

Inequalities in Trade

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1. Introduction

The reduction of inequalities both within and between countries is the main aim of goal 10 of the United Nations sustainability goals (SDG 10). Thus, far, many studies have focused on the measurement of *income inequality* within national boundaries. Special interest has been given to analyzing the share of the poorest people within one country, their living standards, or the evolution of international differences in per capita income as occurs in the World Inequality Report 2018 (Alvaredo et al. 2018) and the World Social Report by the United Nations (2020a).

The major concerns of the United Nations regarding SDG10 are the persistent differences in the possibilities to achieve sustainable growth and development, with technological innovation being identified as either the engine for faster and more equal development from which poorer countries can over-proportionally benefit or as a further obstacle to achieve equality, as wage inequality rises with the poorest and least qualified being left behind or even being laid off due to increased automation and digitalization processes (United Nations 2020a).

There is a wide range of factors with major impacts on economic development. In this chapter, we focus on international trade. More specifically, we study the degree of integration of a large set of countries in the international trade network. The title of this contribution “Inequalities in Trade” is inspired by the fact that we explore several dimensions of trade. The intricate network of relationships at the international level is explored in order to assess to what extent the number of trading partners of each country, the number of different products exported to each of the partners, and the volume of trade differ and have evolved over time.

Shifting the focus from national income distribution to other dimensions of inequality is in line with the United Nations statement that:

Greater focus is needed to reduce income and other inequalities, including those related to labor market access and trade. Specifically, additional efforts are needed to further increase zero-tariff access for exports from poorer countries and thus to provide better access of fast developing countries to the global trade network by providing technical assistance

to LDCs and small island developing States seeking to benefit from preferential trade status (United Nations 2015).

Thus, a critical analysis of the level of inequality in world trade is an important contribution for a better understanding of other inequalities. Economic openness and trade can foster economic possibilities as the market size increases for firms, and exports can be the key to higher paying jobs and strong long-term economic development (Grossman and Helpman 1990). In addition, more integrated countries can benefit from importing knowledge and the settlement of international companies in fast developing and least developed countries (Almeida and Fernandes 2008). The literature also suggests, however, that this beneficial development depends on the existence of social and technological capabilities of the countries that are lagging behind. For instance, Kim and Lin (2009) showed that trade openness is positively linked with economic growth for already rich and highly developed countries, whereas the opposite is true for low-income countries. Through the effect of several channels, Wood (1995) suggests that trade is the single main explanatory factor of wage inequality. According to the standard Heckscher–Ohlin model, trade integration would hurt workers in the most industrialized countries while the population in the poorest countries should benefit from increases in trade, leading to catch-up processes of the poorest towards the richest countries.

For wage differentials to determine location decisions and to have a decisive impact on trade, these differentials have to be significantly large between countries. This is the case above all for low-skilled workers where the wage differential in many sectors (e.g., the textile industry) leads to a decline in production and labor in industrialized countries, whereas developing countries can benefit by attracting firms due to their competitive advantage. In this respect, the level of trade costs is crucial for determining the volume of exports and relocation of production. Baldwin (2012) highlights that, in the presence of high wage differentials, major parts of the production processes that only need low-skilled workers can move easily to low-wage countries, whereas economic centers can mainly retain workers in strategic functions of the production process such as R&D, marketing and sales. Altogether, the importance and significance of truly global value chains cannot be underestimated.

Over recent decades, globalization has been a widely researched topic, with a special rise in interest starting in the 1990s due to technological advances that facilitate international trade and efforts undertaken to achieve trade liberalization worldwide by lowering tariffs and other barriers on trade (Levinson 2006; Cuervo-Cazurra et al. 2017; Kobrin 2017). This process of integration has the potential to allow nations to

specialize, explore their comparative advantages, and benefit from a myriad of flows. In a report entitled “Globalization, Inequality, and Poverty since 1980”, David Dollar from the World Bank stresses that:

Globalization has been a force for growth and poverty reduction in a diverse group of countries, including China, India, Mexico, Uganda, and Vietnam. I define globalization as the growing integration of economies and societies around the world because of flows of goods and services, capital, people, and ideas. The main theme of my paper is that integration accelerates development. Workers with the same skills—be they farmers, factory workers, or pharmacists—are less productive and earn less in developing economies than in advanced ones. Integration through trade in goods, foreign investment, international telecommunications, and migration reduces these gaps by raising productivity in the developing world. In this way globalization can be a powerful force for poverty reduction (Dollar 2001, p. 2).

Recent reports from the United Nations (United Nations 2020b, 2020c) highlight that, despite the fact that poverty is declining, this is happening at a slower pace than in the years before and many problems continue to persist as inequalities both within and between countries have started to rise again. Although there are many direct and indirect positive effects arising from globalization, deeper integration in the global trade network comes with costs (e.g., Morrissey and Filatotchev 2000). The evidence available points towards a significant degree of heterogeneity concerning the ability to harvest gains from the process (for a seminal set of contributions discussing some of these issues see the book organized by Smith and Toye 1979). For example, domestic firms become exposed to increased competition and some of the least efficient may shut down, leading to higher unemployment and social exclusion. In addition to the issue of the relative size of benefits and costs, there are also questions about how these gains are distributed within each country. Due to these aspects, there has been an increase in the skepticism towards globalization (Hiscox 2006; O’Rourke and Sinnott 2006). According to this line of reasoning, globalization is seen as a threat to well-being (Cuervo-Cazurra et al. 2020), requiring a thorough debate not only among policy makers but also in societies at large. Nevertheless, Morrissey and Filatotchev (2000, p. 11) emphasize that the outcome of the trade integration process may be different if the correct efforts are made:

Marginalisation is often interpreted as implying that low-income countries will ‘lose’ from globalisation, that is, marginalised economies will be made

worse-off. This need not be so. If we can understand better why some countries are marginalised, we can begin to identify the policies that can be implemented to help these countries benefit from integration into the global economy. The reforms necessary may relate to domestic policies, at the national or enterprise level (Morrissey and Filatotchev 2000, p. 11).

In the recent months, the COVID-19 crisis has been turning from a health crisis to an economic and social crisis that hinders the smoothness of international trade and is affecting the most vulnerable and the poorest in many countries. As elaborated, for example, by the United Nations World Food Programme and Laborde et al. (2020), trade networks also deteriorated in the agricultural and food sector such that food supply has not been easily guaranteed in some of the poorest parts of the world during the pandemic. This is especially true for Sub-Saharan African states, which are most vulnerable as they import roughly 40 million tons of cereals every year.

The United Nations World Food Programme, moreover, stresses the general economic vulnerability of countries which depend a great deal on exporting food and have not yet reached a sufficiently diversified trade structure, such as Angola, Mozambique, Nigeria and the Congo. Moreover, countries that are heavily oriented towards tourism such as some Caribbean countries and some African countries such as Kenya and Tanzania are likely to face significant impacts on the level of income and income inequality due to their economic specialization patterns.

All the open issues discussed above raise important topics of debate regarding the level and the evolution of inequality in trade. The analysis of this aspect is the main goal of the present chapter. To that end, we explore different dimensions of trade, namely in terms of: (1) the number of positive bilateral relations, showing the densification of the integration process of individual countries into the world trade network; (2) the volume of trade, highlighting the importance of openness for the development of national GDPs; and (3) the number of sectors involved in trade in order to shed light on the differences regarding the internationalization of production networks. A long period of time (about fifty years) is considered, which proves beneficial in detecting major trends of trade inequalities not only in the short-term but also in the long-term.

2. Materials and Methods

As mentioned in the Introduction, the main goal of the analysis developed in this chapter is to investigate the existence and the dimension of trade inequalities. To that end, we use trade data covering a long period of time—50 years (1968–2016)—aiming to provide an understanding of the main changes which occurred in the long-term.

Trade data are retrieved from Chelem—International Trade Database (CHELEM-INT) from the Centre d'Études Prospectives et d'Informations Internationales (CEPII). For each year, we not only use aggregate data at bilateral level (i.e., total exports and total imports between each pair of countries included in the sample) but also consider sectoral data, covering the ISIC 4 digit-level, which includes 147 sectors. This is a vast amount of statistical information, corresponding to more than 40 million individual trade flows. This allows us to have a very intricate perspective concerning the interrelations that countries establish with their trade relations.

Regarding the countries included in the sample, due to the political changes that occurred in the first half of the 1990s, we have to consider two different sub-periods:

1. The sub-period 1968–1990, concerning in which 72 countries were included in the analysis;
2. The sub-period 1994–2016 with 84 countries.

The difference in the number of countries between these two sub-periods derives from the disintegration processes in Czechoslovakia, the USSR, and Yugoslavia. These three former countries gave place to thirteen new countries for which data are only available starting in 1994.

It is important to emphasize that these countries account for around 96 per cent of world trade and are thus adequate to represent the structure of most existing trade flows. It is, however, important to note that the smallest and least developed countries are underrepresented in the Chelem—International Trade Database (CHELEM-INT) due to data restrictions and data reliability issues.¹

This all leads to underestimating and underrepresenting the role of Africa in the world economy.² In this regard, it is important to note that our analysis is representative in terms of the major world trade flows in the manufacturing sector, where many African countries do not have as strong comparative advantages as in agricultural products and minerals.

The shortcomings of the data are likely to lead to overestimating the degree of world trade integration as the countries not being resembled in the sample are

¹ For further details on the database see http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=17 (accessed on 19 October 2020).

² For an enriching study and discussion on the unequal effects of trade on African farmers and businesses in mainly buyer-driven global value chains and the marginalizing effects of world trade on some of the countries' businesses compared to the gains associated with higher trading possibilities, see Gibbon and Ponte (2005).

proportionally more likely to show a low level of integration in the world trade network.³ Thus, the evidence we obtain regarding the inequality level in trade is probably underestimated.

The evaluation of trade inequality will be centered in three main vectors:

1. The number of trade partners;
2. The volume of trade;
3. The number of different sectors involved in bilateral trade.

These three aspects will be discussed taking each country in two different roles: as an exporter and as an importer. Obviously, the two roles are strongly interconnected, yet there are idiosyncrasies that we are able to capture only when the analysis is sensitive enough to account for these two levels of analysis.

Following we will briefly discuss the importance of each of the dimensions of trade inequality. The first element that needs to be considered in order to produce an evaluation of the level of inequality concerning integration into the world trade network is the number of positive trade flows. This dimension is assessed at the bilateral level and aims to scrutinize the relevance of the participation of each country in the globalization process. As extensively documented in the literature on trade globalization, one of its key characteristics is the interdependence among countries (Palan et al. 2020). In fact, as stated by Goldberg and Pavcnik (2007, p. 41), “globalization is a broad concept casually used to describe a variety of phenomena that reflect increased economic interdependence of countries. Such phenomena include flows of goods and services across borders, reductions in policy and transport barriers to trade, international capital flows, multinational activity, foreign direct investment, outsourcing, increased exposure to exchange rate volatility, and immigration”. Thus, through this first dimension we aim to see to what extent each country contributes and participates in this complex world trade system. To keep the analysis as simple as possible, we assume that a trade flow exists whenever it takes a positive value. If the bilateral trade flow does not exist, there is a zero for trade in that bilateral relation.

Obviously, the degree of participation of the different countries in world trade cannot be measured exclusively through the number of zeros/positive trade flows. A basic dimension that should be included in any evaluation is the volume of trade. While the tremendous growth of the total volume of world trade over recent decades,

³ All countries for which the data required to apply our method were available in the Chelem trade database (INT) were included in the analysis.

and more specifically since mid-1980s, is a fact, there are significant differences among countries that are important to emphasize, as they allow a clearer picture of the overall level of trade inequality.

Finally, the third dimension that will be considered in the empirical analysis is the number of sectors. This is an interesting and less studied aspect. However, in our perspective, it is critical to a more complete and detailed understanding of the reality under scrutiny. Effectively, we expect that this dimension reveals different stages of integration. While the most developed and richest countries probably trade in a large group of sectors, the less developed countries have less diversified specialization structures and therefore export and import a smaller group of sectors. The risks from these concentration patterns emerge at several levels. One of the most important is the fact that it constrains the possibilities of expanding the productivity of the resources applied in the production process, which does not allow countries to enter in stages of development characterized by higher growth, income and employment (Prebisch 1950; Imbs and Wacziarg 2003; Hausmann et al. 2007; Osakwe et al. 2018). In addition, countries become more vulnerable to external shocks, with significant effects on the wellbeing of the population.

3. Results and Discussion

3.1. Level of Integration in the World Trade Network

The average number of trading partners of each country sheds light on the level of globalization and its evolution over time. This number captures the degree to which each country is part of the global trade network. As shown in Table 1, the average number of trading partners has steadily increased since the 1960s, starting with 59.31 out of 71 potential trading partners in 1968 and evolving to an average of 66.56 trading partners in 1990 (the sample in the first sub-period contains 72 countries, meaning that each country has 71 potential trading partners). This implies that, on average, every single country traded with all but 4.44 countries by the end of the first investigation sub-period and made use of 94 per cent of all possible trading partners in the sample.

Due to the structural break in the data set and the formation of new countries in the wake of the fall of the iron curtain, the number of potential trading partners increased to 83 after 1990. It is thus no surprise that, from 1994 onwards, the absolute number of trading partners on average increased. In 1994, each country on average traded with 77.06 countries: this equals 93 per cent of all potential trading partners. By the end of the second sub-period, these numbers increased to 82.19 countries and thus 99 per cent of all possible trading partners, indicating that almost all countries

were fully integrated into the world trade network and traded with all other countries irrespective of distance or level of development.

Table 1. Inequality in trade (1968–2016).

Year	Average Number of Trade Partners per Country	Standard Deviation	Theil Index
1968	59.31	12.53	1.8654
1969	59.92	12.19	1.7394
1970	60.86	11.51	1.4945
1971	60.65	11.16	1.3805
1972	61.06	11.07	1.3332
1973	62.06	10.73	1.2216
1974	62.50	10.42	1.1243
1975	62.81	10.20	1.0691
1976	63.19	10.02	1.0235
1977	63.28	10.02	1.0204
1978	63.76	9.44	0.8850
1979	64.22	8.73	0.7409
1980	64.22	8.96	0.7842
1981	64.33	8.74	0.7397
1982	64.60	8.23	0.6440
1983	64.35	8.70	0.7422
1984	64.61	8.61	0.7167
1985	64.56	8.61	0.7199
1986	65.13	8.25	0.6425
1987	65.53	7.88	0.5774
1988	65.97	7.09	0.4605
1989	66.24	6.94	0.4281
1990	66.56	6.42	0.3629
⋮	⋮	⋮	⋮
1994	77.06	8.38	0.4826
1995	77.76	7.46	0.3038
1996	78.11	8.01	0.3986
1997	78.48	7.70	0.4301
1998	78.81	7.42	0.3739
1999	79.06	7.07	0.3523

Table 1. Cont.

Year	Average Number of Trade Partners per Country	Standard Deviation	Theil Index
2000	79.74	6.18	0.3296
2001	80.17	5.59	0.1660
2002	80.31	5.29	0.1513
2003	80.43	5.13	0.1226
2004	80.88	4.55	0.0790
2005	80.95	4.22	0.1107
2006	81.21	3.98	0.0321
2007	81.24	4.25	0.0608
2008	81.42	3.44	0.0112
2009	81.62	3.19	0.0401
2010	81.87	2.76	0.0242
2011	82.04	2.57	0.0257
2012	81.93	3.01	0.0333
2013	82.10	2.71	0.0227
2014	82.11	2.43	0.0143
2015	82.14	2.42	0.0433
2016	82.19	2.30	0.0225

Source: Table by authors.

As we are interested in trade inequalities and the dispersion in the participation of individual countries in international trade, the standard deviation is a first proxy to analyze. In 1968, the level of dispersion around the mean value showed the highest value of all years (standard deviation = 12.53). Throughout the first sub-period, the standard deviation decreased continuously, with the only exceptions in the years 1980 and 1983. This highlights that the countries in the sample converged towards a similar level of trade integration. This development is driven by the fact that the least globally integrated countries could increase the number of trading partners significantly over time. In detail, Albania, Bangladesh and Brunei had the fewest trading partners, with the development in Brunei being the most remarkable one: while trade took place only with 12 out of the 71 potential partners in 1968, Brunei increased their number of trading partners to 69 at the end of the investigation period. This is still below the average of 82.19 trading partners in 2016; however, no other country could catch-up as strongly regarding the number of trading partners over the course of time.

At the beginning of the second sub-period, the standard deviation increased, which is driven by the fact that the number of potential trading partners became higher and that new countries such as Bosnia and Herzegovina, Kazakhstan, Kyrgyzstan, and Macedonia had only begun to establish trade relationships. It is natural therefore that they only had a limited number of trading partners at the beginning of the 1990s. Thus, it is even more noteworthy that the standard deviation declined to a level of 2.30 in 2016. Analyzing the evolution of the standard deviation in the second sub-period, it is evident that, despite the overall converging trend, the standard deviation increased in 1996, 2007, and 2012.

As outlined, the standard deviation is a good proxy for dispersion and contains meaningful information to what extent data are distributed around the mean value. However, the standard deviation depends on the number of countries under study and the absolute size of the mean value. Therefore, in empirical studies on inequality, most often properly designed measures of inequality are used. The most well-known and universally used indicators are the Gini index (Gini 1921) and the Theil index (Theil 1967). If we compare these two measures, the former has some favorable characteristics that are not shared by the latter. The reasons why the Theil index is applied in this chapter are the following: the Theil index obeys the axiom of progressive transfers and can thus weight deviations from the reference value properly. The Gini index, on the contrary, weighs deviations at the edge of the distribution more strongly than in the middle, which can lead to misleading interpretations of results or to misleading conceptions of the role of individual countries regarding the forces of trade inequality (Cowell 1995; Amiti 1999). Moreover, the Gini index can react strongly to outliers and can only be decomposed without a residual if there is no overlap between the groups of interest, which in empirical studies most often is not the case (see for instance Cowell 1980; Dagum 1997).

For our underlying research questions, it is most adequate to work with a relative index, as the primary concern of this chapter is to shed light on the driving forces of trade inequality and the changes that are due to global developments over time. We therefore apply the relative (and not the absolute) Theil index to our dataset, which implies that the mean value of trading partners is the reference value in every single year. For relative indices, the reference value can thus change over time and is not fixed, as would be the case for an absolute Theil index.

For obtaining the relative Theil index of trade inequality, we must start by calculating the number of countries with which every single country has positive export flows. Let x_{iht} measure the exports of country i ($i = 1, 2, \dots, I$) to country

h ($h = 1, 2, \dots, H$) in year t . With the help of the dummy variable v_{iht} , we can distinguish positive trade flows ($x_{iht} > 0$ and therefore $v_{iht} = 1$) from zero trade flows ($x_{iht} = 0$ with $v_{iht} = 0$):

$$v_{iht} = \begin{cases} 1 & \text{if } x_{iht} > 0 \\ 0 & \text{if } x_{iht} = 0 \end{cases}. \quad (1)$$

In order to obtain the absolute number of countries with positive trade relations for a single country in year t , t_{it} , we calculate $t_{it} = \sum_{h=1}^H v_{iht}$.

In a further step, we calculate the mean value of positive trade flows for every single year $\mu_t = \sum_{i=1}^I \frac{t_{it}}{H}$.

The relative Theil index is then obtained as follows:

$$Theil_t = \frac{1}{H} \sum_{i=1}^I \sum_{h=1}^H \frac{t_{it}}{\mu_t} \ln \frac{t_{it}}{\mu_t}. \quad (2)$$

If all countries had the same number of trade partners in one year, then also the mean would be identical and total equality would prevail. As it would then hold for every single country that the number of trade partners was identical to the mean value, the relative Theil index would take the value zero, indicating no inequality. If, on the other hand, only one country would trade with all other countries and no positive trade relationships occurred between all other countries, then the maximum level of trade inequality would prevail.

As can be seen from Table 1, the development of standard deviation and relative Theil index can be co-evolutionary, but it does not necessarily have to be. Moreover, as the relative Theil index considers the differences in size of the dataset, the results between the two sub-periods can be compared more easily with one another.

Studying the results of the relative Theil index in more detail, the strong convergence trend throughout the investigation period becomes visible. It is highly remarkable that during the first decade of our study, the Theil index decreased from 1.87 to 0.89. This convergence trend can be explained by various factors. First, many developed high-income countries such as Canada, the United States of America, and Western European countries were characterized by above-average numbers of trading partners throughout the whole investigation period. As these countries kept the number of their trading partners almost stable while the average number of trading partners for the whole sample increased, many highly developed countries contributed to a reduction in the relative Theil index as other countries caught up

to these advanced levels of trade integration. Second, we can take a closer look at the countries that had the most significant effect on the reduction in the Theil index, which are countries that were among the least integrated at the beginning of the investigation period. Bolivia increased its number of trading partners from 31 to 48, Chile from 47 to 61, Bangladesh from 40 to 61, and Paraguay from 41 to 53 countries.

Thus, altogether, the Theil index could capture a lot of movement of individual countries with respect to their impact on inequality during this first decade.

A further remarkable convergence trend can be tracked with the relative Theil index lying at 0.46 in 1988 and 0.36 in 1990, respectively. It is again the development in Southern American countries that is driving the process. However, we can observe many incremental changes in the number of trading partners in many countries in contrast to the earlier period, where only a small number of South American countries had undergone major catch-up processes by increasing the number of trading partners by more than 10 countries. Thus, whereas the decline is remarkable in both decades, the underlying development processes are to some degree different in nature. Notably, in this second decade, the development of some African countries such as Nigeria even de-globalized from 59 trading partners in 1968 to 51 countries in 1978 and could export to 65 countries in 1988, exemplifying the fact that globalization is not a one-way street but that deglobalization trends can occur, e.g., due to political instability in a country.

During the second sub-period, between 1994 and 2016, the relative Theil index was characterized by both convergence and divergence trends, with the overall trend being that of decreasing inequality. Altogether, trade inequality during these decades remained at a comparatively low level with many countries being characterized by having reached full or almost total trade integration with all other countries in the sample. Only a small number of countries remained more isolated, whereas by the end of the investigation period, 66 out of the 84 countries had positive export trade relations with all other countries. This was true only for 25 out of 84 countries in the beginning of the 1990s. The most isolated countries in 2016 were Tunisia with 73 and Indonesia with 74 trading partners (out of 83 potential trading partners). This however shows again the high level of trade integration and low level of trade inequality as even the least integrated countries are well integrated in the global trade network.

In the book *Win-Win: How International Trade Can Help Meet the Sustainable Development Goals* (Helble and Shepherd 2017, p. xv), it is stated in the Preface that “the promotion of trade integration is not an objective of the SDGs, but is considered an important means to reach the goals”. Our evidence suggests, in the sample we

are analyzing, that a significant part of the trade integration process was completed in recent decades, as the number of linkages show a steady increase over the course of time. In the next section, we will dig deeper and show additional traits of the underlying transformation.

3.2. Additional Dimensions of Analysis

Taking the discussion above as a departure point, Tables 2 and 3 allow us to see evidence for each of the countries included in our empirical study. To detect the main trends that emerge from the data, we present evidence for the first and the last year available (1968 and 2016). In addition, we now explore the differences that can be found with regard to export and import flows.

Table 2. Analyzing trade flows of exporting and importing countries—1968.

Country	Exporting Country ¹			Importing Country ²		
	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³
Albania	36	6.77	0.57	40	14.94	0.84
Algeria	19	8.79	12.82	11	20.86	11.30
Argentina	1	24.25	22.05	7	28.65	17.21
Australia	1	42.49	42.76	2	45.66	49.57
Austria	2	64.17	26.58	3	43.61	35.49
Bangladesh	31	2.27	1.58	39	7.77	2.07
Belgium	3	75.41	104.05	3	49.42	115.72
Bolivia	40	1.99	2.04	21	21.31	2.16
Brazil	3	24.55	30.24	11	29.41	29.98
Brunei	59	0.90	1.57	41	10.30	0.51
Bulgaria	4	30.10	21.12	17	27.55	22.30
Cameroon	36	4.69	3.04	14	16.87	2.25
Canada	2	57.92	172.90	4	45.54	155.23
Chile	24	9.01	13.09	17	26.18	11.31
China	7	46.99	20.82	19	21.82	21.07
Colombia	11	10.58	8.34	18	23.83	9.16
Cote d'Ivoire	19	6.32	6.36	14	18.96	3.93
Cyprus	18	6.37	1.44	11	24.73	2.29
Denmark	1	73.76	34.55	3	45.61	42.17
Ecuador	23	4.20	3.99	21	21.68	3.48

Table 2. Cont.

Country	Exporting Country ¹			Importing Country ²		
	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³
Egypt	12	12.96	8.99	11	25.56	9.56
Finland	0	36.21	22.60	2	37.13	21.24
Former Czechoslovakia	3	49.23	38.19	13	24.06	39.94
Former USSR	2	45.44	119.47	12	31.68	117.91
Former Yugoslavia	5	38.99	18.67	8	32.46	24.94
France	2	104.51	159.66	2	60.70	186.00
Gabon	38	1.85	1.68	29	11.25	0.83
Germany	1	117.96	409.21	1	71.62	316.85
Greece	11	20.92	6.43	5	37.92	18.65
Hong Kong	5	40.01	18.14	9	36.17	24.09
Hungary	1	32.38	23.51	13	21.04	22.02
Iceland	21	6.00	1.25	13	22.46	1.82
India	1	39.66	23.18	9	26.66	28.44
Indonesia	5	11.82	12.52	19	27.06	10.30
Ireland	4	24.80	10.52	5	33.18	15.65
Israel	12	28.90	7.93	12	31.92	13.21
Italy	2	102.10	133.30	2	60.37	129.27
Japan	0	86.48	156.06	0	45.68	126.33
Kenya	13	10.42	2.24	17	28.23	4.15
Libya	39	2.93	25.84	7	33.17	9.56
Luxembourg	3	39.83	6.20	3	33.55	5.62
Malaysia	3	21.54	18.66	9	34.72	13.72
Malta	23	6.49	0.39	8	22.72	1.90
Mexico	9	21.01	20.80	10	27.04	30.62
Morocco	8	13.08	6.56	10	25.37	7.56
Netherlands	2	90.27	210.77	2	57.30	155.14
New Zealand	9	15.31	13.24	8	29.27	10.84
Nigeria	12	7.63	7.71	7	29.13	6.89
Norway	3	47.94	25.87	4	39.39	34.83
Pakistan	2	16.89	6.79	12	26.51	11.32
Paraguay	29	3.65	0.76	27	15.87	1.31
Peru	14	9.54	12.51	12	28.51	8.98

Table 2. Cont.

Country	Exporting Country ¹			Importing Country ²		
	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³
Philippines	14	11.68	14.53	18	26.85	18.50
Poland	2	46.08	35.31	6	26.72	37.24
Portugal	6	31.41	7.79	7	31.41	12.89
Romania	3	31.27	18.70	15	29.11	23.14
Saudi Arabia	25	3.25	21.60	14	30.08	8.91
Singapore	10	26.07	6.59	12	38.58	14.84
South Korea	13	16.83	6.28	28	19.61	17.77
Spain	2	59.11	20.67	2	48.44	44.11
Sri Lanka	4	7.65	4.33	19	21.48	4.61
Sweden	0	72.20	64.32	1	48.96	69.71
Switzerland	1	77.92	52.34	3	48.18	65.76
Taiwan	6	38.89	11.40	14	28.35	14.41
Thailand	5	14.59	8.58	13	34.52	14.81
Tunisia	24	8.00	2.52	14	19.77	3.27
Turkey	15	12.14	6.52	16	27.32	10.45
United Kingdom	1	110.06	180.84	1	75.11	210.84
United States	0	109.87	424.85	1	65.51	423.24
Uruguay	21	7.35	2.64	9	18.42	2.56
Venezuela	23	7.56	27.12	7	32.61	19.36
Viet Nam	32	9.44	0.85	24	26.23	13.41

¹ The number of zeros corresponds to the potential trading partners to which each country does not export. Average number of sectors is calculated analyzing how many sectors are, on average, involved per trade flow. ² The definition of the variables for each importing country follows the same rationale used for exporters. ³ Millions of current dollars. Source: Table by author.

Starting with the results for 1968 (Table 2), we verify that four countries already export to all the other countries included in our sample: The United States of America, Finland, Sweden, and Japan. If we define a more flexible threshold (a maximum of five zeros of trade), it is possible to conclude that the number of countries exporting to almost all the remaining countries increases to 35.

Table 3. Analyzing trade flows of exporting and importing countries—2016.

Country	Exporting Country ¹			Importing Country ²		
	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³
Albania	1	29.92	23.13	4	44.23	56.45
Algeria	5	19.86	361.43	1	59.76	559.18
Argentina	0	68.10	664.04	0	66.25	644.57
Australia	0	82.84	2113.11	0	86.77	1997.42
Austria	0	113.23	1666.76	0	98.65	1768.56
Bangladesh	0	43.22	405.29	0	54.71	519.80
Belarus	1	49.51	244.57	1	56.95	320.01
Belgium	0	122.77	4603.78	0	99.25	4027.18
Bolivia	6	23.07	83.28	0	53.66	99.96
Bosnia and Herzegovina	1	45.65	64.60	0	58.48	106.00
Brazil	0	100.31	2118.84	0	77.94	1729.46
Brunei	14	14.75	58.14	8	37.76	38.07
Bulgaria	0	89.08	295.96	0	71.45	364.34
Cameroon	2	26.52	41.96	2	51.89	72.83
Canada	0	98.23	4197.00	0	104.77	4834.90
Chile	0	60.04	693.79	0	76.98	694.66
China	0	130.71	22,833.99	0	102.27	14,133.64
Colombia	0	58.28	400.26	0	67.92	508.16
Cote d'Ivoire	1	26.84	112.88	1	57.90	99.93
Croatia	1	72.98	152.94	1	66.71	261.80
Cyprus	0	44.45	31.49	1	60.98	102.73
Czech Republic	0	110.51	1802.08	0	89.69	1742.08
Denmark	0	109.57	962.87	0	87.53	980.58
Ecuador	0	42.61	224.42	1	55.24	183.33
Egypt	0	70.36	235.48	0	72.34	776.39
Estonia	0	72.23	174.91	3	68.80	216.22
Finland	0	92.75	650.48	0	83.23	701.39
France	0	126.05	5611.48	0	112.11	6771.50
Gabon	4	15.36	49.61	2	37.81	23.82

Table 3. Cont.

Country	Exporting Country ¹			Importing Country ²		
	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³
Germany	0	131.96	15,483.99	0	110.35	11,814.79
Greece	0	88.57	304.74	1	77.51	505.66
Hong Kong	1	45.46	300.79	0	74.01	1994.14
Hungary	0	99.75	1208.76	1	77.86	1124.46
Iceland	2	39.18	62.71	0	63.59	86.55
India	0	117.40	2359.89	0	87.02	3260.21
Indonesia	0	96.73	1826.42	0	75.07	1572.90
Ireland	0	80.13	1522.31	0	77.33	913.11
Israel	1	74.54	656.21	2	77.23	691.78
Italy	0	127.47	5075.28	0	103.11	4444.54
Japan	0	94.27	7333.62	0	81.77	6237.91
Kazakhstan	0	31.86	361.28	2	63.60	351.79
Kenya	0	35.65	41.95	1	61.18	184.10
Kyrgyzstan	10	12.57	10.25	8	38.82	102.11
Latvia	0	71.41	146.84	5	63.66	244.06
Libya	9	9.22	79.92	6	37.55	110.83
Lithuania	0	83.61	294.75	1	69.59	320.08
Luxembourg	0	65.42	147.45	1	64.98	240.54
Macedonia	0	41.07	67.39	0	57.35	86.54
Malaysia	0	96.60	2801.93	0	78.41	1961.72
Malta	0	44.55	64.81	2	59.42	153.65
Mexico	0	94.42	4733.66	0	85.04	4176.41
Morocco	0	62.06	285.29	0	67.54	467.06
Netherlands	0	132.02	5100.69	0	132.53	4717.41
New Zealand	0	60.70	356.48	0	79.12	395.50
Nigeria	2	30.19	403.34	1	63.77	403.90
Norway	0	80.25	1046.71	0	89.70	870.16
Pakistan	0	67.01	217.04	0	65.30	521.35
Paraguay	3	20.80	97.45	6	45.72	127.23
Peru	0	53.57	420.45	1	67.55	407.80
Philippines	0	76.54	794.85	0	69.11	1262.09
Poland	0	117.43	2228.53	0	91.76	2648.90
Portugal	0	97.12	619.70	0	75.94	753.45
Romania	0	90.61	715.00	0	76.58	877.99

Table 3. Cont.

Country	Exporting Country ¹			Importing Country ²		
	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³	No. of Zeros	No. of Sectors (Average)	Volume of Trade (Average) ³
Russian Federation	0	96.81	3399.83	0	89.49	2291.70
Saudi Arabia	0	54.08	1780.50	0	74.18	1458.97
Serbia and Montenegro	0	72.59	183.41	0	77.05	261.88
Singapore	0	88.58	1762.58	0	87.41	1954.98
Slovakia	0	87.31	878.82	0	76.11	898.16
Slovenia	0	88.73	342.44	0	76.28	391.27
South Korea	0	103.69	5482.35	0	95.00	4159.27
Spain	0	125.80	3169.14	0	105.78	3566.98
Sri Lanka	0	59.19	108.68	0	58.70	207.91
Sweden	0	105.80	1594.68	0	90.05	1593.89
Switzerland	0	110.58	3540.27	0	104.45	2758.36
Taiwan	0	95.52	3293.25	0	78.53	2392.06
Thailand	0	107.41	2452.01	0	88.40	1991.86
Tunisia	0	58.31	169.82	1	58.69	239.24
Turkey	0	111.01	1307.91	0	86.20	2042.05
Ukraine	0	83.30	447.66	0	74.48	539.31
United Kingdom	0	123.34	4613.78	0	100.48	7140.79
United States	0	124.07	13,666.49	0	107.33	23,914.59
Uruguay	0	36.55	95.34	1	57.55	126.68
Venezuela	4	26.76	331.45	2	51.70	282.70
Viet Nam	0	93.84	2293.67	1	74.27	2384.79

¹ The number of zeros corresponds to the potential trading partners to which each country does not export. Average number of sectors is calculated analyzing how many sectors are, on average, involved per trade flow. ² The definition of the variables for each importing country follows the same rationale used for exporters. ³ Millions of current dollars. Source: Table by authors.

Despite the idea that a significant number of countries export, at the beginning of the period, to a vast group of other countries, contributing to a more complex world trade network, it is also true that there are 17 countries that do not export to 20 or more of the remaining countries. At the top of this list, we identify the following cases: Brunei (59 zeros, meaning that this country does not export to 59 countries of the group of potential partners), Bolivia (40), Libya (39), Gabon (38), Albania (36),

and Cameroon (36). The simple average of the number of zeros of trade in 1968 is 11.68.

Moving our attention now to the analysis of the volume of trade, the evidence shows that in the first places are, as expected, the largest, richest, and most developed countries. In this context, it is possible to highlight the cases of the United States of America, Germany, the Netherlands (making clear the importance of ports in the context world trade), the United Kingdom, and Canada.

The evidence discussed so far concerns export flows. The results for import flows show, however, a high overlap in terms of general conclusions. Japan is the only importing country that, in the first year of analysis, imported from all trading partners, but four other countries import from 70 partners (out of 71)—Sweden, the United Kingdom, Germany, and the United States of America. Only a small group of nine countries has more than 20 zeros in bilateral trade relationships. This occurs in the following cases: Ecuador (21), Bolivia (21), Vietnam (24), Paraguay (27), South Korea (28), Gabon (29), Bangladesh (39), Albania (40), and Brunei (41).

Regarding the volume of trade in terms of imports, the group of countries in the top positions is very similar to those in the top in the case of exports, the most important difference being the appearance of France in the fourth position (while occupying the sixth position regarding exports).

A final element presented in Table 2 is the average number of sectors involved in bilateral trade, which allows us to evaluate another dimension of trade inequality. Concerning the exporting countries, the average number of sectors ranges between 0.9 in the case of Brunei and 117.9 in the case of Germany. Five countries—four European countries (Germany, the United Kingdom, France, and Italy), and the United States of America—have an average of more than 100 sectors. In turn, nine countries have an average value between 57.9 and 90.3. Thirty-four countries have an average value below 20 while 23 of them have a value below 10.

The relevant values for the analysis of imports are less dispersed. The United Kingdom—the country importing on average the vastest group of sectors—has a value of no more than 75.1 sectors (in a total of 147 sectors under analysis). Besides the United Kingdom, only Germany, the United States of America, France, Italy, and the Netherlands import more than 50 sectors on average. On the other hand, the lowest values are 7.8 (from Bangladesh) and 10.3 (Brunei).

Comparing, in overall terms, the key facts emerging from the analysis of trade inequality in 1968 and 2016, i.e., analyzing Tables 2 and 3 together, some critical conclusions should be retained. First, regarding the number of zeros of trade, we identify an extraordinarily strong densification of the world trade network,

suggesting a progressive integration of less developed countries in that network. While the average number of zeros of trade in 1968 was 11.68, in 2016 the value for this variable decreased to 0.81, with only two countries having 10 or more bilateral relations without trade, namely Brunei, with 14 zeros, and Kyrgyzstan, with 10 zeros.

Second, as expected and extensively documented in the literature, the volume of trade has very significantly increased over recent decades (see for instance Palan et al. 2020). Analyzing in more detail the ranking of countries in terms of volume of exports, three countries show a tremendous evolution:

- China, rising from the 28th position in 1968 to a clear 1st position at the end of the time period;
- South Korea, which rose from the 55th to the 6th position;
- Mexico, rising from the 29th to the 9th position.

Third, there is a remarkable increase in the average number of sectors involved in each bilateral trade relation. While at the beginning of the period the average was 32.08, in 2016 this value dramatically increased to 74.80 sectors.

The results for 2016 are shown in Table 3 and allow us to emphasize some other aspects. Starting with the number of zeros in the export flows, besides the two countries already mentioned, only the following countries have more than one zero in their export flows: Bolivia (6), Algeria (5), Venezuela (4), Gabon (4), Paraguay (3), Iceland (2), Cameroon (2), and Nigeria (2). Regarding import flows, only seven countries have zeros of trade with three or more countries. These countries are Kyrgyzstan, Brunei, Paraguay, Libyan, Latvia, Albania, and Estonia. A final aspect that should be highlighted concerns the number of sectors involved in trade. Libya is the only country specialized in less than 10 sectors (in terms of exports) while 24 countries export on average less than 50 sectors. The top six (exporting on average more than 125 sectors) comprise the following countries: the Netherlands, Germany, China, Italy, France, and Spain. In turn, when we analyze the import flows, we conclude that 10 countries import on average more than 100 sectors, namely: the Netherlands, France, Germany, the United States of America, Spain, Canada, Switzerland, Italy, China, and the United Kingdom.

Taking all this evidence together, the existence of strong asymmetries regarding the participation of specific countries in the world trade network is clear. Moreover, it is also obvious that the richest and most developed countries participate more and have stronger links with other countries than low-income countries, measured in all the terms investigated in this chapter, i.e., number of trade partners, volume of trade, and number of sectors.

As the goal of this chapter is to shed light on both trade integration and economic inequality, Table 4 provides evidence concerning the economic development levels of the countries in the sample to then address the correlation between the level of economic development and trade integration. As outlined in the United Nations' World Social Report of 2020 (United Nations 2020a), for future policy strategies, it has to be kept in mind that advances in economic development do not necessarily lead to a higher level of equality within and between countries as the level of inequality remained rather heterogeneous for countries at the same level of development.

Table 4. Development levels of the countries in the sample.

Country	Country Code	Human Development Index (HDI) ¹	Gross National Income (GNI) per Capita (2011 PPP USD) ¹
Albania	ALB	0.785	11,886
Algeria	DZA	0.754	13,802
Argentina	ARG	0.825	18,461
Australia	AUS	0.939	43,560
Austria	AUT	0.908	45,415
Bangladesh	BGD	0.608	3677
Belarus	BLR	0.808	16,323
Belgium	BEL	0.916	42,156
Bolivia	BOL	0.693	6714
Bosnia and Herzegovina	BIH	0.768	11,716
Brazil	BRA	0.759	13,755
Brunei	BRN	0.853	76,427
Bulgaria	BGR	0.813	18,740
Cameroon	CMR	0.556	3315
Canada	CAN	0.926	43,433
Chile	CHL	0.843	21,910
China	CHN	0.752	15,270
Colombia	COL	0.747	12,938
Cote d'Ivoire	CIV	0.492	3481
Croatia	HRV	0.831	22,162
Cyprus	CYP	0.869	31,568
Czech Republic	CZE	0.888	30,588
Denmark	DNK	0.929	47,918
Ecuador	ECU	0.752	10,347

Table 4. Cont.

Country	Country Code	Human Development Index (HDI) ¹	Gross National Income (GNI) per Capita (2011 PPP USD) ¹
Egypt	EGY	0.696	10,355
Estonia	EST	0.871	28,993
Finland	FIN	0.920	41,002
France	FRA	0.901	39,254
Gabon	GAB	0.702	16,431
Germany	DEU	0.936	46,136
Greece	GRC	0.870	24,648
Hong Kong	HKG	0.933	58,420
Hungary	HUN	0.838	25,393
Iceland	ISL	0.935	45,810
India	IND	0.640	6353
Indonesia	IDN	0.694	10,846
Ireland	IRL	0.938	53,754
Israel	ISR	0.903	32,711
Italy	ITA	0.880	35,299
Japan	JPN	0.909	38,986
Kazakhstan	KAZ	0.800	22,626
Kenya	KEN	0.590	2961
Kyrgyzstan	KGZ	0.672	3255
Latvia	LVA	0.847	25,002
Libya	LBY	0.706	11,100
Lithuania	LTU	0.858	28,314
Luxembourg	LUX	0.904	65,016
Macedonia	MKD	0.757	12,505
Malaysia	MYS	0.802	26,107
Malta	MLT	0.878	34,396
Mexico	MEX	0.774	16,944
Morocco	MAR	0.667	7340
Netherlands	NLD	0.931	47,900
New Zealand	NZL	0.917	33,970
Nigeria	NGA	0.532	5231
Norway	NOR	0.953	68,012
Pakistan	PAK	0.562	5311

Table 4. Cont.

Country	Country Code	Human Development Index (HDI) ¹	Gross National Income (GNI) per Capita (2011 PPP USD) ¹
Paraguay	PRY	0.702	8380
Peru	PER	0.750	11,789
Philippines	PHL	0.699	9154
Poland	POL	0.865	26,150
Portugal	PRT	0.847	27,315
Romania	ROU	0.811	22,646
Russian Federation	RUS	0.816	24,233
Saudi Arabia	SAL	0.853	49,680
Serbia and Montenegro	SRB	0.787	13,019
Singapore	SGP	0.932	82,503
Slovakia	SVK	0.855	29,467
Slovenia	SVN	0.896	30,594
South Korea	KOR	0.903	35,945
Spain	ESP	0.891	34,258
Sri Lanka	LKA	0.770	11,326
Sweden	SWE	0.933	47,766
Switzerland	CHE	0.944	57,625
Taiwan	TWN	-	-
Thailand	THA	0.755	15,516
Tunisia	TUN	0.735	10,275
Turkey	TUR	0.791	24,804
Ukraine	UKR	0.751	8130
United Kingdom	GBR	0.922	39,116
United States	USA	0.924	54,941
Uruguay	URY	0.804	19,930
Venezuela	VEM	0.761	10,672
Viet Nam	VNM	0.694	5859

¹ Data drawn from Human Development Report of the United Nations Development Programme (UNDP 2018). Source: Table by authors.

Figure 1 shows that there is a positive correlation between per capita income and the participation in world trade (measured with the share of partners–sectors where there is positive trade in the total number of partners–sectors). In turn, Figure 2 shows

the correlation between the Human Development Index (HDI) and the participation in world trade. Both figures make clear that there is a positive link between the level of development and the participation in world trade, irrespective of the choice of measurement for economic development.

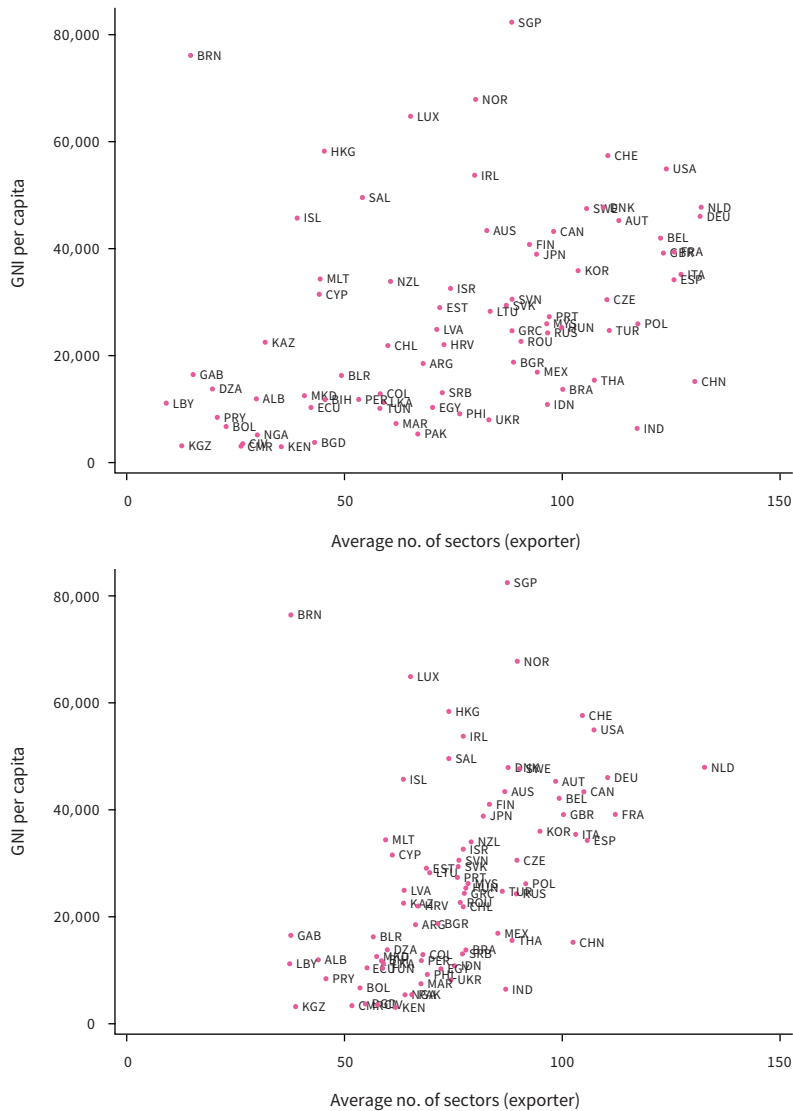


Figure 1. Development levels and diversification in trade. Source: Graphics by authors.

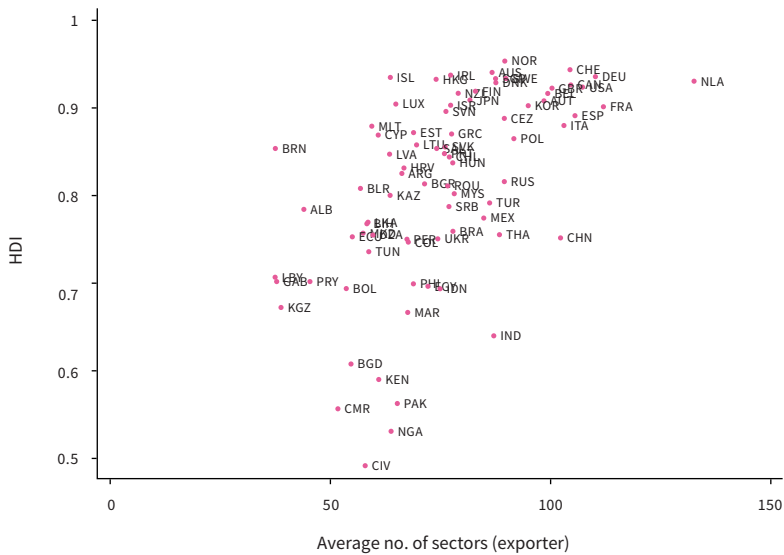


Figure 2. Development levels and diversification in trade. Source: Graphics by authors.

4. Conclusions

Using data from the export and import global trade network covering a period of five decades, this study characterizes the contours of the integration that occurred

among the countries in the sample (72 countries between 1968 and 1990; and 84 countries after 1994). Significant changes occurred at several levels. One of the most remarkable aspects is the progressive integration of the less developed countries in the world trade network. In fact, when we analyze the interdependence among countries, this is already significant at the beginning of the period and rises substantially over the next fifty years. By the end of the period, there are trade flows among almost all pairs of countries. However, significant differences persist regarding the volume of trade and the number of sectors involved in trade. This means that an important degree of inequality is evident in the current world trade structure, contributing in this manner to other dimensions of inequality, including wealth and income inequality.

The implications of this process are vast and profound and the debate over sustainable development brings new concerns into the discussion. The winners and losers of the previous years can change significantly as the concerns with working conditions and economic growth (SDG 8), gender equality (SDG 5), quality education (SDG 4), affordable and clean energy (SDG 7), and responsible consumption and production (SDG 12) become more important.

While the focus of the current chapter was the discussion of the transformations occurred in recent decades, it is important to bear in mind that, as more and more countries actively participate in world trade and less developed countries explore their advantages, the structure of comparative advantages and thereby also the global trade structures can significantly change.

However, another key aspect that should be taken into account is the fact that the COVID-19 pandemic can generate a reverse trend of globalization, making it even harder for the least developed countries to participate in international trade in the years ahead. In this context, the discussions about re-allocating production processes and re-shoring sensitive sectors are of great relevance, which can impact not only trade volume and specialization patterns but also influence inequality between countries and regions.

The inequalities in trade that we discuss in this contribution are related to three dimensions of international trade that can be captured with high granularity through the CHELEM-INT database. This very rich set of data allows us to characterize the trade relations between countries over a long period of time and for a wide range of products. Data for around 43 million bilateral trade flows were used to produce our empirical evidence. Despite its advantages, this dataset has three shortcomings that deserve attention because of their impact on the key conclusions obtained here. Let us briefly explore each of them.

First, the number of countries considered in the empirical analysis is limited due to data restrictions. Moreover, in the group of countries excluded from the sample, there is an over-representation of less developed and poor countries, namely from Africa and Asia. This is important because it means that some of the countries that are less integrated into the world trade network are not included in the empirical exercise. As highlighted by UNCTAD (2019), African countries account for less than three per cent of both global production and trade, whereas more than 16 per cent of the world population live in these countries. The challenges for African countries in participating and benefiting from international trade are expected to be high, as many of the least-developed African countries mainly rely on the export of primary goods, with high export concentration and thus little diversification, leading to high volatility in trade volumes and prices due to weather conditions and the development of international demand. Moreover, many African countries are faced with high transportation costs, which further hampers economic development. The African countries included in our analysis belong to the group of better-integrated African countries with a higher level of trade diversification. Altogether, the real level of world trade integration is probably lower than identified in this chapter and, therefore, the level of trade inequality can be underestimated.

Second, while we consider three different dimensions of world trade, another important aspect is not included due to data limitations: quality ranges in international trade flows. However, the empirical literature on international trade makes clear that there is an increasing trend pointing to intra-sectoral specialization, with more advanced countries and low-income countries specialized in different quality ranges within the same sectors, as occurs, for example, in the clothing and textile sectors (Schütz and Palan 2016). This fact contributes once again to a potential increase in the level of income inequality across (but also within) countries, as the production stages which are high-value-added and are characterized by high wages (e.g., design and marketing) remain in highly developed countries, whereas the production stages that are low-value-added and are characterized by low wages take place in developing countries. This amplifies the inequality and the share each country can earn by participating in trade in a specific sector. Inequality can however also rise within the countries, as low skilled workers are more at risk losing their jobs than high-skilled workers.

Finally, in our empirical application, we use the simplest method to evaluate the existence of a given bilateral trade flow. More specifically, we assume that a given flow exists whenever at least one dollar is exported/imported. This of course is a simplification and alternative thresholds can also be considered. Following that

strategy, lower levels of integration and greater levels of inequality will obviously emerge and could be a worthy path for future research.

Taking all these considerations together, we can easily verify that the conclusions emerging from our empirical analysis are very important but should be carefully interpreted in what regards the level of participation of less developed countries in the world trade network. In fact, the consideration of alternative methodological options implies, in almost all cases, a less favorable message in terms of trade integration and inequality reduction at the global level.

Beyond these aspects, it is important to stress that the implications of the identified trends in terms of trade inequality on the level of income inequality are far from linear. Theoretical and, above all, empirical studies produced in the most recent decades make it clear that not all countries benefit the same amount from globalization. For example, this is a key conclusion of Dollar and Kraay (2004). In their final section, summarizing the empirical results obtained, these authors state that,

we have identified a group of developing countries that have had large cuts in tariffs and large increases in actual trade volumes since 1980. Since China, India and several other large countries are part of this group, well over half of the population of the developing world lives in these globalising economies. The post-1980 globalisers are different from the rest of the developing world in terms of the extent of tariff cutting (22-point reduction compared to 10 points) and in terms of the increase in trade volume over the past 20 years (an increase from 16% to 32% of GDP, versus a decline from 60% of GDP to 49% of GDP). While growth rates of rich country have slowed down over the past several decades, the growth rates of the globalisers have shown exactly the opposite pattern, accelerating from the 1970s to the 1980s to the 1990s. The rest of the developing world, on the other hand, has followed the same pattern as the rich countries. (. . .) Thus, the globalisers are catching up with rich countries while the non-globalisers fall further and further behind (Dollar and Kraay 2004, F47).

Thus, among other aspects, the existence of an active export-led development strategy seems to be an important contribution to promote higher growth rates, as highlighted by the experience of countries such as Hong Kong, Singapore, Taiwan, and South Korea (the four Asian Tigers), as well as China, Malaysia, Thailand, India, Brazil, and Mexico (see for instance, Mishra 2020).

The aim of this chapter was to shed light on the multi-dimensional aspects of trade inequality. In this regard, we must be aware of the fact that we focus

on the role of international trade and are not able to discuss broader topics of inequality such as working conditions in textile factories in Bangladesh or the negative externalities stemming from the exploitation of lithium for the production of electro mobile cars in parts of South America. Social and gender aspects, human rights and environmental problems associated with economic integration need to be considered in sustainable economic policy-making. Especially the distribution of gains and losses from international trade between and within countries, between different groups of workers and between different age groups need to be tackled. Policy-making needs to be more aware of the fact that sustainable economic growth needs to be accompanied with social, economic, and political inclusion of large parts of the population and that many components of inequality overlap. Thus, policy making should not be focused on addressing one-dimensional policy goals but rather consider the many facets and interrelationships of inequality. This is the motivation behind the discussion we develop in this chapter. By introducing additional layers of analysis into the study of trade inequality, we enrich the knowledge available over a dimension of economic activity with very strong impacts on societies at large.

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