these unquantified ecological transfers were also acknowledged and considered. Although the debate had limited success in official circles in Latin America, it gained evidence in alternative treaties prepared by NGOs and grassroots organizations during Rio-92, when it was also mentioned in Fidel Castro’s speech (Martinez-Alier, 1997, 2002a; Warlenius et al., 2015a, b).

13.3 The Ecologically Unequal Exchange by the Barcelona School¹

13.3.1 *Ecological Debt*

After Rio-92, ecological debt was the subject of campaigns, publications, and events led by organizations such as Acción Ecológica and Friends of the Earth. In this context, Joan Martínez-Alier was one of the main proponents of the recognition of Global North ecological debt within academic circles. Besides exports by peripheries of cheap natural resources, of which prices do not account for several local or global socio-environmental impacts, he asserts that ecological debt is also related to rich countries’ historical overuse of global environmental functions, such as climate

¹The analysis carried out throughout this section is the result of a Barcelona School literature review. However, some analyses from other schools were eventually included, when carried out in a dialogue with researchers from Barcelona or in line with the fundamentals presented here.

and nutrient regulation. In this sense, recognizing the ecological debt can contribute to promoting, along with environmental justice, the North “ecological adjustment” (Martinez-Alier, 1997, 2002a, b).

In 1997, a special edition of *Ecología Política* published several contributions on the ecological debt. These contributions reflect the liveliness of this debate in that context, in which it was the subject of international meetings in Latin America, and inspired several demonstrations and statements by politicians, researchers, and social organizations, reinforcing the then-prevalent campaigns for external debt cancellation (Parlamento Latinoamericano, 1997; Acción Ecológica, 1997). The relationship between external debt and ecological debt is further explored in this special issue, with articles arguing that contemporary requirements of monetary payment to the North increased the pressure on the environment in Latin American countries, deepening the historical ecologically unequal exchange unfavourable to the Global South (Acosta, 1997; Martínez-Alier, 1997). Finally, a set of articles and an interview described specific aspects of ecological debt, such as the appropriation of knowledge related to agricultural seeds and medicinal plants by the North (“biopiracy”) (Bravo, 1997; Mora, 1997).

More recently, the Environmental Justice Organisations, Liabilities and Trade (EJOLT) project made additional contributions to the ecological debt discussion (Warlenius et al., 2015a, b), with a special section published in the *Journal of Political Ecology* (2016). Here, the main debates are not anymore centred on Latin American external debt, but on the ecologically unequal exchange and its relationship to ecological debt (Hornborg & Martinez-Alier, 2016). The asymmetries between core regions and extractivist economies in the periphery are described through theoretical contributions on ecologically unequal exchange (Oulu, 2016; Jorgenson, 2016), ecological debt (Manzano et al., 2016; Warlenius, 2016), and several empirical studies based on monetary and biophysical indicators to analyse these asymmetries in South American, African, and Asian countries (Dorninger & Eisenmenger, 2016; Kill, 2016; Temper, 2016; Martinez-Alier et al., 2016b; Mayer & Haas, 2016).

13.3.2 Biophysical Studies

The Barcelona School introduces a new dimension in the analysis of core-periphery dynamics. In ECLAC’s analysis, international specialization accentuates global socio-economic inequalities. In the renewed interpretation by Barcelona, inspired by the debates on ecological debt, peripheral specialization – in resource-intensive or environment-intensive products – also reinforces the unequal distribution of resources and environmental damage between countries or regions (Muradian & Martinez-Alier, 2001). This new interpretation of unequal exchange led by Joan Martínez-Alier seems to be based on two central foundations: (i) strong sustainability, which is reflected in the use of social metabolism accounting to discuss the sustainability of economic models (Fischer-Kowalski, 1998; Fischer-Kowalski &

Huttler, 1998); and (ii) core-periphery division as a key category to investigate the environmental damage associated to exports, or the displacement of environmental damage to Global South.

Monetary valuation may be appropriate for calculating environmental liabilities in certain contexts, particularly to demand compensation or prevent future damage (Rodríguez-Labajos & Martínez-Alier, 2013), and indeed it is often used in claims for ecological debt. However, in more rigorous terms, ecological debt involves a variety of social and environmental costs that cannot be reduced to a cardinal metric (Martínez-Alier et al., 1998; Falconí, 2001; Martínez-Alier, 2002b). The Barcelona School's analyses of unequal trade reflect this understanding that sustainability should be discussed through biophysical indicators, such as embodied pollution in trade (Muradian et al., 2002), soil nutrient export (Pengue, 2005), and ecological footprint (Hornborg, 2006). More frequently, as I will next present, these studies also employ material flow analysis, which describes the environmental pressures of trade and economic activities.

While biophysical indicators are used in several studies of ecologically unequal exchange (see Jorgenson, 2006; Rice, 2007), Barcelona School analyses differ in that they discuss these indicators based on centre-periphery dynamics, influenced to some extent by ECLAC theories. One important contribution of Barcelona's analyses was the extension of Prebisch's hypothesis to take into account ecological aspects of trade (Muradian et al., 2002; Pérez-Rincón, 2006). The deterioration in terms of trade in the context of an "ecological Prebisch thesis" means that there is a decrease in the volume of imports (in tonnes) that can be purchased through the sale of one tonne of export (Schatan, 1998; Pérez-Rincón, 2006). Facing up declining trend in terms of trade in peripheries, central economies can import increasing amounts of natural resources, while maintaining balanced trade relations in monetary terms.

In line with this "structuralist" foundation of ecologically unequal exchange, empirical evidence from material flow analysis shows that specialization in environmental-intensive products is on the basis of unsustainable social metabolic profiles in peripheries. In the vast majority of Latin American countries, physical trade deficits (volume of materials exported exceeding the imported volume in terms of weight) are chronic, meaning that the regional export-oriented model generates a net outflow of resources to the international market. This specialization pattern also explains why, within the last decades, most of these countries saw an increase in material intensity (the amount of material input required to produce one unit of GDP), while central economies were dematerializing – often by outsourcing resource-intensive activities to peripheries (Russi et al., 2008; Muñoz et al., 2009; Vallejo, 2010; Vallejo et al., 2011; Manrique et al., 2013; West & Schandl, 2013; Dorninger & Eisenmenger, 2016; Samaniego et al., 2017; Infante-Amate et al., 2020).

Overall, this research provides a strong ecological critique of the recent Latin American development. Since the mid-1970s, neoliberal reforms and deregulation have intensified unsustainable socio-metabolic patterns in the region, by promoting environmental-intensive exports (Giljum, 2004; Russi et al., 2008; González-Martínez & Schandl, 2008). Moreover, despite the provisional improvement in raw

material prices in the early 2000s, these adverse economic and ecological structures were further reinforced through an extractivist approach to economic policies (Samaniego et al., 2017; Saes, 2018; Crespo-Marín & Pérez-Rincón, 2019), probably contributing to the recent socio-economic crisis in Latin America.

13.4 Conclusion

By promoting an innovative interpretation of Latin American debates, the Barcelona School conceptualized and empirically reinforced the ecological analyses of unequal exchange. Paradoxically, as this knowledge advanced throughout the 2000s, campaigns for the acknowledgment of ecological debt lost strength, and are no longer mentioned by governments in Latin America or internationally. Even so, now there is abundant empirical evidence proving the existence of ecologically unequal exchange and ecological debt, which can be powerful tools to revive the necessary discussion on the environmental liabilities of international trade, and the need for an “ecological adjustment” of the Global North.

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