

WTO TRADE COST INDEX: INSIGHTS FROM THE 2025 EDITION¹

How do trade costs compare across sectors and regions? How have global trade costs evolved over time? This note uses the WTO Trade Cost Index estimates for 74 economies and 25 sectors between 1995 and 2022 to illustrate patterns in global trade costs across regions, income groups and sectors, as well as their evolution over time.

KEY MESSAGES

- **In 2022, international trade costs were, on average, three times higher than domestic trade costs.** Global trade costs declined between 1995 and 2022, but most of the reduction occurred before 2008. Trade costs then increased during the 2008-09 financial crisis and declined more slowly thereafter. The early gains were broad-based across regions, while developments after the financial crisis, particularly from the mid-2010s onwards, varied across regions.
- **Trade costs vary substantially across sectors.** Global trade costs are lowest in manufacturing, higher in services and highest in agriculture. Since 1995, the largest reductions in global trade costs have occurred in digitally deliverable services, such as business and professional activities, followed by manufacturing sectors such as transport equipment and electrical and optical equipment. By contrast, trade costs in agriculture and trade and transport services ended the period at broadly the same levels as at the beginning.
- **Trade costs also vary across regions.** They are highest in the African and South and Central American economies in the sample, often more than one-third above the global average, with African economies recording the highest costs. Europe and Asia have trade costs close to the global average. North America records the lowest costs, while the Middle East and the CIS region are moderately above the global benchmark.
- **Trade costs tend to decline as income per capita rises.** Middle- and low-income economies face higher trade costs than high-income economies. Least-developed countries (LDCs) have the highest trade costs, at around 50 per cent above the level observed in high-income economies. This disparity persists despite convergence: between 1995 and 2022, trade costs declined substantially faster in middle- and low-income economies than in high-income economies.

1 BACKGROUND

The WTO Trade Cost Index (TCI) measures global trade costs by comparing international and domestic trade flows. It therefore reflects the cost of trading internationally relative to trading domestically. This approach to estimating trade costs is conceptually close to the trade cost index initially proposed by Head and Ries (2001) and subsequently developed in several studies.²

These top-down measures capture all frictions that make international trade more difficult or costly than domestic trade, including transportation costs, trade policy barriers, costs associated with complying with foreign regulations, communication costs, transaction costs and information costs.

A major advantage of these indirect measures is that they make it possible to estimate total trade costs without having to collect and combine a vast amount of information. The disadvantage is that the

¹ This note was developed by Stela Rubínová and Irene Quaglia. The opinions expressed in this paper are those of the authors. They do not represent the positions or opinions of the WTO or its Members and are without prejudice to Members' rights and obligations under the WTO. Any errors are attributable to the authors.

² See for instance Anderson and van Wincoop (2004), Chen and Novy (2011), Novy (2013), Miroudot et al. (2013), Arvis et al. (2016).

estimates may also capture a broader range of factors. One example is home bias, or consumers' preference for goods produced domestically. However, to the extent that such factors do not change systematically over time or across economies, they do not affect the observed trends over time or patterns across regions.

The WTO TCI is based on a methodology introduced by Egger, Larch, Nigai and Yotov (2021) [ELNY] (see Annex 1). This methodology provides a unified, theory-based framework for estimating trade costs.

One novel feature of the methodology is that it provides sector-specific elasticities of trade flows to trade costs for both goods and services. This is a more realistic approach than that used in previous studies, which typically apply the same elasticity across sectors. Moreover, while previous studies relied on elasticities estimated by other studies, the ELNY methodology provides a unified framework for estimating elasticities using the same sample of economies and sectors as the trade cost estimates.

A second novel feature of the ELNY methodology is that it allows for the estimation of directional trade costs. This represents another step towards a more realistic measurement of trade costs. The cost of shipping a good from economy A to economy B may differ from the cost of shipping the same good from B to A. Import tariffs may differ by direction, while transportation costs may also vary along the same route depending on the direction of trade. Directional trade costs are also important for understanding how trade costs affect different groups of consumers (importers) and producers (exporters).

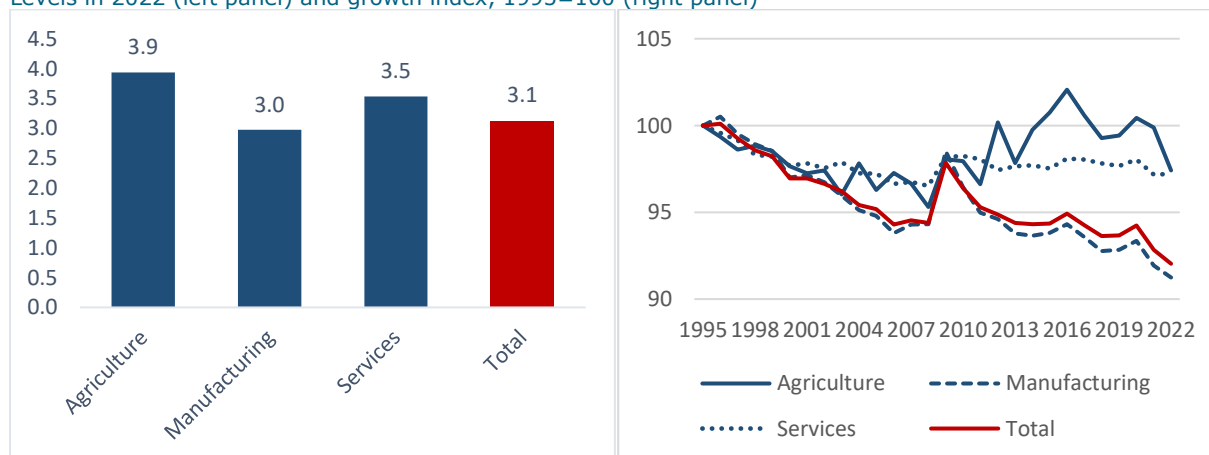
2 GLOBAL TRADE COSTS

The WTO TCI estimates suggest that global trade costs are around three times higher than domestic trade costs. Historically, global trade costs declined between 1995 and 2022. Most of the reduction occurred before 2008, after which trade costs increased during the 2008-09 financial crisis and then declined more slowly.

Global trade costs are higher in agriculture and services than in manufacturing (Figure 1, left panel). While global trade costs in all broad sectors were on a downward trend before 2009, their trajectories diverged thereafter (Figure 1, right panel). Trade costs in services have remained broadly stagnant since the 2008-09 financial crisis, despite only a modest increase in 2009. Trade costs in agriculture also ended the period at broadly the same level as in 2009, although they fluctuated more, rising until the mid-2010s before declining again.

Figure 1: Global trade costs by broad sector

Levels in 2022 (left panel) and growth index, 1995=100 (right panel)



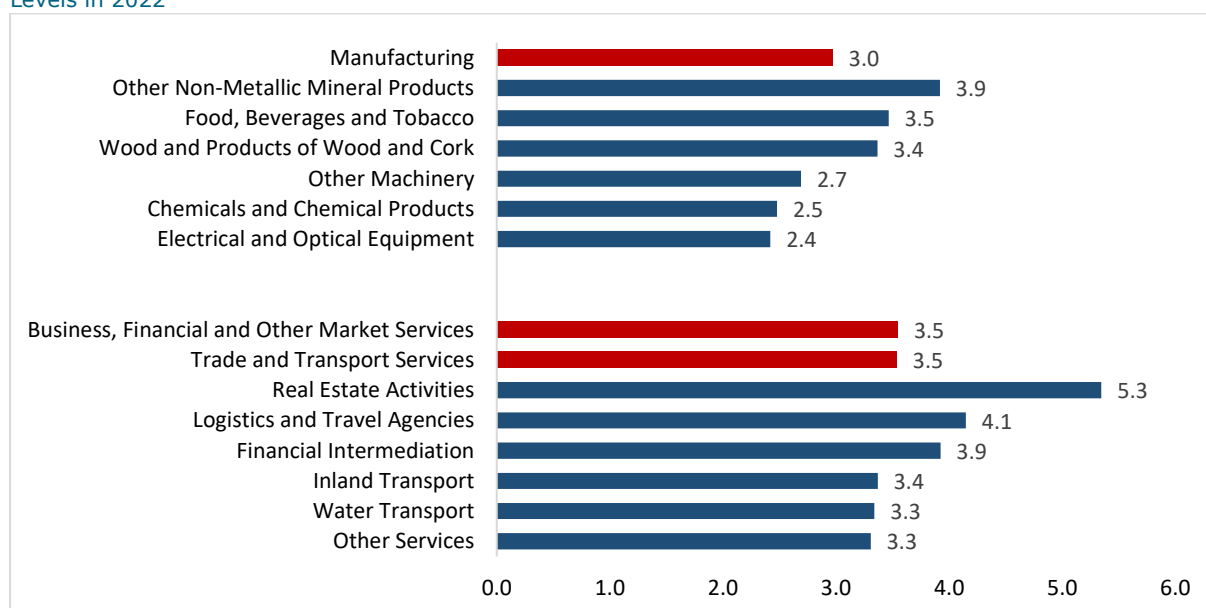
Note: The level of global trade costs can be interpreted as how many times higher are international trade costs compared to domestic trade costs. Hence, global trade costs in 2022 (3.1) correspond to an ad-valorem equivalent of 210 per cent.

Looking more closely at manufacturing and services reveals substantial variation across sectors (Figure 2). Among manufacturing sectors, electrical and optical equipment and chemicals and chemical products have the lowest trade costs, followed by other machinery. Other non-metallic mineral products have the highest trade costs among manufactured products, followed by food, beverages and tobacco, and wood and products of wood and cork.

Within services, other services – including community, environmental, cultural and personal services – as well as water transport and inland transport have the lowest trade costs. Their trade costs are comparable with those of some manufacturing sectors. By contrast, real estate activities, logistics and travel agencies, and financial intermediation have some of the highest trade costs across the economy.

Figure 2: Global trade costs in selected manufacturing and services sectors

Levels in 2022



*Other Services include Community, Environmental, Cultural and Personal services

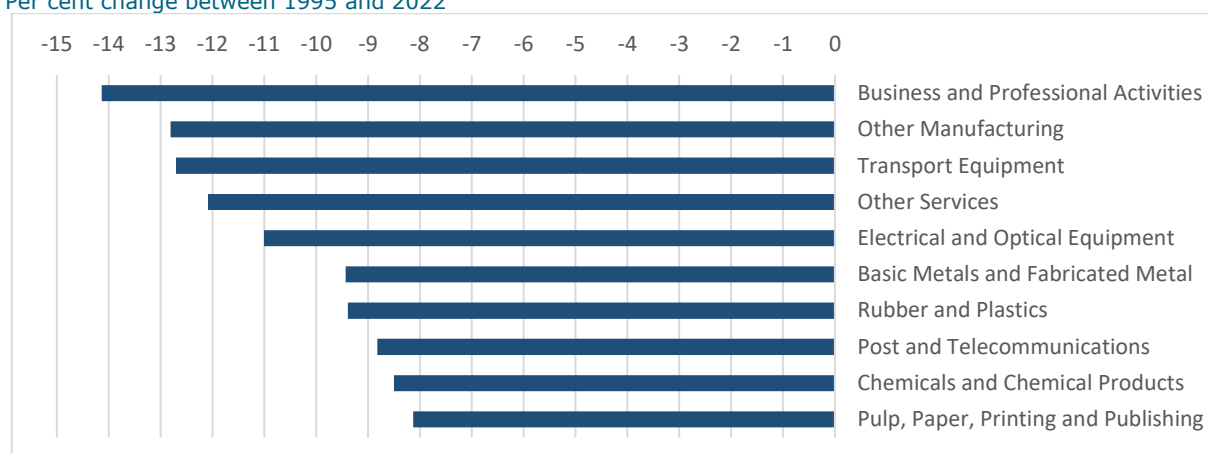
Note: The figure shows the global trade cost index for the three sectors with the lowest trade costs and the three sectors with the highest trade costs in manufacturing and in services. It also shows the aggregate global trade costs in manufacturing and in two aggregate groups of services sectors. Coke, Refined Petroleum and Nuclear Fuel was excluded.

Manufacturing sectors were among those that experienced the largest reductions in global trade costs between 1995 and 2022 (Figure 3). Of the ten sectors with the largest declines in trade costs over this period, most are in manufacturing. Transport equipment, other manufacturing, and electrical and optical equipment recorded the largest reductions.

Three services sectors – business and professional activities, other services, and post and telecommunications – were also among the ten sectors with the fastest declines in trade costs between 1995 and 2022. Business and professional activities, which include digitally deliverable services, recorded the largest reduction in trade costs of all sectors. This illustrates the transformative impact of digital technologies on cross-border trade in these services.

Figure 3: Ten sectors where global trade costs declined the most

Per cent change between 1995 and 2022



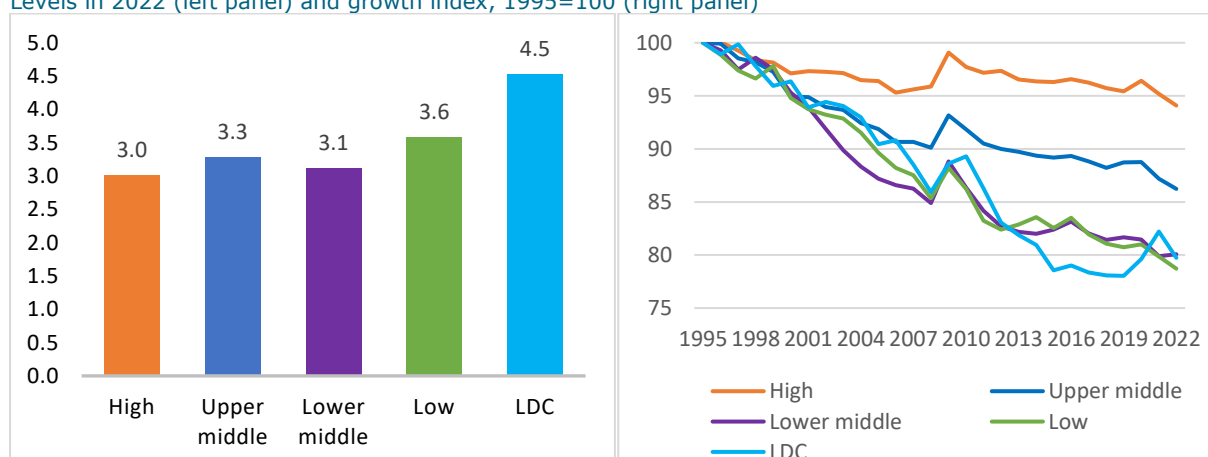
Note: The figure displays the ten sectors where global trade costs declined the most between 1995 and 2022. Coke, Refined Petroleum and Nuclear Fuel was excluded.

3 TRADE COSTS ACROSS INCOME GROUPS AND REGIONS

Trade costs are higher in low- and middle-income economies than in high-income economies (Figure 4, left panel).³ This disparity persists despite convergence: between 1995 and 2022, trade costs declined substantially faster in lower-income economies than in high-income economies (Figure 4, right panel). Low- and lower-middle-income economies recorded the largest declines over the period. Trade costs in least developed countries (LDCs)⁴ declined even more sharply until 2019, before increasing during the COVID-19 pandemic.

Figure 4: Trade costs by income groups and LDC status

Levels in 2022 (left panel) and growth index, 1995=100 (right panel)



Note: Income groups are based on the World Bank's country groupings in 2000.

³ Income groups are based on the World Bank's country groupings in 2000. Low-income economies included in the dataset are Angola, Bangladesh, Cameroon, Cambodia, Côte d'Ivoire, Democratic Republic of the Congo, India, Indonesia, Lao People's Democratic Republic, Myanmar, Nigeria, Pakistan, Senegal, Ukraine, and Viet Nam. Lower-middle-income economies included in the dataset are Belarus, Bulgaria, China, Colombia, Egypt, Jordan, Kazakhstan, Latvia, Lithuania, Morocco, Peru, Philippines, Romania, Russian Federation, Thailand, and Tunisia. Upper-middle-income economies included in the dataset are Argentina, Brazil, Chile, Costa Rica, Croatia, Czech Republic, Estonia, Hungary, Korea (Republic of), Malaysia, Mexico, Poland, Saudi Arabia, Slovak Republic, South Africa, and Türkiye. High-income economies included in the dataset are Australia, Austria, Belgium, Canada, Chinese Taipei, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovenia, Spain, Sweden, Switzerland, United Arab Emirates, United Kingdom, and the United States of America.

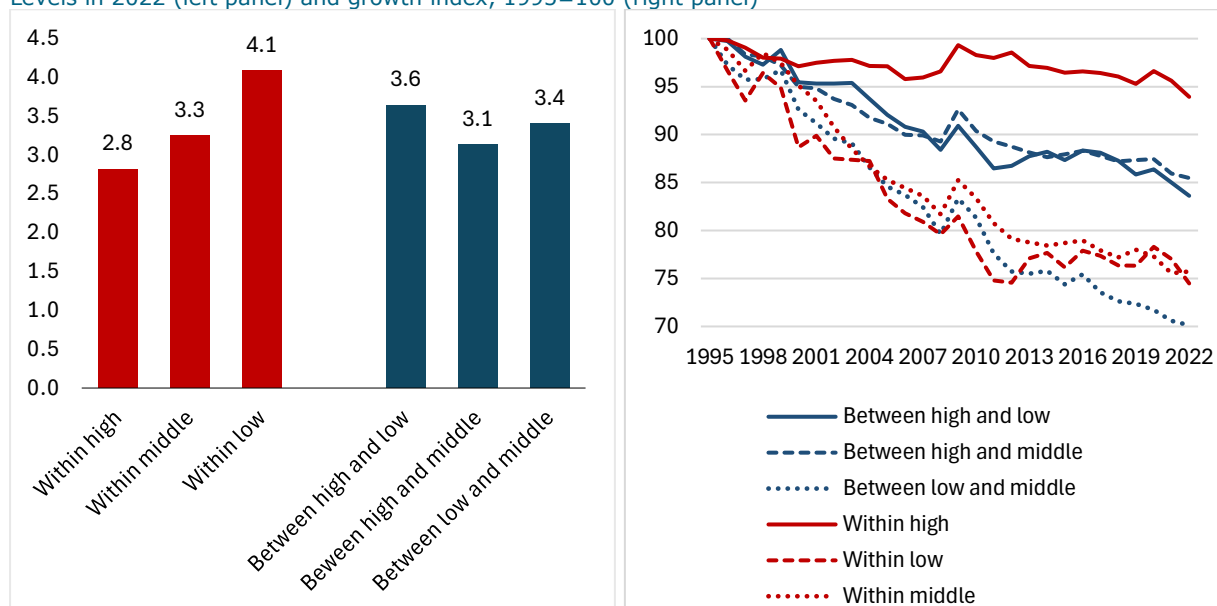
⁴ LDCs included in the dataset are Angola, Bangladesh, Democratic Republic of the Congo, Cambodia, Lao People's Democratic Republic, Myanmar and Senegal

Breaking trade costs down further by bilateral income groups shows that trade between lower-income economies faces the highest costs, followed by trade between low- and high-income economies (Figure 5, left panel). Trade costs are lower among high-income economies than among lower-income groups. Trade between high- and low-income economies is more costly than trade between low- and middle-income economies.

Trade costs between high-income and lower-income economies declined faster than those among high-income economies (Figure 5, right panel). Trade costs among middle-income economies and among low-income economies declined even more rapidly. Trade costs between middle- and low-income economies recorded the largest decline.

Figure 5: Trade costs within and between income groups

Levels in 2022 (left panel) and growth index, 1995=100 (right panel)

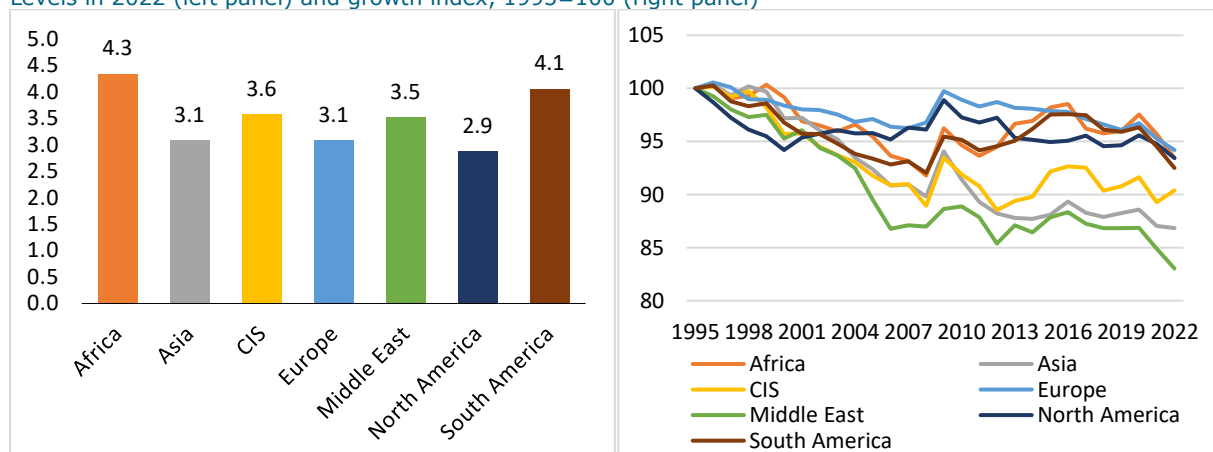


Note: The middle-income group is composed of upper-middle- and lower-middle income economies.

Trade costs also vary substantially across regions (Figure 6, left panel). They are relatively high in Africa and South and Central America, and relatively low in Asia, Europe and North America. Trade costs declined in all regions between 1995 and 2022, but by different amounts (Figure 6, right panel). While the early gains were broad-based across regions, developments after the 2008-09 financial crisis, particularly from the mid-2010s onwards, varied across regions.

Figure 6: Trade costs by region

Levels in 2022 (left panel) and growth index, 1995=100 (right panel)

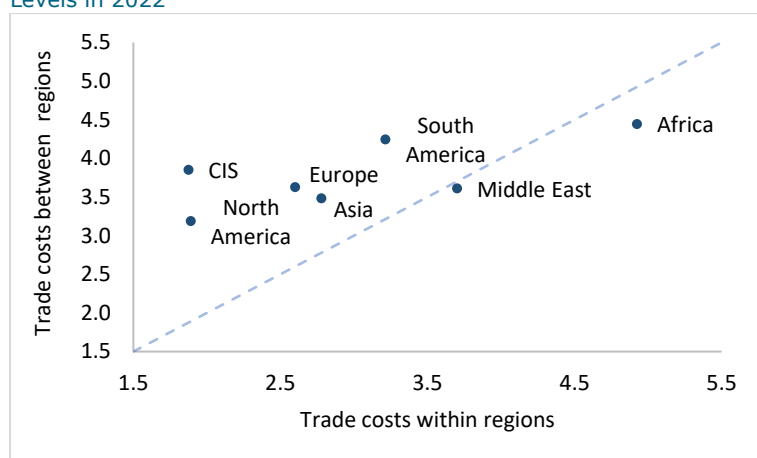


Note: CIS refers to Commonwealth of Independent States, including certain associate and former member states. South America includes South and Central American economies.

Trade costs are generally lower within regions than between regions, with two exceptions: the Middle East and Africa. Figure 7 shows each region's trade costs with intra-regional partners and with extra-regional partners, as well as a diagonal line that represents the situation where intra-regional trade costs are the same as extra-regional trade costs. If the region appears to the left of the diagonal line, then trade costs are lower when trade occurs within the region. The opposite is true if the region appears to the right of the diagonal line. In the Middle East, trade costs are approximately the same for trade within the region and trade with partners outside the region. In Africa, trade costs are higher within the region than when trading with economies in other regions.

Figure 7: Trade costs within and between regions

Levels in 2022



Note: CIS refers to Commonwealth of Independent States, including certain associate and former member states. South America includes South and Central American economies. The diagonal line represents the situation where trade costs within the region and with other regions are the same. If the region appears to the left of the diagonal line, then trade costs are lower when trade occurs within the region. The opposite holds if the region appears to the right of the diagonal line.

4 DIRECTIONAL TRADE COSTS

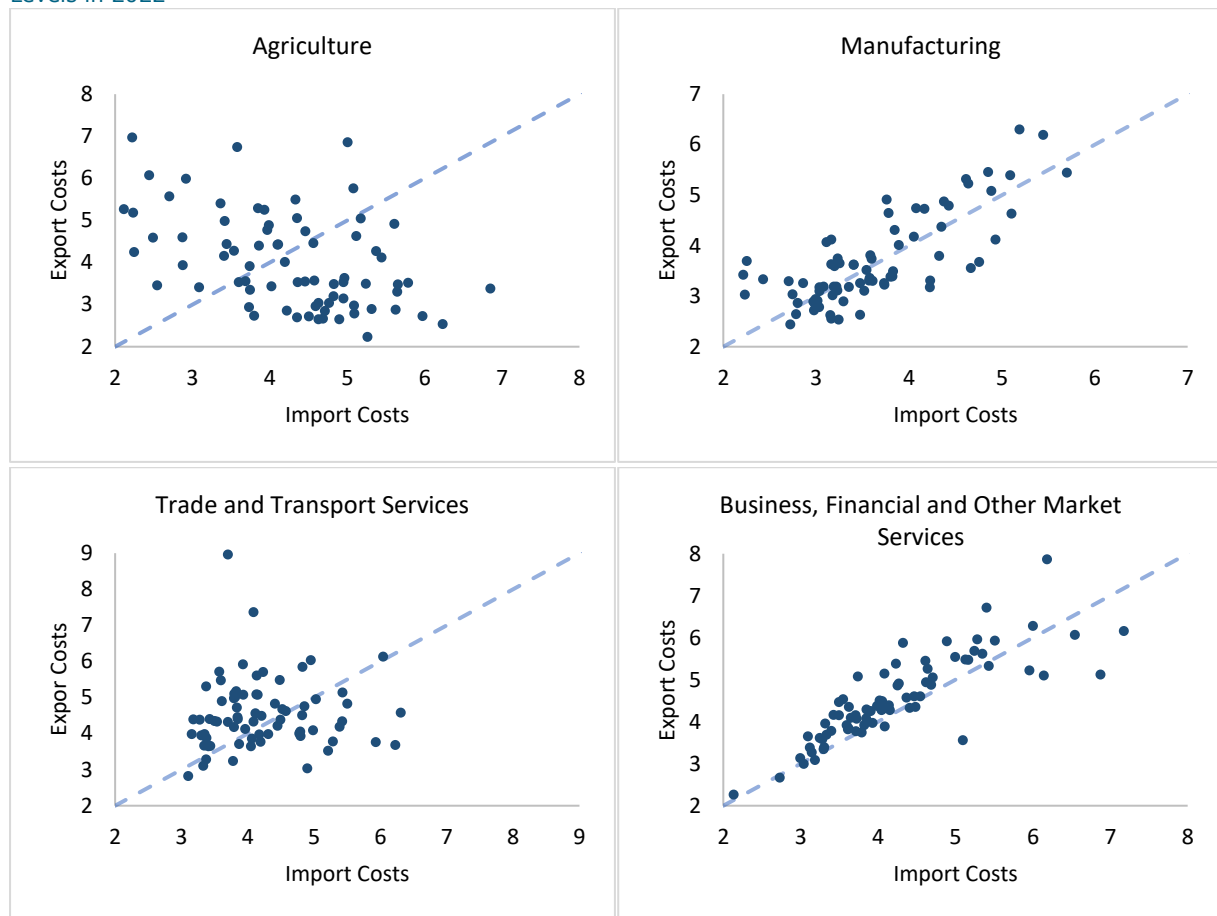
Economies may face different levels of trade costs for imports and exports. While many obstacles to trade are symmetric – for example, language differences may affect imports and exports in similar ways – some, particularly policy barriers, may be asymmetric.

For example, non-reciprocal preferential trade regimes may create asymmetries between import and export costs between LDCs and the economies granting preferences. Other factors may affect export costs more directly, such as access to trade finance. Transportation costs may also differ for the same route depending on the direction of trade. If container ships consistently return with less cargo, for example, shipping prices may be lower in that direction. These factors can therefore create asymmetries between import and export costs at the bilateral level.

Trade costs tend to be relatively symmetric in manufacturing and in business, financial and other market services, which comprise largely digitally deliverable services (Figure 8). There is also a clear positive correlation between export and import costs in trade and transport services, although this broad sector shows considerable asymmetry between the two sides of trade in some economies. In agriculture, by contrast, there is no systematic relationship between export and import costs. Some economies face very high import costs alongside very low export costs, while the opposite is true for others.

Figure 8: Comparison of import and export costs by broad sector

Levels in 2022

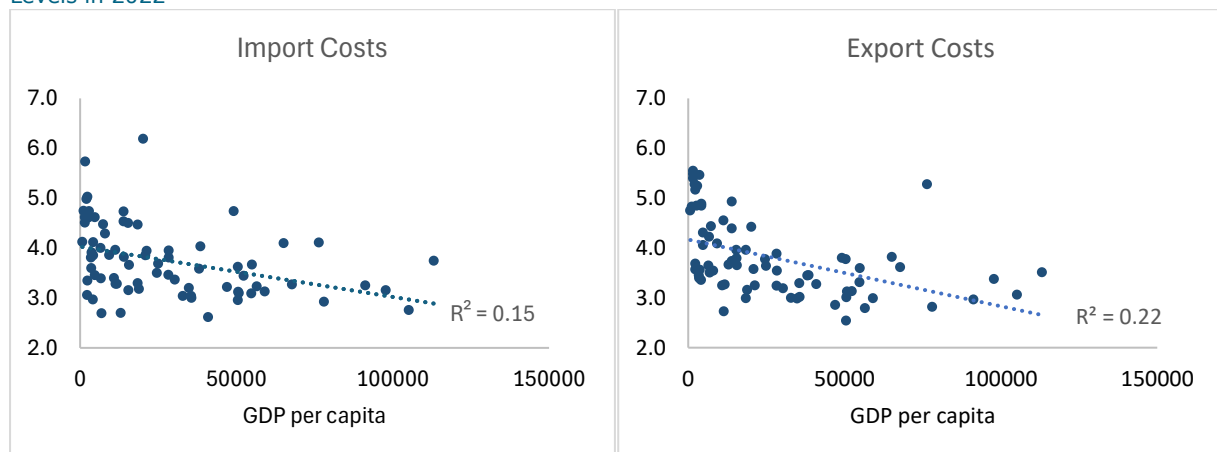


Note: Each dot represents an economy. Angola and Latvia were excluded from the chart on Trade and Transport Services.

At the economy-wide level, both export and import costs are negatively correlated with income per capita: richer economies tend to have lower trade costs (Figure 9). However, the correlation is stronger for export costs than for import costs. One possible explanation is that economies differ in what they import and export. While most economies import products across a broad range of sectors, exports tend to be more specialized. If an economy has a comparative advantage in sectors with relatively low trade costs, such as certain manufacturing sectors, its economy-wide export costs may be lower than its economy-wide import costs.

Figure 9: Export and import costs are negatively correlated with income per capita

Levels in 2022



Note: Each dot represents an economy. GDP per capita is in current USD.

At the level of income groups, there is greater symmetry between export and import costs across the various groups (Figure 10). The figure confirms that low-income economies face the highest trade costs, whether they are importing or exporting, and shows that it is trade between low-income economies that faces the highest trade costs.

Figure 10: Export and import costs by income group

Levels in 2022

		EXPORTER		
		High-income	Middle-income	Low-income
IMPORTER	High-income	2.8	3.2	3.7
	Middle-income	3.4	3.3	3.7
	Low-income	3.8	3.9	4.1

Note: The rows of the table represent importer regions, while the columns represent exporter regions. The middle-income group is composed of upper-middle- and lower-middle income economies.

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ANNEX 1: METHODOLOGY

For each sector and year, we estimate a constrained gravity model proposed by ELNY (2021), from which we obtain the coefficients on directional economy-pair dummies ($\widehat{d}_{ij}$). The model is estimated using the inter-country input-output (ICIO) tables from the 2025 edition of the Trade in Value Added (TiVA) database.⁵

The basis for all applications is the estimated trade openness index ($\widehat{d}_{ij}$) at the **exporter-importer-sector-year level**. It reflects all factors that increase sales to foreign partners relative to domestic sales.

To obtain aggregated global trade costs over time, by economy groups, broad sectors and sectors, we first aggregate the trade openness index to the economy-sector-year level using a theory-consistent weighted average. We generate three measures at the **economy-sector-year level**:

1. **Export index** = $\widehat{d}_{ij}$ averaged over all importers j and weighted by the estimated importer fixed effects from the gravity model.
2. **Import index** = $\widehat{d}_{ij}$ averaged over all exporters i and weighted by the estimated exporter fixed effects from the gravity model.
3. **Trade index** = $\sqrt{\widehat{d}_{ij} \cdot \widehat{d}_{ji}}$ averaged over all importers and weighted by the geometric average of importer's importer and exporter fixed effects.

⁵ TiVA 2025 data use ISIC revision 4 classification. We convert the data into ISIC revision 3.1 classification, using a correspondence table from WIOD (http://www.wiod.org/protected3/data16/SEA/SEA16_Sources.pdf) with two modifications: E37-39 and J59-60 are allocated to Other Services (not to Electricity, gas and water supply and Pulp, paper, printing and publishing, respectively).

The same theory consistent weighting principle is applied to further aggregate the economy-sector-year trade costs across economies and across sectors.

To obtain trade cost index (TCI) we transform these indices using a sectoral trade costs elasticity (θ):

$$TCI = (\text{Trade index})^{-1/\theta}$$

The parameter θ is estimated according to the methodology introduced in ELNY (2021). A higher θ means a higher responsiveness of trade to trade frictions. **Error! Reference source not found.** shows that for many services sectors θ takes on lower values than for goods, implying that trade in services reacts less to changes in trade costs.

Table 1: Estimated trade costs elasticities

Sector	Elasticity θ
Agriculture, Hunting, Forestry and Fishing	4.76
Mining and Quarrying	4.99
Food, Beverages and Tobacco	4.68
Textiles; Leather Products and Footwear	4.46
Wood and Products of Wood and Cork	4.65
Pulp, Paper, Printing and Publishing	4.60
Coke, Refined Petroleum and Nuclear Fuel	4.53
Chemicals and Chemical Products	4.96
Rubber and Plastics	4.55
Other Non-Metallic Mineral Products	4.24
Basic Metals and Fabricated Metal	4.52
Other Machinery	4.47
Electrical and Optical Equipment	4.47
Transport Equipment	4.44
Other Manufacturing; Recycling	4.41
Retail and Wholesale Trade	4.52
Inland Transport	4.96
Water Transport	4.70
Air Transport	4.00
Logistics and Travel Agencies	4.37
Post and Telecommunications	4.98
Financial Intermediation	4.42
Real Estate Activities	4.92
Business and Professional Activities	4.32
Other Services*	5.27

*Other Services include Community, Environmental, Cultural and Personal services

Note: These elasticities correspond to the parameter θ in ELNY (2021).