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## Deconstructing Deglobalisation: The Future of Trade is in Intermediate Services

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# Deconstructing Deglobalisation: The Future of Trade is in Intermediate Services

Richard Baldwin<sup>\*</sup>, Rebecca Freeman<sup>†</sup>, Angelos Theodorakopoulos<sup>‡</sup>

## Abstract

This paper contests the idea that the world has entered a post-globalisation era. It argues that rapid globalisation has evolved rather than stopped. Even though the global goods trade-to-GDP ratio reached its zenith 15 years ago, the rapid rise of services trade has persisted and now accounts for a one-fifth of international commerce. The waning goods trade is ascribed to a decrease in commodity prices and an unwinding of manufacturing supply chains. The paper makes a statistical and a logical case that the future of trade lies in services trade – especially trade in intermediate services.

**JEL codes:** F10, F13, F15, F60

**Keywords:** Intermediate services, Service-led development, Deglobalisation, Services trade

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## 1. Introduction

Is the world economy deglobalising? Many observers say ‘yes’. Irwin (2020), for example, writes: “The COVID-19 pandemic is driving the world economy to retreat from global economic integration...This retreat will not mark the end of globalization, a process that has reached a historically high level...The Great Recession of 2008–10 marked a historic turning point in the degree of global economic integration”.

This paper examines this ‘deglobalisation’ claim using simple statistics and economic logic. The main takeaway is that while the intensity of trade in goods peaked, or at least plateaued, 15 years ago, the world ratio of trade in services-to-GDP has continued to power ahead. Services exports now account for over a fifth of export earnings globally. In short, while globalisation is changed, it is far from dead.

This paper first takes a close look at the facts of and possible causes of the decline in the goods trade ratio, before turning to facts on trade in services. We then highlight the sources of the rise in services trade intensity. The paper closes with economic logic that suggests that the future of globalisation lies in trade in intermediate services.

## 2. The future of trade is not manufactured goods

The peaking of the world trade-in-goods to GDP ratio in 2008 is often seen as a sign that the world is deglobalising. This section presents evidence on how and why the goods peak is “for real”.

### 2.1. The goods trade ratio peaked in nominal and real terms

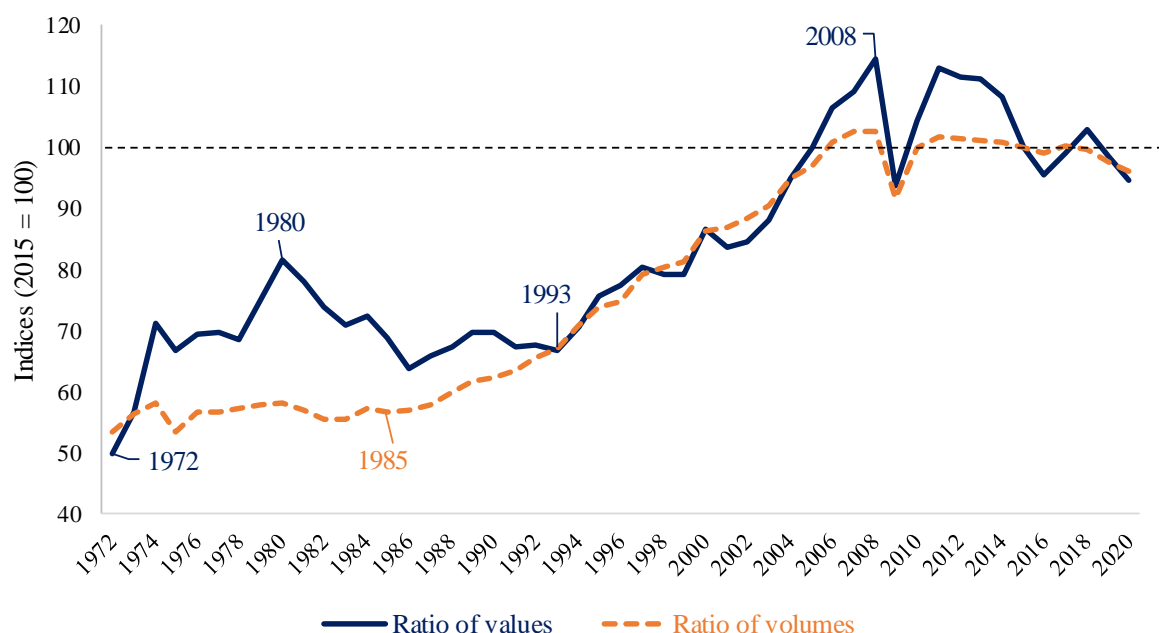
Figure 1 shows the ratio of the value of world exports to the value of world GDP. As can be seen by the solid line, the ratio of the value of world exports to the value of world GDP (both measured in current US dollars) peaked in 2008 and has declined substantially. The dashed line shows the same for the ratio of real goods exports and real GDP.<sup>1</sup> Focusing on the real ratio – which eliminates ructions caused by the oil shocks and inflation-fighting recession in the early 1980s – the data shows that the ratio rose gradually until the mid-1980s and then skyrocketed between 1985 and 2008. This phase of globalisation is variously known as the ‘second unbundling’, or the Global Value Chain (GVC) revolution. The ratio suffered a sharp crash during the Great Trade Collapse of 2008-09. It subsequently recovered, but then started a gradual decline until 2020.

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<sup>1</sup> The peak is far more muted in real terms. As it turns out, the composition of exports and GDP are very different, so important changes in relative prices strongly affect the ratio. To wit, the numerator world trade in goods is made up of about three-quarters manufacturing goods, with the remaining roughly equally split between agricultural goods, and mining products. The denominator, world GDP, is made up of roughly two-thirds services and only one-third goods. Given this mismatch, relative price changes can have a big impact on the ratio, and, as history would have it, relative price changes really did move the ratio.

**Figure 1. World goods exports to GDP ratio, 1972-2020**

*The world trade in goods ratio peaked in 2008 in value and volume terms*



**Key values and percentage point changes: World goods exports to GDP ratio**

	1972	1985	2008	2020	pp change ('85-'08)	pp change ('08-'20)
<b>Ratio of values (2015=100)</b>	50	69	114	94	46	-20
<b>Ratio of volumes (2015=100)</b>	53	57	103	96	46	-7

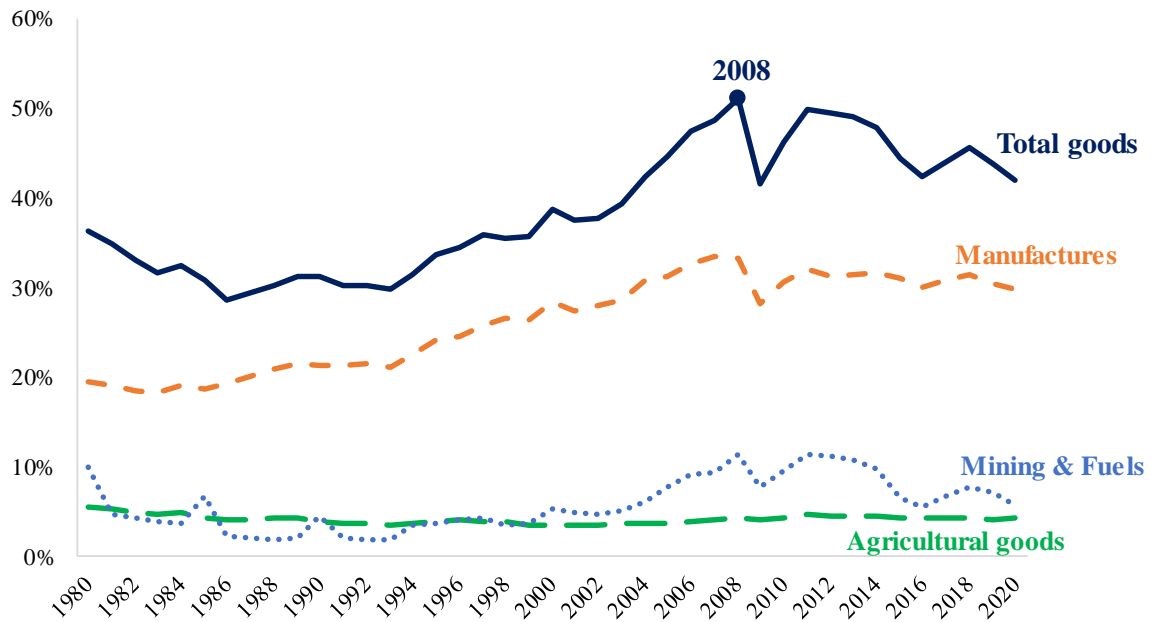
*Source: Trade data from WTO Stats. Data on GDP from World Bank World Development Indicators database.*

*Note: pp stands for percentage points.*

**2.2. Commodity composition of the 2008 peak**

World trade in goods is dominated by manufactured products. According to data from the WTO, in 2008, for instance, world goods exports consisted of 68% manufactured goods, 9% agricultural products, and 23% fuels and mining products. But, as it turns out, roughly 60% of the drop in the overall trade-to-GDP ratio was due to a drop in fuels and mining products – much of this due to a large and long price swing known as the commodity super cycle (Baldwin 2022a). The rest of the drop was due to a reduction in the trade of manufactures. More precisely, the GDP share for all traded goods (total goods in Figure 2) fell from 51% in 2008 to 42% in 2020 while the share of mining and fuels trade in world GDP dropped from 11% in 2008 to 6% over the same period. The share of manufacturing trade in world GDP dropped from 33% in 2008 to 30% in 2020 (Figure 2).

**Figure 2: World goods trade as a share of world GDP, by sector, 1980 – 2020**  
*About 60% of the drop in the ratio was due to mining and fuels, the rest manufactures*



**Key values and percentage point changes: World trade to world GDP ratio, by sector**

	Total goods	Agricultural goods	Mining & Fuels	Manufactures
<b>2008</b>	51.0%	4.3%	11.3%	33.3%
<b>2020</b>	41.9%	4.3%	5.6%	29.7%
<b>Drop (pp)</b>	-9.1	0.0	-5.7	-3.6
<b>Share of drop</b>	100%	-0.3%	62.6%	39.5%

*Source: Trade data from WTO Stats. Data on GDP in current USD from World Bank World Development Indicators database. Note: pp stands for percentage points. Figure appears as Figure 3 in Baldwin (2022a) and Figure 1 in Baldwin (2022b).*

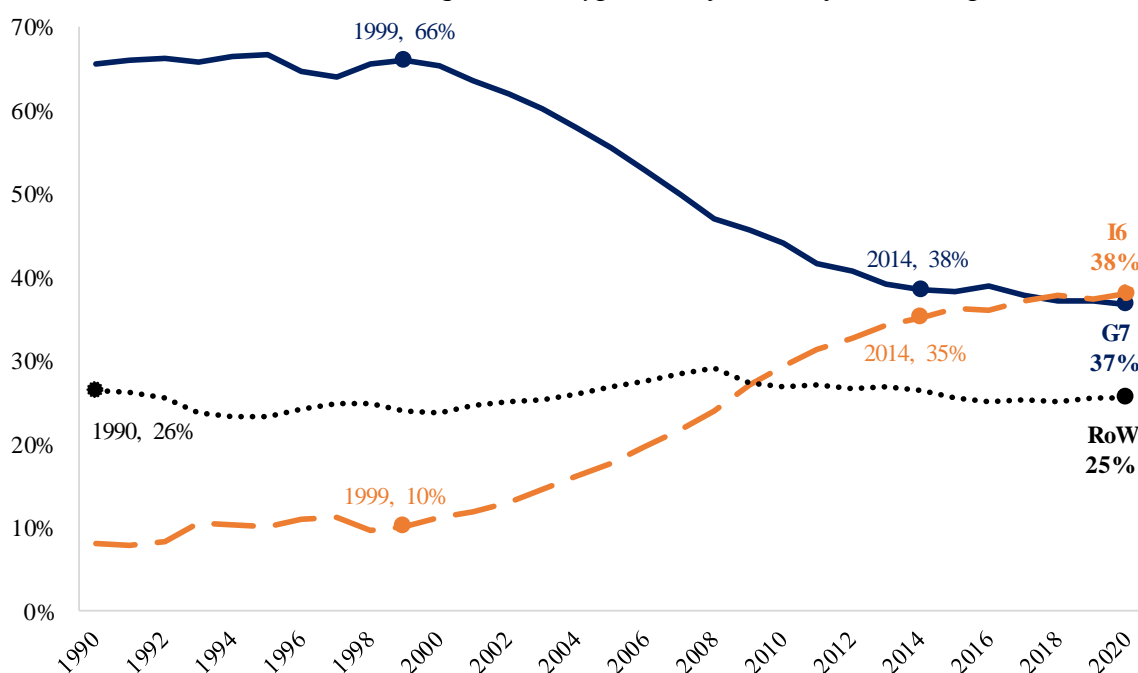
**2.3. Why is the manufacturing ratio falling?**

There are two, not mutually-exclusive hypotheses concerning the peak in the manufacturing export-to-GDP ratio. The first – which best fits the real ratio – is that the pattern is not a peak but rather a transition between equilibria. In Figure 1 the ratio is stable until 1985 suggesting one equilibrium, and then after 2008, suggesting another. In this reading of the data, the unusual thing is not the post-2008 behaviour but rather the 1985-2008 period (transition between equilibria) that was triggered by globalisation’s second unbundling (Baldwin 2006), also known as hyperglobalisation (Rodrik 2011).

Inspection of the data on the shift in the location of manufacturing during the 1985-2008 period provides some support for this reading of the data. As Figure 3 shows, global manufacturing has experienced a massive reorganisation. At the start of the second unbundling (1990) and through year 1999, two-thirds of global manufacturing was done in G7 nations. By 2014, the G7 share was down to 38%, with effectively the entire share loss showing up as a share gain from a handful of emerging economies (which we call the Industrialising-6, or I6 for short). These are the six economies that saw their share of global manufacturing GDP rise by at least half of one percentage point in this period. In order of largest gains, the I6 are China, India, Korea, Indonesia, Thailand, and Brazil. All the other nations in the world saw almost no change in their collective share of world manufacturing.

The first noteworthy point in the chart is that the G7's entire share loss shows up as a share gain by a handful of emerging economies (which we call the Industrialising-6, or I6 for short). These are the six economies that saw their share of global manufacturing GDP rise by at least half of one percentage point in this period. In order of largest gains, the I6 are China, India, Korea, Indonesia, Thailand, and Brazil. The second point is that the shift in shares slowed significantly from 2014. This pattern is suggestive of a transition between stable equilibria. In other words, the easy and obvious opportunities for combining high technology from G7 firms with low wage labour in emerging market factories were exploited and so the rate of offshoring slowed. Of course, this was not a zero-sum shift of manufacturing as the process accelerated, or was accelerated by, the rapid industrialisation of the I6. China, for instance, is now the largest manufacturer in the world with an industrial base that provides competitiveness beyond simple low costs.

**Figure 3. Share of world manufacturing GDP for G7, I6 & Rest of World, 1990-2020**  
*The 'transition between equilibria' hypothesis for manufactured exports*



Source: Authors' calculations based on data on manufacturing value added (current USD) from UNIDO. Notes: I6 includes China, India, Korea, Indonesia, Thailand, and Brazil. G7 includes France, Italy, Germany, UK, Japan, US, and Canada. Figure appears as Figure 2 in Baldwin (2022b).

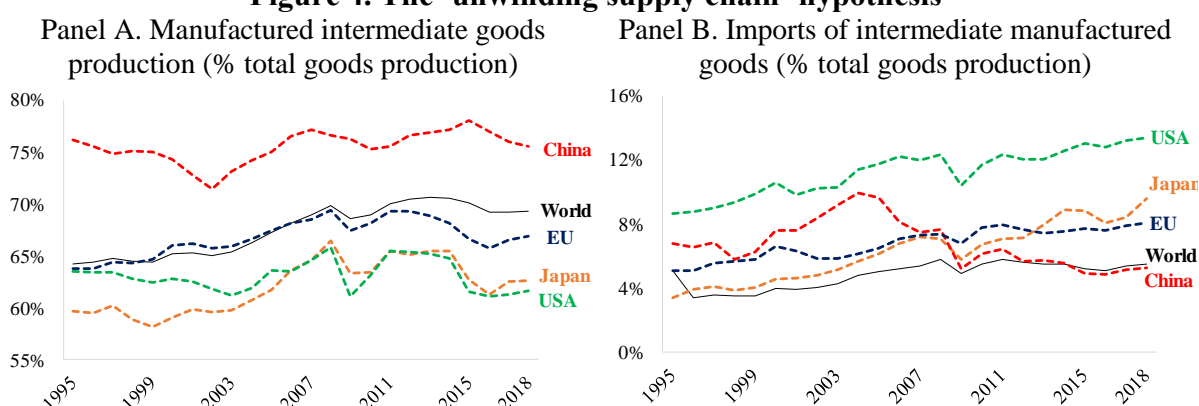
The second hypothesis is that global supply chains (GSCs) are unwinding (Antràs 2020), due, say, to automation that combines more production tasks into a single stage or machine (Baldwin 2012). Evidence for this hypothesis can be found by noting that supply chains involve intermediate inputs, so a key indicator of the importance of supply chains is the fraction of gross production that goes to intermediate good use, with high fractions indicating that supply chains that are more important, longer, or more complex.

The left panel of Figure 4, which draws upon data from the OECD Trade in Value Added (TiVA) database, shows that intermediate goods production as a share of total gross production for the whole world's manufacturing sector (thin black line). As this is global, the figure speaks to the state of supply chains combining data for domestic and international supply chains. What the chart shows is that supply chains became more important from the late 1990s to the mid-2010s – both domestically and internationally. This shows up very clearly in the chart as the share rises from 64% 1999 to 71% in 2014. After that, the share falls to 69% in 2018. The

magnitude of the fall is not very impressive, but if we compare the share to what it would have been had the 1999-2014 trend continued, the drop would be substantial. The chart also shows the national shares, and here we see that all major manufacturing hubs saw a decrease in supply chain importance from around 2012. Lastly, the fact that China's ratio is far above that of the other three manufacturing giants shows that China is more reliant on supply chains (domestic and international) than the US, EU, and Japan.

The right panel strips out the domestic component of supply chains and focuses on international supply chains by plotting the evolution of imported manufactured intermediate goods over total domestic production in manufacturing. Here we see diverse trends. For China, it is evident that international supply chains have become much less important since the early 2000s as domestic intermediates were largely substituted for imported inputs. For the other major manufacturing powers, reliance on imported intermediates has risen steadily throughout the period.

**Figure 4. The 'unwinding supply chain' hypothesis**



Source: Authors' calculations based on OECD Trade in Value Added Database (2021 edition). Notes: Goods refer to total manufacturing (sectors 10-33). Intermediate usage computed as gross output minus value added.

The timing of the unwinding is important for rejecting deglobalisation assertions in the public discourse. According to the Figure 4 data, deglobalisation trends started in 2013 – well before events which are typically cited as kick-starting the decline of globalisation.

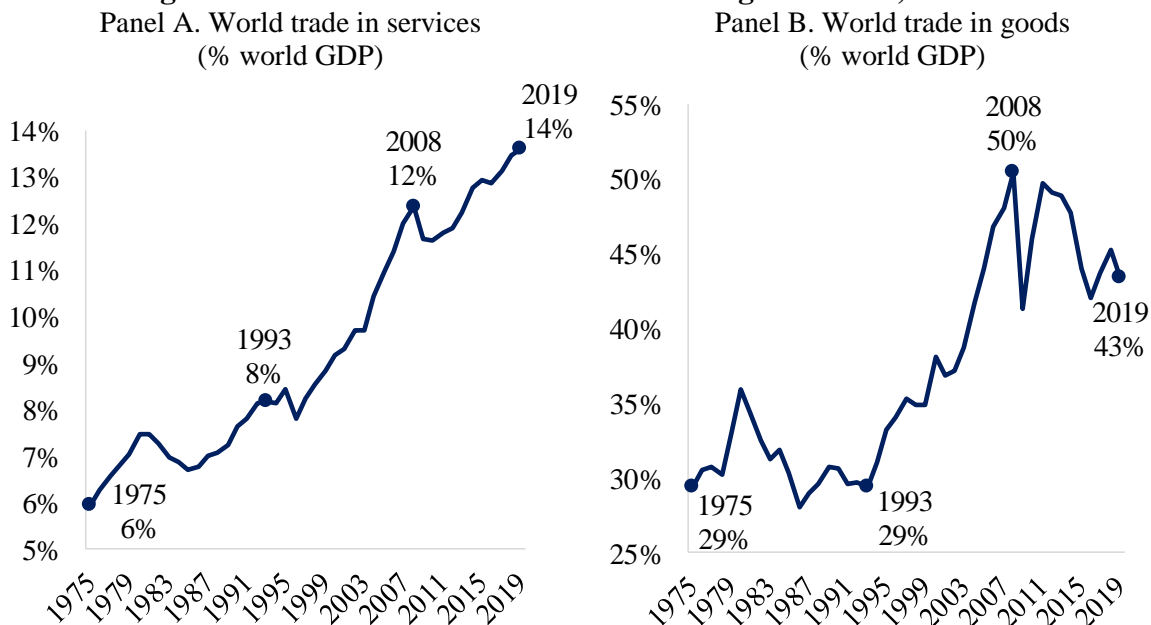
### 3. The future of trade is trade in services

This section shifts the focus to services trade by showing that the services-to-GDP ratio has not peaked, and by making the case that the future of trade lies in trade in services, especially trade in intermediate services.

#### 3.1. Trade in services: Trends and basic features

Figure 5 plots the evolution of world services trade versus world goods trade over the period 1975-2019. The left panel shows that the world's trade-to-GDP ratio in services has not peaked; it boomed before and after 2008, right up to the ructions caused by the pandemic and associated lockdowns. Covid-19 seriously distorted services trade from 2020 (see Box 1) so the chart stops at 2019. The trend in services trade is in sharp contrast to the behaviour of that in trade in goods peak (right panel). Note that the scales are very different in the two panels since goods trade still accounts for most of international commerce.

**Figure 5. World services trade versus world goods trade, 1975-2019**



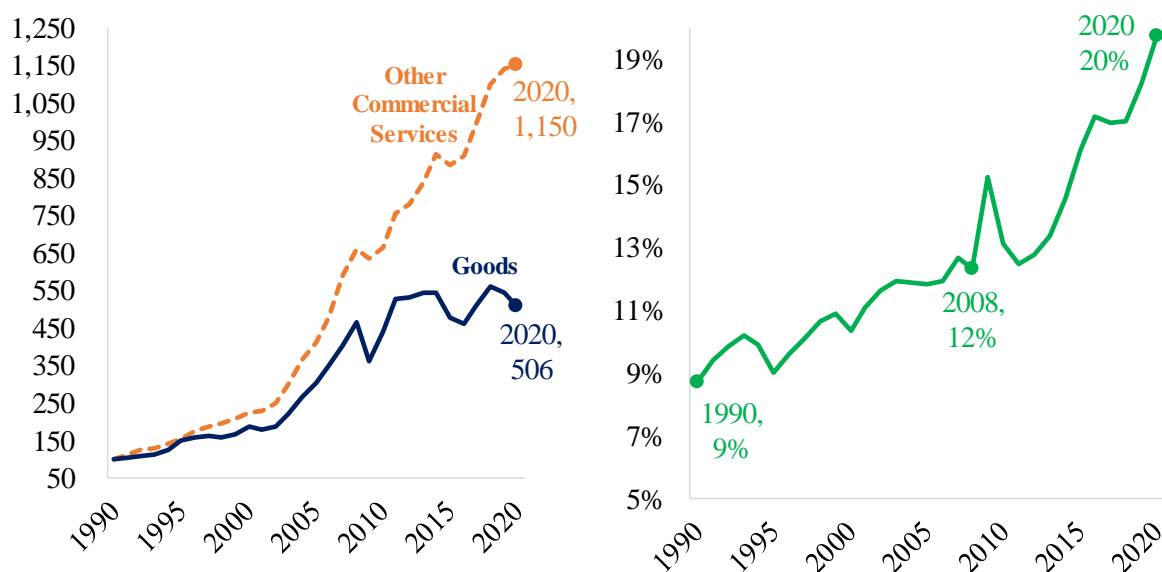
Source: Authors' calculations based on trade data from WTO Stats and data on GDP (current USD) from World Bank World Development Indicators database. Figure appears as Figure 1 in Baldwin (2022c).

The divergent behaviour of goods and services trade comes out even more clearly when comparing the value of the world flows, as in Figure 6. Here, we focus on Other Commercial Services (OCS) trade, which dominated by activities that – like trade in goods – are done in one economy and sold to another. The left panel of Figure 6 sets the value of trade to 100 in 1990 for both goods and OCS in order to emphasise trends rather than levels. It shows that worldwide OCS flows have grown faster than trade in goods for decades, but the divergent paths became more pronounced after 2008. While trade in goods recovered in 2010, it clearly grew slower afterwards. By contrast, OCS trade has continued to grow rapidly; between 1990 and 2020, goods trade expanded 5 times while OCS trade multiplied by 11 times.

Given the much faster growth of services trade as compared to goods trade, the relative importance of services in all international commerce has been rising steadily, as the right panel shows. In 1990, OCS accounted for only 9% of all trade in goods and services, but by 2020 that figure had tripled to 20%, and its rise shows no sign of abating.

**Figure 6. World trade in OCS versus trade in goods, 1990-2020**

Panel A. Cumulative world trade growth in OCS vs. goods, index (1990=100)      Panel B. Trade in OCS (% of total goods and services trade)



Source: Authors' calculations based on trade data from WTO Stats and data on GDP (current USD) from World Bank World Development Indicators database. Figure appears as Figure 4 in Baldwin (2022c).

### 3.1. Will services trade continue to grow faster than goods trade?

Using a purely extrapolative argument, Figures 5 and 6 make a clear case that the future of trade lies in services, not goods. But what mechanisms drove the faster rise of services trade over goods trade, and how confident can we be that this trend will continue? An argument for the continuation of the services trade trend can be built on four facts and a subsequent deduction.

The first fact is that services barriers are much higher than goods trade barriers, but they are falling faster. The second fact is that digital technology is reducing barriers to services trade. The third fact is that demand is not a limiting factor, nor is supply, which is the fourth fact. The deduction is simple: trade barriers for services are significantly higher and falling faster than for goods, which indicates that the growth in services trade is likely to persist for many years and will continue to be more rapid than the growth of goods trade. In short, it suggests that the future of trade lies in services. In the following paragraphs, we will discuss these four facts in further detail.

#### 3.1.1. Fact 1: Trade barriers for services are radically higher than for goods

The first point is that current trade barriers for most services are significantly higher than those for goods (Benz and Jaax 2022). This is the standard explanation for why trade in services is so small compared to the size of the services economy in all nations. When thinking ahead, it is important to distinguish two sources of services trade barriers: technical barriers related to the importance of face-to-face interactions in the production and delivery of services, and regulatory barriers. The latter will be difficult to remove, but the former will almost irresistibly be lowered by the rapid advance of digital technology.

On this point, it is noteworthy that the technical barriers to trade in most services are so high as to make them non-tradable. There are many regulatory barriers to services trade, but in most services sectors, the bulk of barriers are technological rather than regulatory or fiscal in nature. The reason for this fact is telling. The lack of fiscal barriers, such as tariffs, is not so much a

policy choice as it is a technical necessity. The main challenge is that imported services are difficult to track when they cross borders and thus are difficult to tax at the border. Indeed, the features of trade in services that make it difficult to collect statistics are the same features that make them difficult to tax.

Given that putting tariffs on services poses many challenges, domestic service providers who wanted protection from foreign competition would typically lobby for regulations that stymied foreign service providers. For example, competition from foreign architects is restricted by lack of mutual recognition of qualifications even among nations with high safety standards. As a result, most services barriers arise from domestic regulation (OECD 2023).

Removal of such barriers is not going well. The main multilateral framework for liberalising trade in services is the General Agreement on Trade in Services (GATS) from 1995 which comprises general obligations and specific commitments. The general obligations apply to all members of the World Trade Organisation (WTO) and are broad-ranging, including non-discrimination (most-favoured-nation treatment) and transparency (publication of the laws and regulations impacting trade). Specific commitments, by contrast, are set at the individual WTO member level and are specified by service sector, and the means of supply. In WTO parlance, the means of supply are called modes, and four are specified. Mode 1, which is similar to standard trade in goods, refers to services that are produced in one country and consumed in another (and this is where OCS falls). They are, so to speak, made-here-sold-there. Mode 2 is consumption abroad, for example tourism where citizens of one nation go to another nation to buy services. Mode 3 is the reverse of this, where firms from one country go to another country to sell services – the standard example of this being banks which set up a foreign branch in order to conduct business in another country. Lastly is mode 4, which is temporary migration where workers from one nation travel to another nation to do some work, in other words provide services, but they soon return home. A classic example of this is a technician from one nation who travels to another to, for example, help install a complicated, imported machine. The acronym TTIM summarises modes 1 to 4 as Trade, Tourism, Investment, and Migration.

WTO members made initial commitments to openness in GATS when it was signed, but progress has been stunted since. The last effort, the Doha Development Agenda, was suspended in 2015. Some progress has been made as WTO members decided to unilaterally remove regulatory barriers to attract world-class infrastructure service providers that boost their industrial competitiveness as part of the Washington Consensus (Baldwin 2016a). Additional liberalisation has been agreed within some regional trade agreements, especially the European Union, and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), signed in 2018, which includes provisions for the liberalisation of trade in services via the removal of barriers to market access and the establishment of rules governing the treatment of foreign service providers located within CPTPP members.

### **3.1.2. Fact 2: Digital technology is reducing obstacles to trading services**

The second fact is that digital technology is rapidly reducing the technological obstacles to trading services. To our knowledge, there are no empirical studies linking advances in digital technology to the expansion of OCS, but Oh (2020) estimates that digital technologies have reduced trade costs for digitally deliverable services. The rapid adjustment to telework during the pandemic provides abundant anecdotal evidence for the impact of digital technology on intra-national services trade. In the services trade context, digital transformation reduces the costs of international telework, what has been called telemigration, and the delivery of services like language training, translation, telemedicine and copyediting across borders (Baldwin 2019). Specifically, digital technology reduced transaction costs by easing communication,

coordination, and contracting between providers and consumers. It also facilitated quality improvement by enabling customization, feedback mechanisms, and rating systems.

The first and second facts taken together imply that services-trade barriers are declining significantly more rapidly than trade barriers for goods, and are expected to continue doing so for the foreseeable future since the services barriers started so much higher.

### **3.1.3. Export capacity is not a limiting factor**

The third fact is that export capacity is not as great a limiting factor in services as it is in goods. The argument rests on two considerations. First, services are very labour intensive compared to manufacturing and mining – to the extent which appropriate labour is the main constraint on production – not capital, infrastructure, or materials. Second, every nation has a workforce that is already producing business services. For all OECD member countries, for example, data in the OECD's Trade in Employment (TiM) Database (2021 edition) shows that about 45% of all jobs in OECD member countries are in the business services sector.

This capacity is not limited to developed economies. All emerging market economies have lots of workers trained to perform intermediate services domestically in all the occupations listed above. There is no need to develop new sectors, build factories, or develop farms or mines. Data in the TiM database show that there are tens of millions of office workers in emerging markets. For instance, in Brazil, China and India, the shares of business services sector jobs in year 2018 were 40%, 34%, and 19% respectively. In many other developing nations, the corresponding figure is over a third of workers. While not all of these could feasibly join the services export sector, the data make the point that the problem of export capacity in services sectors is quite different than that of export capacity in goods sectors.

### **3.1.4. Export demand is not a limiting factor**

The fourth fact is that demand does not serve as a limiting factor. Businesses in all nations heavily spend on services, and some of these services could potentially be provided by workers based in foreign countries. A rough idea can be had by looking at some figures for the importance of services in the world economy. According to the latest data from the World Bank World Development Indicators Database, just below 65% of world GDP is produced by the services sector. Zooming in on business services only, the share of world gross output that is in all business services was roughly 40% in year 2018, according to data from the OECD TiVA Database.

## **Box 1: Composition of services trade and impact of Covid-19**

Since few services pass through customs controls and few countries tax services imports, statistics on exported and imported services are systematically less detailed than statistics on goods trade.<sup>2</sup> Service trade figures are grouped in three high-level categories, as shown in the left panel of Chart A: transportation services, travel services, and Other Commercial Services (OCS). Transportation services are closely tied to trade in goods and thus driven by the same factors, so we do not consider them further here. By contrast, travel, of which tourism is a large part, is driven by forces that are quite different than traditional trade drivers since it involves moving customers to production, not production to customers. The third category, OCS, involves international commerce of the more traditional made-here-sold-there type.

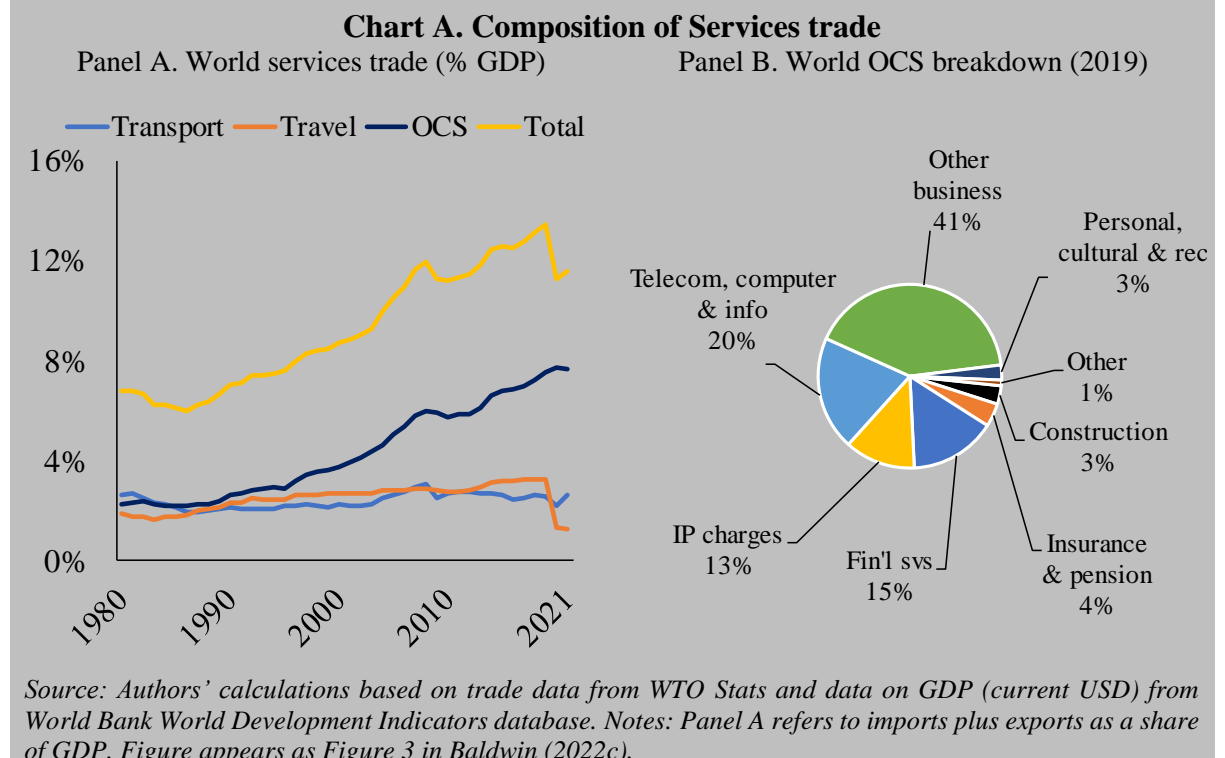
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<sup>2</sup> Services trade data are gathered either from balance of payment statistics or enterprise surveys. Both sources provide statistical agencies with the value of services imports and exports. The categories for reporting services trade were last updated in 2010 which, as Chart A shows, was just when the role of OCS started to take off. The data does not provide adjustments for prices, so it is not possible to display trade in services figures in real terms.

Reflecting these differences, Chart A shows that the three aggregates behaved very differently during the pandemic and associated lockdowns. Transportation roughly followed trade in goods, but travel was severely hit; it is still well below its pre-pandemic level. The OCS category now accounts for about 60% of all export of services and its share is growing fast.

The right panel of Chart A shows a breakdown of OCS. Reflecting the difficulties in gathering sound statistics on trade in services (compared to data on trade in goods), OCS is a grab-bag of things ranging from people paying for their Spotify subscriptions and US companies hiring call centre workers in Manila, to payments to large Indian outsourcing companies and Gazprom paying Ukraine for transit rights through its pipelines. The pie chart in the right panel shows the next standard level aggregation. Some of the services are recognisable, but over 40% is thrown into the ‘other business services’ category. All Indian service outsourcing and call centres are piled into ‘Telecom, computer & info services’ along with payments for international telecommunications. Bunching a utility-like service (telecom) together with offshored software development is typical of the non-analytic organising principle that seems to have been used in collecting the statistics.

The OCS category consists of a few big items and many small items. Some are easily recognisable. Among the bigger categories are Financial Services (15% of OCS), and payments for intellectual property rights (13% of OCS). The category Telecommunications, Computer and Information Services accounts for 20% of OCS. Much of this is made up of computer services related to software, but a large share is tossed into the category ‘Other computer services other than cloud computing’ (this is typical of the lack of precision in services trade statistics).<sup>3</sup>



<sup>3</sup> The largest sub-category of OCS is ‘Other Business Services’ (OBS). Peeling off another layer of the onion, the largest categories in OBS are: professional and management consulting services (37% of OBS), and technical, trade-related, and other business services not included elsewhere (TTOBS). Disaggregate figures for the TTOBS category are not available for the whole world, but some nations – like the US – provide more detail. These include engineering services (38%), leasing services (19%), and other business services, not included elsewhere (24%).

## 4. Thinking about the future pattern of trade in services

When thinking about the future of trade in services, two facts discussed above come to the fore. The first concerns the national sources of the future growth of trade in services and the second concerns the types of services which will be traded.

### 4.1. Services trade: Basic facts

A key factor that suggests the future of trade lies in services turns on the view of globalisation as arbitrage (Baldwin 2016b). That is, whenever relative prices of goods or services differ across nations, arbitrage is possible since the goods or services that are relatively cheap in one nation are relatively dear in the other. This is always a two-way arbitrage opportunity since the reverse cheap-versus-dear ranking holds for the other good or service in the relative prices. Again, noting the highly labour intense nature of most services production, the key to relative prices lies in the wage gaps among countries. As is well known, wages are far higher in developed nations than they are in emerging markets. For instance, a recent paper on international telework in Colombia found that, on average, a Colombian worker earns \$2.2 per hour working on occupations that are teleworkable while the average wage for such an occupation in the US is \$25 (Baldwin et al. 2021). The fact that US wages are, on average, more than 11 times higher suggests that there are plenty of arbitrage opportunities. Of course, the same occupation performed in the US and Colombia may be very different across a variety of dimensions, but the very large wage gap suggests that outsourcing service sector tasks from US offices to Colombian service workers would have the potential to be cost saving.

To gauge competitiveness, the calculation must take account of productivity differences. What really matters is the unit labour cost, not the wage per se. Indeed, as of today, the numbers suggest that high productivity more than offsets high wages in many types of services because it is the high-wage nations that dominate trade in services today. As Table 1 shows, in 2020 high income countries accounted for 75% of all OCS exports and 72% of all OCS imports. Their share of exports was little changed since 2010, but their share of imports rose from 66%. The shares for the rest of the world account for the balance of exports and imports.

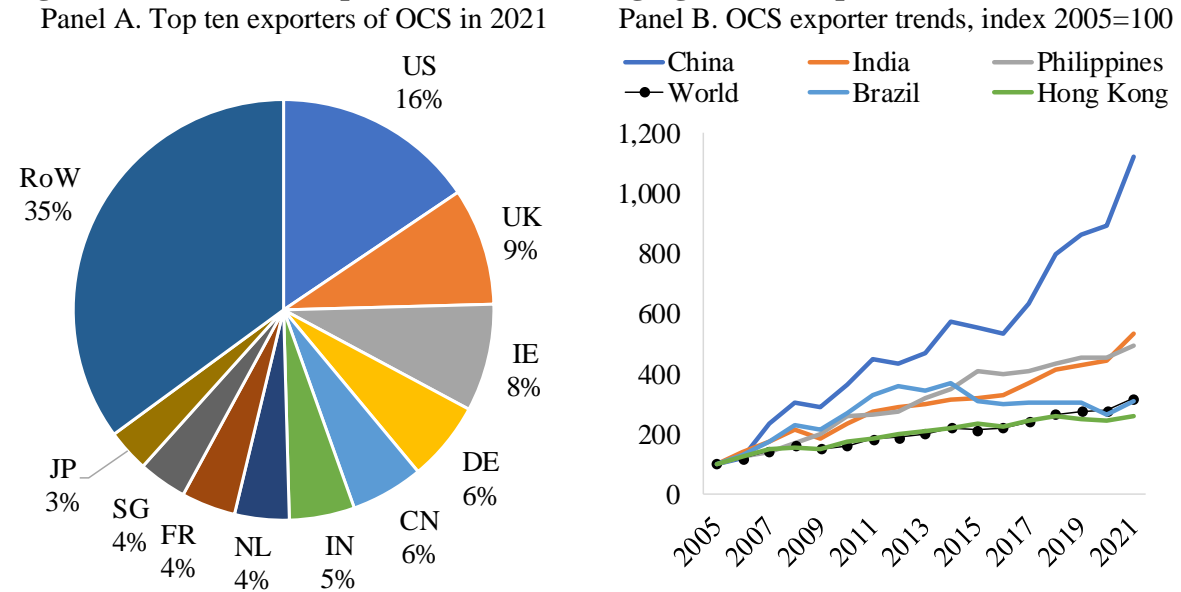
**Table 1: World shares of OCS exports and imports**

	Exports		Imports	
	2010	2020	2010	2020
<b>High-income countries</b>	74%	75%	66%	72%
<b>Rest of the World</b>	26%	25%	34%	28%

*Source: Authors' calculations based on trade data from WTO Stats. Note: Definition of high-income countries from World Bank.*

At a more granular level, the left panel of Figure 7 shows that most of the largest OCS exporters are advanced economies. Among the top ten biggest OCS exporters, only China, India, and Singapore are classified as emerging economies. The right panel of Figure 7 shows, however, that the biggest emerging economy exporters of OCS (which includes the Philippines, Brazil and Hong Kong) are growing faster than or at a similar rate to the world aggregate. This set of facts suggests that the expansion of services trade in the future may involve a significant share of exporting by emerging markets and importing by advanced economies.

**Figure 7. World OCS export shares and emerging market exporter trends, 2005-2020**



Source: Authors' calculations based on WTO Stats. Notes: the emerging markets included are those whose OCS exports amounted to at least 1/2 of one percent of world OCS exports in year 2019.

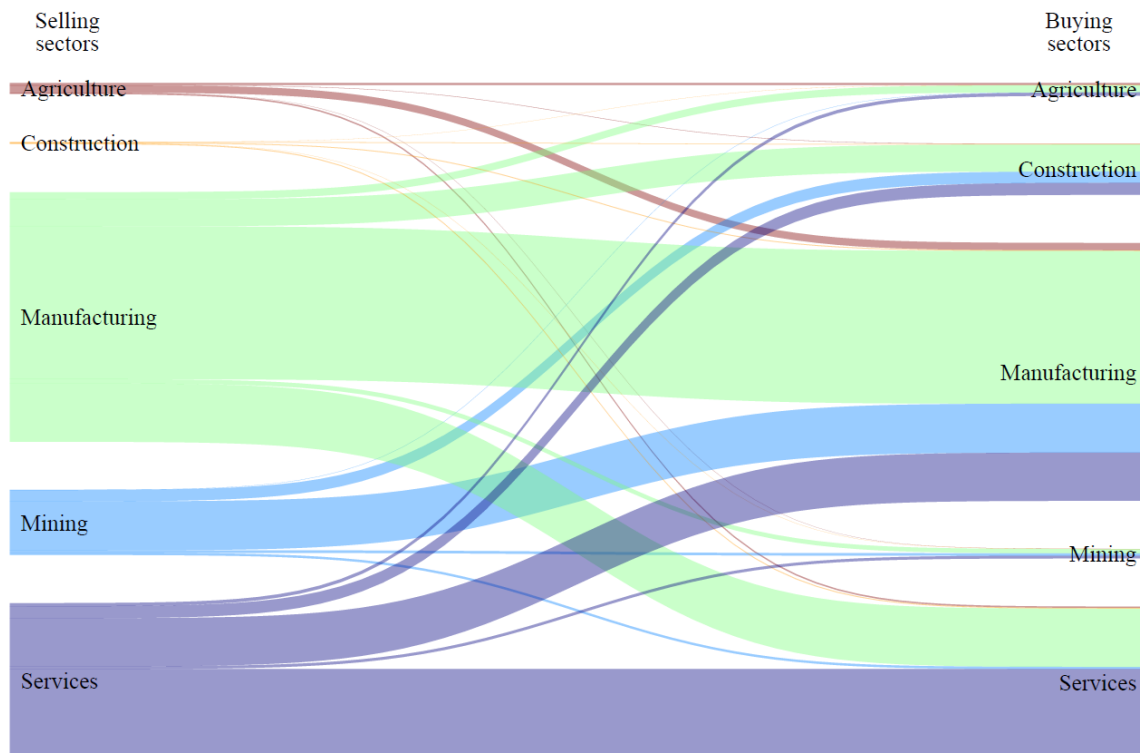
**4.1.1. Trade in intermediate services**

The distinction between intermediate goods and final goods is well established. Intermediates refer to goods that are used to produce other goods, and are thus sold from one business to another. Final goods are consumed or invested. Similarly, intermediate services are those which are utilized in the production of other goods or services, while final services are delivered to the end-client. An illustrative example of an intermediate service is the legal research conducted in support of a court filing, with the court filing itself being the final service.

Here we present basic facts concerning the world pattern of trade in intermediate services, starting with the sectoral pattern. Figure 8 shows, for the world as a whole, the sectors exporting (selling) intermediates (both goods and services) and the sectors importing (buying) them. Specifically, the figure shows the share of intermediate services imported by a given buying sector from a given selling sector in total world intermediates. The width of each tentacle-like bar represents the share of sectoral intermediate trade in world intermediates production. The total of each side (buying and selling sectors) sums to 100% of the total share of intermediate trade in world intermediates production.

Two key facts pop out. First, manufacturing is the largest seller of intermediates, but the services sector is not far behind. Second, most manufacturing intermediates are bought by the manufacturing sector itself whereas the buyers of services are spread more widely across all sectors. Basically, every business needs intermediate services (finance, human resources, marketing, etc.) while the use of intermediate manufactured goods is heavily concentrated in industry.

**Figure 8. Allocation of world trade in intermediates across sectors, 2018**

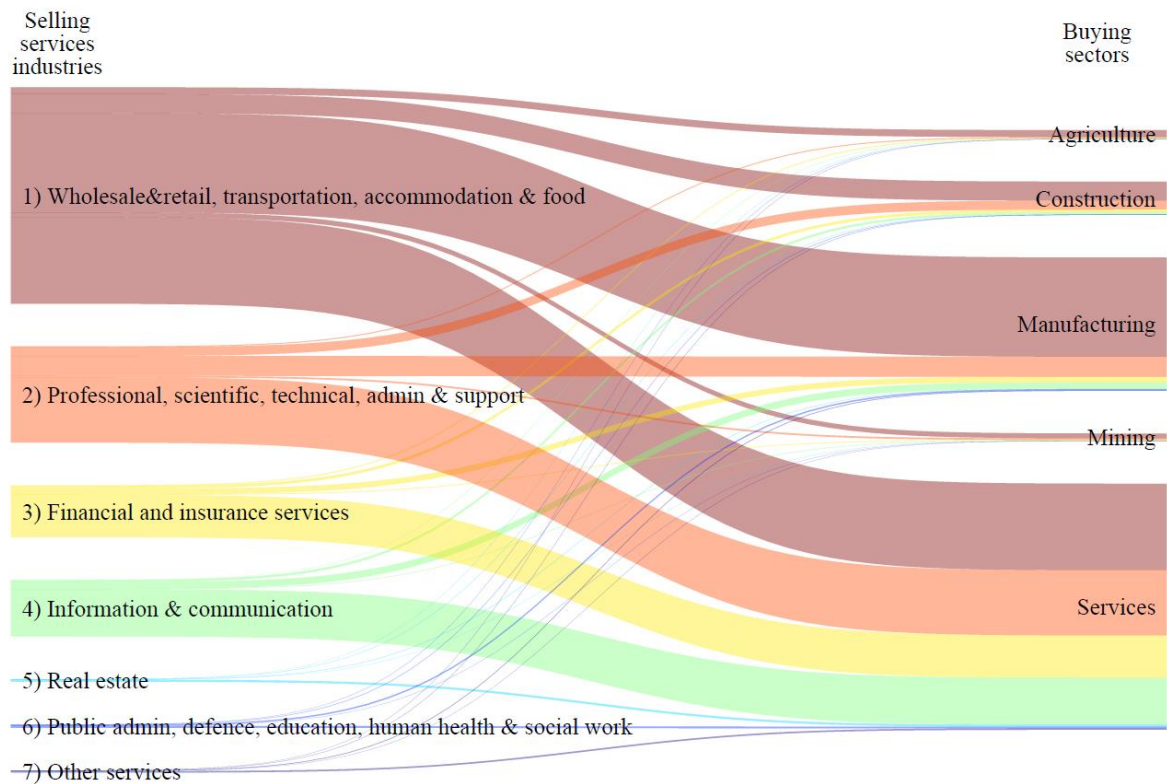


*Source: Authors' calculations based on underlying data from 2021 edition of OECD ICIO Tables. Notes: This figure shows the share of intermediate services which are imported by a given buying broad economic sector from a given selling broad economic sector in total world intermediates.*

Figure 9 takes a closer look at the services sub-sectors responsible for trade in intermediate services. The concept of how to read the chart carries over from Figure 8 – it shows the share of intermediate services purchased by a given broad economic sector, as a share of total world intermediate services. The categories in the chart are a basic aggregation of more detailed sectors available in the 2021 version of the OECD Inter-Country Input-Output (ICIO) Database, which offers a detailed breakdown of intermediate services trade across (goods and services) sectors<sup>4</sup> and between nations. The largest services sub-sector is wholesale and retail trade, transportation, and accommodation and food, which includes most of the services listed under transport and travel in the WTO classification used in Chart A. As Figure 9 shows, while these intermediate services are important inputs into all of the broad sectors of the economy (agricultural, mining, etc.), they are especially important inputs to manufacturing. The next three service sub-sectors are important primarily for services sectors, and to a lesser extent manufacturing.

<sup>4</sup> These same sectors are available in the 2021 version of the OECD TiVA Database, which is built using underlying data from the OECD ICIO Tables.

**Figure 9. Allocation of world services trade in intermediates across sectors, 2018**



*Source: Authors' calculations based on underlying data from 2021 edition of OECD ICIO Tables. Notes: This figure shows the share of intermediate services purchased by a given broad economic sector, as a share of total world intermediates.*

A curious fact that comes out of Figure 8 is the similarity in the importance of services and manufacturing intermediates in trade as a share of world production in intermediate inputs. It is curious since barriers to trade in services are so much larger than barriers to trade in goods. Offsetting this low trade-to-output ratio in services is the very high share of services in world production (typically two-thirds to three-quarters of nations' GDP are produced by the services sector). Another factor is the widespread use of services as intermediate inputs.

Table 2, which uses numbers for France as an example, shows that services are three times more important as intermediate inputs into domestic production than manufactures. Economy-wide, intermediate service inputs account for 30% of France's total gross output, while manufactured intermediates account for only 11%. The reason for this little known fact is that services inputs are consistently important in primary, secondary, and tertiary sectors, while manufacturing usage is concentrated in the manufacturing and primary goods sectors. This consistency, teamed with the outsized importance of the services sector (68% of French GDP), is why services inputs are so much more important at the economy-wide level.

**Table 2: Intermediate services and manufacturing in the French economy, 2018**

<b>Sector</b>	<b>Services inputs</b>	<b>Manufacturing inputs</b>	<b>Imported services inputs</b>	<b>Imported manufacturing inputs</b>	<b>Sector share of total gross output</b>
<b>Service</b>	32%	5%	4%	2%	68%
<b>Manufacturing</b>	24%	25%	4%	13%	26%
<b>Primary</b>	28%	17%	3%	5%	6%
<b>Total economy</b>	30%	11%	4%	5%	100%

*Source: Authors' calculations based on underlying data from 2021 edition of OECD ICIO Tables. Note: Table appears as Table 1 in Baldwin (2022c).*

#### **4.1.2. Protection in intermediate services**

When looking ahead, an important point is that service-sector regulations, which restrict trade in services, overwhelmingly target final services but do little to constrain intermediate services trade (OECD 2023). For instance, while strict rules govern the sale of accounting services in the US, there are few regulations on the qualifications of the service workers responsible for the paperwork involved in providing such intermediate services. This means that a US accountant can hire anyone to handle a client's travel expenses and receipts. Quality control responsibility falls on the sellers of the final service and not government regulators.

More research would be needed to pin down why this mismatch in protection emerged, but a simple political economy story suggests on mechanism. Prior to the ICT revolution, the coordination of complex processes over long distances was a significant challenge, so most intermediate services needed to produce a final service were performed by a single company, often in a single building. At this point, regulation of the final service also meant regulation of the requisite intermediate services since both were done by the same firm. There was, that is, little domestic trade in intermediate services since the trade was intrafirm and went uncounted.

This changed when ICT made it feasible to coordinate the production of intermediate and final services, even when the two were done far apart and even when done by different firms. This outsourcing trend, which started in the 1980s, saw many firms outsourcing services like cleaning, transportation, marketing, advertising, human resources, payroll and the like. This outsourcing was mostly done domestically in the early days, but it also opened the door to offshoring, i.e., trade in intermediate services. This emergence of trade in intermediate services created new export-linked job opportunities for a range of professions, including bookkeepers, forensic accountants, CV screeners, administrative assistants, translators, online client help staff, graphic designers, copyeditors, personal assistants, travel agents, software engineers, and others.

According to calculations using the latest data available in the OECD's 2021 edition ICIO Database, over half of all existing service-sector exports are intermediate services rather than final services. And as mentioned above, existing service-sector regulations do little to target intermediate service trade. Political economy reasoning may explain this. Politically powerful service providers, be they professionals like doctors and architects, or firms like insurance companies and banks, pushed for regulation that limited competition – especially foreign competition. The means of protection are highly varied, but most involve some sort of required certification of the sellers of final services. When the outsourcing trend started, politically powerful service providers had no interest in raising the cost of their intermediate inputs by limiting competition via regulation. On a good-governance level, one could trust the final provider of services to self-regulation and not use poor-quality intermediate service providers.

### 4.1.3. Who sells intermediate services inputs to whom?

Given the above discussion of intermediate services, we next turn to a brief examination of the pattern of intermediate services trade across geographies. The first two columns of Table 3 show the share of world trade in intermediate services in 2018 between high-income countries and the rest of the world. Here, ‘high-income’ refers to all nations in the OECD ICIO Tables classified as high-income by the World Bank, while ‘rest of the world (RoW)’ refers to all other nations. The main takeaways from the table are threefold. First, the share of world trade in intermediate services is highly concentrated among high-income countries, accounting for half of world trade in intermediate services. The second two columns show the percentage point difference in the share of world intermediate trade between regions in 2018 and 1995. As can be seen by the third column, the share of intermediate services among high-income countries has declined by 14 percentage points since 2018, with the fall being primarily made up for by a rise in RoW-RoW intermediate services trade. On the other hand, intermediate services trade between high-income countries and the RoW, and the RoW and high-income countries has been relatively stable. These three points combined provide suggestive evidence that there is ample room for trade in intermediate services to expand across regions, and in particular between high-income and RoW nations.

**Table 3. Share of world intermediate services trade between North and South**

	2018		1995 vs. 2018 (pp)	
	High-income	Rest of world	High-income	Rest of world
<b>High-income</b>	49.6%	22.5%	-14.1	4.2
<b>Rest of world</b>	14.6%	13.3%	1.9	8

*Source: Authors’ computations based on data from OECD 2021 ICIO Tables (OECD 2021). Notes: High-income refers to all countries in the OECD ICIO tables which are classified by the World Bank as high-income countries. Rest of world refers to all countries in the OECD ICIO tables which are classified as other than high-income countries (including the Rest of World aggregate).*

Finally, Figure 10 shows the share of world trade in intermediate services for the top 15 OCS exporters amongst bilateral trade partners. All in all, these 15 exporters make up 77% of total world OCS exports, and 41% of total world exports of intermediate services.<sup>5</sup> The figure can be read as a matrix, so the 0.8 in the row for the USA and the column for the United Kingdom (GBR) means that 0.8% of world trade in intermediate services is between the US and UK. The shading is a heat plot, where shades of darker brown represent larger shares of world intermediate services exports, and shades of lighter brown represent smaller shares.

Five points are noteworthy. First, the US (and to a lesser extent the UK) are clear leaders when it comes to intermediate services exports to all nations. Second, the distribution of world trade in intermediate services is fairly dispersed. This is in stark contrast to the distribution of world intermediate manufacturing trade, which is highly concentrated amongst the three ‘giants’ – China, the US, and Germany (Baldwin et al. 2022). Third, the upper left quadrant of the heat plot is, in general, more darkly shaded, indicating a larger set of leaders in world trade in intermediate services (eight to ten countries) than for manufacturing. Fourth, the US, UK, and France – all countries which are heavy exporters of intermediate services – are large intermediate services importers, as seen by the fact that their respective columns are darkly shaded. Finally, while China appears heavily reliant on intermediate services imports (as seen by the dark shading of its row), it is not a key intermediate services exporter.

<sup>5</sup> The top 15 manufacturing exporters make up 44.4% of world intermediate manufacturing exports.

**Figure 10. Share of world trade in intermediate services (%), 2018**

	USA	GBR	IRL	DEU	NLD	CHN	IND	FRA	JPN	SGP	LUX	CHE	BEL	CAN	SWE
USA	0.8	1.2	0.8	0.6	1.2	0.4	0.5	1.1	0.6	0.3	0.2	0.3	1.4	0.1	
GBR	1.0	0.5	0.5	0.4	0.2	0.1	0.6	0.2	0.2	0.3	0.1	0.2	0.1	0.1	
IRL	0.2	0.3	0.4	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	
DEU	0.5	0.3	0.2	0.3	0.5	0.1	0.5	0.1	0.2	0.4	0.3	0.2	0.1	0.1	
NLD	0.2	0.2	0.4	0.4	0.1	0.0	0.2	0.1	0.1	0.0	0.1	0.3	0.0	0.1	
CHN	0.7	0.1	0.0	0.2	0.1	0.1	0.1	0.4	0.5	0.0	0.0	0.0	0.1	0.0	
IND	0.7	0.1	0.0	0.2	0.1	0.2	0.1	0.1	0.3	0.0	0.0	0.0	0.1	0.0	
FRA	0.2	0.4	0.3	0.5	0.2	0.3	0.0	0.1	0.1	0.2	0.1	0.4	0.0	0.1	
JPN	0.4	0.1	0.2	0.1	0.2	0.7	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	
SGP	0.3	0.1	0.1	0.2	0.1	0.5	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.0	
LUX	0.1	0.2	0.2	0.2	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.2	0.0	0.0	
CHE	0.2	0.1	0.1	0.3	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.0	
BEL	0.2	0.1	0.1	0.2	0.3	0.1	0.0	0.4	0.0	0.0	0.2	0.1	0.0	0.0	
CAN	1.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	
SWE	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	

Source: Authors' calculations based on underlying data from 2021 edition of OECD ICIO Tables. Countries are the top 15 OCS exporters, accounting for 77% of world OCS exports and 41% of world intermediate services exports.

#### 4.2. The DFS model with nontraded goods and services

To structure thinking about the past and future behaviour of services trade, it is useful to have a general equilibrium services trade model that explains why so much of today's services is dominated by advanced economies. The model, from Baldwin and Dingel (2021), uses an extended Dornbusch, Fischer, and Samuelson model— henceforth DFS.

In the classic DFS model, we consider a hypothetical world comprising of two economies - North and South - both of which operate under the conditions of perfect competition and constant returns. The only factor of production is labour, and the endowments of North and South are denoted as  $L$  and  $L^*$ , respectively and preferences are identical across people and nations.

The unit costs and prices for a typical good,  $z$ , in the continuum of goods are denoted as  $wa(z)$  and  $w^*a^*(z)$ , respectively, where  $a(z)$  and  $a^*(z)$  denote the unit labour input coefficients for North and South, and  $w$  and  $w^*$  represent their respective wages (North variables are indicated with an asterisk), so  $\omega = w/w^*$ , is North's wage gap. Sectors are indexed so that North's productivity advantage is greatest in low-  $z$  sectors, so  $A(z)$  represents North's productivity

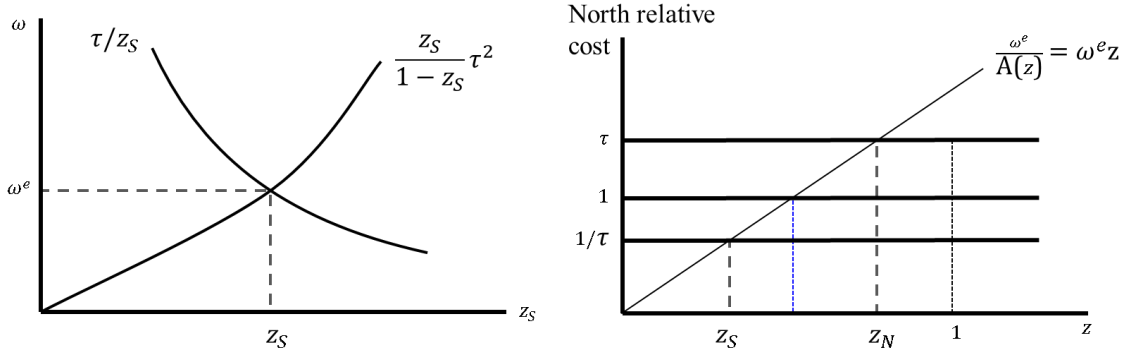
gap and goods are number so that  $A$  is downward sloped. As the richer nation, North is assumed to have an absolute advantage in every good  $z$ . Trade in goods is subject to symmetric, iceberg trade costs, with firms required to ship  $\tau > 1$  units to sell one unit in the other nation (domestic trade is costless). Since North goods pay  $\tau$  to get inside South's market, the South-market threshold or borderline good, which we label as  $z_S$ , is defined by the equal price condition  $\tau w a(z_S) = w^* a^*(z_S)$ ; likewise the North-market threshold good,  $z_N$ , is defined by  $w a(z_N) = \tau w^* a^*(z_N)$ .

Closing the model necessitates the determination of the relative wage, which is established by the North labour market clearing condition. To summarise, the three equilibrium conditions are:

$$\tau\omega = A(z_S), \quad \omega = \tau A(z_N), \quad \omega = \frac{B(z_N)}{1 - B(z_S)} \frac{L^*}{L} \quad (1)$$

To present the model in two-dimensional diagram, we reduce the 3-equation system to a 2-equation system by making explicit functional form assumptions. Specifically, we assume  $A(z) = 1/z$  and  $B(z) = z'$ . Further simplification is attained by supposing  $L = L^*$ . Under these conditions,  $z_N = z_S \tau^2$  and the equilibrium is characterised by two conditions which are plotted in Figure 11. Here the relative wage is determined in the left panel taking the thresholds as given and the thresholds are determined in the right panel taking the relative wage as given.

**Figure 11: DFS model and nontraded goods**



Source: Baldwin and Dingel (2022). Note: South exports goods in the  $z_N \dots 1$ ; North exports goods in the  $0 \dots z_S$  range.

The goods-only model was utilised to establish ideas and notation, but it also provides us with a starting point where the bulk of trade comprises goods. As such,  $\omega$  is predominantly determined by trade in goods.

#### 4.2.1. Adding services and service-linked trade costs

The inclusion of traded and non-traded services can be accomplished by adopting a two-tier Cobb-Douglas preferences structure in which  $\gamma$  denotes the expenditure share on goods (with gamma serving as a mnemonic for goods). In this context, we follow a task-based approach to services that is comparable to the trade-in-tasks approach introduced by Grossman and Rossi-Hansberg (2006).

We also introduce a relative productivity curve for services, akin the  $A(z)$ , and denote it as  $S(t)$ . This is the ratio of the unit labour input coefficients for North and South service "tasks," with  $s$  and  $t$  serving as mnemonics for services and tasks, respectively.

In addition to spending on goods, the new labour clearing market condition now requires consideration of spending on services. The resulting market clearing condition is slightly more

involved than the goods-only case, but still easily solved in terms of parameters and policy variables.

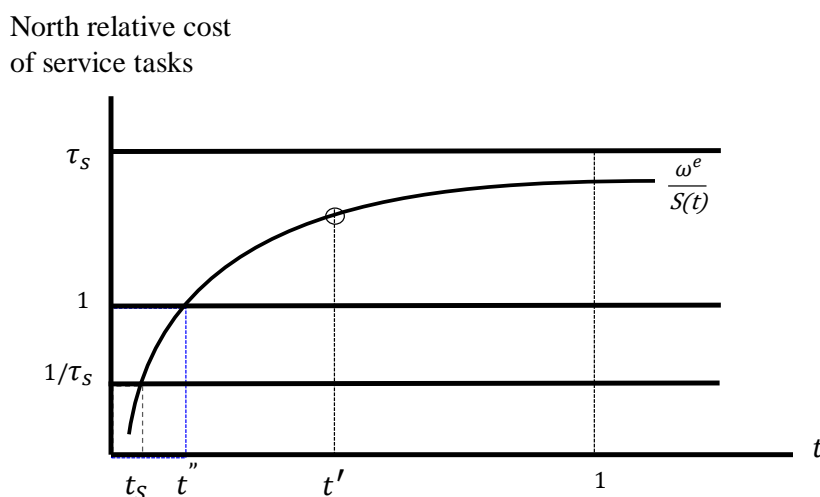
$$\omega = \frac{\gamma z_S + (1 - \gamma)t_S}{1 - \{\gamma z_N + (1 - \gamma)t_N\}}$$

Note that this involves the nontraded thresholds for both goods and services. For example, if both  $z_S$  and  $t_S$  rose, North relative wage,  $\omega$ , would also rise.

To adapt the model to services, we introduce two key elements. First, we assume that the trade costs associated with services are exceedingly high. This implies that cross-border trade in services is limited, especially when compared to the overall size of the sector. This finding aligns with the notion that the provision of services often necessitates the physical presence of the service provider and buyer, which involves the cost of transporting individuals (much greater than that of transporting goods). Second, we posit that the pattern of comparative advantage accounts for the fact that the majority of "Mode 1" services trade involves Northern exports of highly sophisticated services, such as finance, engineering, and communications. This observation highlights the fact that the distribution of comparative advantage shapes the structure of services trade, with Northern countries demonstrating a relative advantage in sophisticated services.

The first feature – high service trade costs – does not require a modification of the model, just application of a different parameter value. To get the second feature, however, requires more substantial changes. Specifically, we assume the  $1/S(t)$  curve has the inverted “hockey stick” shape shown in the diagram Figure 12. Note that in this set up, with these service trade costs, only North exports services since service tasks between  $t_S$  and 1 are nontraded.

**Figure 12: Nontraded service tasks in the “service enabled” DFS model**



Source: Baldwin and Dingel (2022).

What might lead to this inverted hockey stick shape for the technology gap curve  $S(t)$ ? Continuous technological diffusion that operates to narrow large productivity differences across North and South on a task-by-task basis. In the absence of innovation, the seepage of knowhow will lead to a flattening of the relative productivity curve. Products and processes are typically invented in advanced economies, but cross-sectional differences tend to fade over time in a manner that is reminiscent of Vernon's (1966) product life cycle theory. The disappearance of comparative advantage is hastened if the pace of knowhow seepage increases with the size of the productivity gap.

In this framework, the  $S(t)$  curve obtains its slope from the fact that North service firms have a bigger technological edge in recently innovated tasks. As tasks become standardised, the technological disadvantage of South firms erodes. In this case, an inverted hockey stick shape would appear with the North's edge greatest in new service tasks (those with low  $t$ ). This story implies that North possesses a comparative advantage in the innovative service sectors. Observe that the innovation is in the service task, not the sector in which it is used. Coding, for example, is a very old task and thus the technological edge of North is not great compared to that of South. Designing generative AI system, by contrast, is a newly innovated task where the North's edge or South is large.

Of course, this logic also applies to goods, so why might the technology gap curve for services look different than on one for goods,  $A(t)$  versus  $S(t)$ ? The answer is the slow rate of innovation in the service sector. This gives technological diffusion enough time to reduce differences in the cross-sector profile of relative labour productivities.

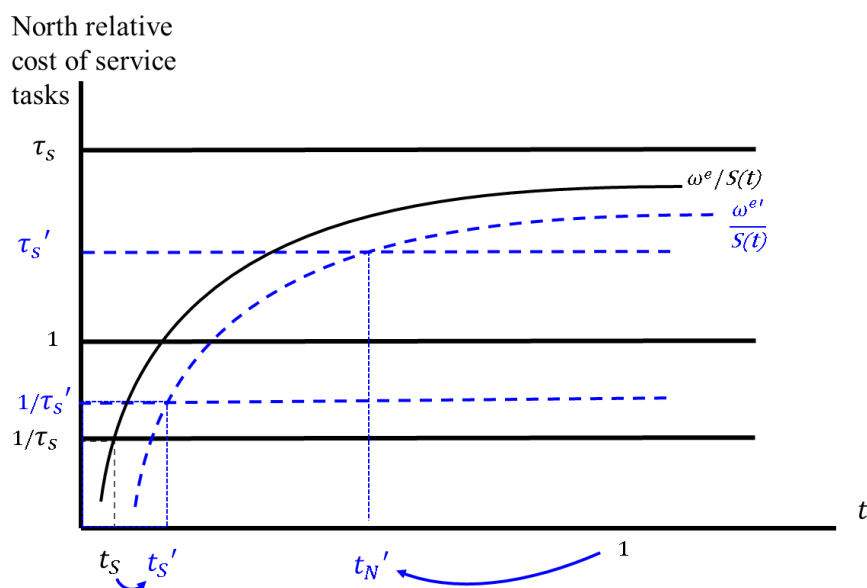
What are the implications of the inverted hockey-stick? As illustrated in Figure 12, the North's productivity advantage is only sufficient to overcome service barriers for a limited range of service tasks, such that North exports services tasks ranging from zero to  $t_s$ . In contrast, the inverse  $S(t)$  curve flattens out, indicating that the lower South wage (which is primarily influenced by goods market conditions) is not low enough to enable South service providers to be competitive in the North market. Stated differently, the South does not export services to the North in this base case. As a result, the South exports some goods and imports both goods and services from the North.

The goods sector is a critical component of this analysis. The derivation of the asymmetric trade in services outcome necessitates a goods sector characterised by largely unrestricted trade and a relatively symmetric comparative advantage. In the absence of these conditions, the conventional "Ricardian wage equilibration" mechanism would drive the relative wage to a point where both North and South were competitive in some service tasks.

The model helps organising thinking about how and why the North could dominate trade in intermediate services now, but how rapid advances in digital technology could turn the South into a big exporter of intermediate services.

In the initial scenario, South service tasks are not competitive within North, yet an incipient arbitrage opportunity exists. If a North-based firm could purchase tasks in South without incurring trade costs via some new digital technology, they would likely do so for the majority of tasks. The impact of a significant reduction in service trade costs can be seen in Figure 13, where the blue dashed lines represent the new scenario with  $\tau_s$  falling to  $\tau_s'$ . This change would considerably expand South service exports while only mildly increasing North service exports, thereby resulting in a reduction in the relative demand for North labour. Consequently, the equilibrium relative wage would decline from  $\omega^e$  to  $\omega^{e'}$ .

**Figure 13: The asymmetric expansion of service exports as service trade costs fall**



Source: Baldwin and Dingel (2022).

An interesting variation of this thought experiment may be more closely linked to real-world situations, involving asymmetric changes in telemigration barriers. Specifically, we can consider the impact of uneven adoption of the necessary digital technology, where North firms have greater access to this technology compared to South firms. For instance, we might envision a scenario where favourable economic and digital conditions in the North make it easier for South workers to telemigrate Northwards, but the "digital divide" makes it difficult for North workers to telemigrate Southwards. In this situation, South would find it much simpler to export services since the greater digital coverage and sophistication of the North would make it easier for North firms to incorporate remote workers in their service value chains.<sup>6</sup>

## 5. Conclusions

The end of the rapid globalisation period that started around 1990 has gained widespread attention and is clearly supported by the data. Some commenters go further and assert that the world economy is actually de-globalising – a stance that is clear in the title of Rana Foroohar's 2022 book, *Homecoming: The Path to Prosperity in a Post-Global World*.

In this paper, we argue that this deglobalisation-view misses the key facts that indicate that the nature of rapid globalisation has changed rather than halted. In particular, the ratio of global goods trade to GDP did peak 15 years ago, but trade in services has continued to boom and now accounts for a fifth of world international commerce. This growth in services trade has been driven by a variety of factors, including advances in communication technology, which have made it easier for trade in services to cross international borders.

We show that 60% of the decline in the goods trade-to-GDP ratio is due to a reduction in the value of trade in commodities, and much of this is due to relative price movements rather than changes in quantities. While such a drop is important, it is not a harbinger of the end of globalisation. Commodity cycles have come and gone throughout globalisation's long history

<sup>6</sup> See Baldwin and Dingel (2022) for an analysis of the free trade equilibrium.

without having a lasting impact on the underlying dynamics driving international economic integration.

Of more concern, at the systemic level, is the fact that 40% of the drop is due to reduced trade in manufactured goods. Here we put forth two, not mutually exclusive, hypotheses to account for the change. The first – which best fits the goods trade-to-GDP ratio measured in constant price terms – is that the pattern is not a peak but rather a transition between equilibria. The notion being that there was a relatively stable, but slowly rising level of goods trade-to-GDP up to 1990, then a rapid transition to a new level by 2008. The transition was sparked, in our reading of history, by what has been called globalisation’s ‘second unbundling’ (ITC-enabled offshoring of manufacturing stages and accompanying technology). The second hypothesis is that global supply chains are unwinding (Antràs 2020), so the value of back-and-forth movement of intermediate manufactured goods – which did so much to push up the ratio from 1990 – is actually falling. Evidence for this hypothesis can be found by noting that supply chains involve intermediate inputs, so a key indicator of the importance of supply chains is the fraction of gross production that goes to intermediate goods use, with high fractions indicating supply chains that are more important, longer or more complex. While the facts directly support this reduced importance of intermediates, they do nothing to explain why supply chains are unwinding. One explanation is tied to automation. As ever more sophisticated manufacturing techniques combine more production into a single stage or machine, the reward to geographically fragmenting production is decreased; supply chains are unwound as this happens.

Turning to services, the facts clearly show that the services trade-to-GDP ratio is not falling – in fact its rise is not even slowing. This rise can be attributed to a number of factors. The most obvious is the way in which the rapid advance of digital technology has made it easier to trade services across borders. This has been particularly true for business services, such as consulting and accounting, which are now routinely delivered remotely. Looking to the future, the paper argues that the future of globalisation is likely to be driven by trade in intermediate services. These are services that are used in the production of goods, such as research and development, design, and logistics. As manufacturing becomes more complex and globalised, the demand for these types of services is likely to grow, creating new opportunities for service providers in both advanced and emerging economies.

To sum up, the notion that we are entering a post-globalisation period is based on an outdated and oversimplified perspective on what globalisation is. While the share of global trade in goods may be declining, the rise in services trade intensity and the growing importance of intermediate services suggest that, as Mark Twain might put it, reports of globalisation’s death are greatly exaggerated.

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