

2024 Trade and development report

Chapter III

Globalization at an inflection point

In a major challenge for developing countries, current global economic and geopolitical shifts in globalization could limit export-led growth strategies. Changing technology and market structure, 'deglobalization' and worsening security environment endanger development strategies based on expanded manufactured exports and some resource exports.

The complex effects of new technologies, including through a higher concentration of corporate control, may be mostly negative for commodity exporters, although lower-cost electrical power will bring benefits. Dependence on critical and scarce materials for batteries exacerbates these risks, as their supply chains are prone to disruptions and hence price volatility and shortages.

In addition to being labour-replacing, as in the past, new technologies are concentrated in a handful of companies. Some technologies favour homeshoring, making governance issues and international policy coordination increasingly important.

The technological characteristics of the emergent sixth wave of economic growth – biotechnology, artificial intelligence and renewable energy – do not offer a well-defined guide for development strategies. Much will depend on the management of stresses on trade and finance. Services-export-led growth as a path to development will only remain feasible if new policy barriers are not enacted and access to markets and technologies is safeguarded.

A delayed or absent political response to the sway of new technologies, including artificial intelligence, will likely leave a vast and critical area of the global economy controlled by large corporations and private regulatory bodies. This will be neither inclusive nor in the public interest.





Key policy takeaways

- A wide implementation of sixth-wave technologies and energy transition threaten to reduce major export revenue sources for developing countries. Reducing current debt burdens is thus vital for enabling their financial sustainability in the changing global economy.
- WTO rules on industrial subsidies and trade barriers need to be reconfigured to enable market access and fair competition, and to support raw materials exporters to expand the value added of their exports.
- Coordinated policy mechanisms to stabilize domestic agricultural production and prices can help relieve current financial and debt service stress in the global South.
- The advanced world should live up to its existing climate change promises to help fund the energy transition in developing economies.
- Artificial intelligence needs to be globally governed by agreed principles and standards to avoid regulatory fragmentation. These efforts should be paralleled by greater policy coordination to limit the concentration of corporate power, enhance transparency and enable competition.



A. Introduction



Eighty years since the Bretton Woods Conference, the world trade regime and the global economy more generally appear to have arrived at an inflection point. Seemingly settled assumptions, norms and institutional arrangements around trade, development, technology and security are all under question.

The inflection point is geoeconomic and geopolitical in nature, an outcome of the interplay of four ongoing shifts setting long-term conditions for development and growth:

- First, trade liberalization measures typical of the decades after 1990 are shifting towards more fundamentally protectionist and interventionist policies.
- Second, immigration and international labour flow policies, which were historically much less open than trade and financial market policies, are becoming even more restrictive.
- Third, a host of conflicts has disrupted a relatively stable global security regime.
- Fourth, new technologies have the potential to fundamentally transform the global division of labour.

Each of these four shifts could limit possibilities to pursue export-led growth and development strategies. This poses a major challenge for developing countries,¹¹ where development plans almost always involve export-led growth. The current inflection point in globalization accentuates many risks long faced by developing countries in global finance and debt architecture. At the same time, it opens opportunities for the global South to rearticulate needs and priorities at the multilateral level, as shown by the ongoing process to develop a United Nations framework convention on international taxation, initiated by the African Group at the United Nations.

An inflection point is nothing new; UNCTAD emerged during a similar era of rapid change 60 years ago. The decade after it was created in 1964 saw the culmination of the great wave of decolonization, the breakdown of the Bretton Woods system of fixed exchange rates and controls over international capital flows, the beginning and then failure to shape a New International Economic Order, and the dawn of the information and communications technology (ICT) revolution. Each decisively reshaped the range of development trajectories available to what was then inaccurately called the "Third World", but which more accurately also encompassed late developers in

¹¹ Here and throughout this chapter, emerging market and developing economies refer to countries aggregated under that label in the IMF World Economic Outlook report, available a <u>https://www.imf.org/en/Publications/</u><u>WEO/weo-database/2024/April/groups-and-aggregates</u>. These countries are particularly reliant on trade, and within that, primary product exports to finance both growth and physical capital investment. They are thus the appropriate group for analysing the long-term effects studied in this chapter. This definition includes Albania, Belarus, Bosnia and Herzegovina, Bulgaria, China, Hungary, Montenegro, North Macedonia, Poland, Republic of Moldova, Romania, Russian Federation, Serbia and Ukraine among the emerging market and developing economies, while excluding the Republic of Korea; Singapore; Hong Kong, China; Macao, China; and Taiwan Province of China, which are defined as advanced economies.

both the "First" and "Second Worlds".¹² The 1960s and 1970s saw largely Statedriven, often foreign debt-financed development projects intended to create domestic capital goods capacity by supporting mass production industry.

The world's population is experiencing a slow-moving demographic transition impelled by falling birth rates. This is likely to decrease the pool of working-age people over the next three decades and increase the number of older workers aged 55 to 64 years. According to the International Labour Organization (ILO), older workers could become a quarter of the global labour force by 2030 (Harasty and Ostermeier, 2020). Without immigration, some advanced countries are already experiencing shrinking, ageing populations that may consume fewer imported manufactured goods in the long run (e.g. McKinsey Global Institute, 2024). Slower population growth in many developing countries might tip them into a middle-income trap where domestic markets are still nascent even as advanced economy markets begin to shrink.

What do current inflection points mean for core UNCTAD trade and development concerns? Answering this question requires reflecting on the past policy record and applying conceptual tools to help anticipate the likely (yet not predefined) impacts of ongoing geoeconomic and geopolitical changes on growth and development strategies.

This chapter is organized into three sections. In section B, the general dilemma that developing countries face in catching up on trade and development is discussed. The objective is to show why trade and exports, even more so, matter, or, as Joan Robinson (1962: 45) said, why "the misery of being exploited by capitalists is nothing compared to the misery of not being exploited at all". Trade raises the question of "trade in what", and in section C, Joseph Schumpeter's (1939, 1942) argument about recurrent economic growth waves or creative destruction is used to understand the potential effects of new technologies on production and trade.

While growth waves and structural transformation have been central to development thought (Kaiser, 1979; Kondratieff and Stolper, 1935; Bairoch and Kozul-Wright, 1996), the Schumpeterian framework helps to capture the specifics of new economic sectors as well as technological and financial processes driving such transformations today.

Finally, the quality and direction of trade require answering the question of trade *with* and *by* whom. Section D examines the drivers and likely consequences of the inflection point in international trade. The analysis applies the framework presented in sections B and C to the question of prospective development paths and policy space given three major potential changes. Of these, the decline in the current open trade regime looms largest as a barrier to an export-led development strategy.

Where appropriate, the chapter considers how changes in broader security and financial regimes might affect potential development pathways; both themes are addressed in greater detail in chapters IV and V.

¹² These labels referred to political alignments. The First World denoted largely rich Western democracies and Japan. The Second World was the Communist bloc. The Third World comprised the non-aligned nations but by metonymy also developing economies.

B. Development arrives at a juncture



A few years before the first UNCTAD conference in 1964, the Estonian economist Ragnar Nurske (1952: 571) sought to capture the combination of self-reinforcing mechanisms hindering development by saying: "Poor countries are poor because they are poor."

Poor countries are poor because they lack investment capital and skilled labour, or more precisely, the human capital needed to operate the latest tools. What Trinidadian economist W. Arthur Lewis (1954) called "unlimited supplies of labour" depresses local wages. It inhibits investment in human and physical capital goods to propel the structural transformation of an economy from labour-intensive agriculture to manufacturing and higher-value services. Poor countries are also poor in physical capital, including, critically, transport and energy infrastructure as well as the financial market depth and stability needed for the massive investments required to move closer to the technology and development frontier. More subtly, poor countries lack the legal and bureaucratic capacity to regulate increasingly complex markets for both goods and finance.

Towering over all these factors is one critical issue: poor countries remain poor because they lack enough aggregate demand to induce anyone to invest to remedy the other deficits. As Thirlwall (2012) argued, insufficient local aggregate demand makes the additional aggregate demand generated by exports crucial for inducing sustained investment and absorbing any investment-disincentivizing oversupply of local labour. Lewis' twosector model assumed, or at least hoped, that an expanding modern sector would eventually absorb the oversupply of labour in the traditional or backward sector, triggering rising wages. In turn, rising wages would induce firms to invest in human and physical capital. The "Lewis turning point" can be observed in, for example, China, from roughly 2004 to 2006 (Garnaut and Song, 2006), and in other East-Asian economies characterized by rapidly growing export volumes. It is rare without export growth (Schwartz, 1994; 2007).

Many industries in modern economies have minimum economies of scale13 that exceed the capacity of the local market, as the automobile industry shows (box III.1). Even though economies of scale are substantially lower for many other manufactured goods, the most complex goods and many key generic inputs for manufactured goods still require high levels of throughput to attain levels consistent with profitability and long-term economic resilience. For instance, there is only room for two, perhaps three, large civilian aircraft manufacturers for the entire world (e.g. Truxal, 2024). From the standpoint of domestic and foreign investors, scale logics mean that it makes more sense to supply developing country needs with imports rather than domestic production, although large economies, such as Brazil, China and India, are obvious exceptions.

¹³ A minimum economy of scale refers to the price point at which enough units can be sold to be profitable given a fixed capital investment.

Box III.1 The changing geography of car production reflects shifts in trade and investment

The evolution of global car manufacturing is often seen as a representative case of the international division of labour and global economic geography, and a major marker for evolving trade integration throughout the twentieth century. Automobile assembly has typically captured 80 per cent of maximum economies of scale with an annual production run of 50,000 vehicles built on the same platform, and maximum economies of scale with a production run of 250,000 vehicles. Internal combustion engine design and assembly has had an even higher threshold, at 400,000 units. The domestic markets of most developing countries – and indeed, many developed economies – cannot absorb anywhere near those volumes.

Domestic demand for vehicles in Australia or Brazil in the 1950s, for example, rarely exceeded 200,000 units of inevitably diverse vehicles (Jenkins, 1987). By 2023, Australia – the fourteenth largest economy in the world – absorbed 1.2 million light vehicles, and Brazil – the ninth largest – 2.2 million.^a By 2023, profitable economies of scale required annual sales of 1 million vehicles using a given platform and 300,000 units for engines (Doner et al., 2021).

This is a very long reach not only for countries below the median national economy in terms of GDP, which in 2023 included Honduras, Senegal and Zimbabwe, depending on how GDP was measured, but also for those further up the list. Roughly 12,500 new cars of all types were sold in Cyprus in 2023, for example. Among wealthier economies, Austria and Israel buy about 250,000 to 300,000 new light vehicles annually. Poorer but more populous Thailand consumes about 850,000, mostly light commercial vehicles. Israel has no light vehicle production; Austrian car production is essentially one subcontractor to Volkswagen whose output is equivalent to a third of Austrian consumption. Thailand is a major vehicle exporter by virtue of being a platform for Japanese multinational enterprises.

The shifting geographic location of automobile production reflects changing patterns of global trade and investment. Even as vehicle firms began moving or subcontracting component production to lower-cost locations, such as in Mexico and Taiwan Province of China, and then eventually to Eastern Europe and China, they also began transitioning the assembly of cheaper, smaller cars to select developing economies. These had domestic markets that justified something close to an entire production complex and a location favourable for exports to a larger region. Examples included Mexico, the Republic of Korea and Spain in the 1980s, then Czechia, Slovakia and Thailand in the 1990s, and eventually Brazil, Indonesia and Morocco in the 2000s. In each case, the final product simply tended to be lower-value vehicles, such as the Romanian-built Dacia Logan, or lower-cost versions of more expensive vehicles sharing the same platform, such as Škoda's Octavia in relation to the Volkswagen Golf or Audi A3.

Box III.1 The changing geography of car production reflects shifts in trade and investment

This trend has continued for electric vehicles, where the same minimum and maximum economies of scale for assembly remain relevant. Even though batteries have replaced internal combustion engines, the scale economies for battery production appear similar to those for internal combustion engines at about 400,000 to 500,000 per factory. The shift to electric light vehicles will therefore not dramatically alter the logic of production, although the location might change at the margins.

Chinese firms currently dominate the world market for electric vehicles, following a strategic decision by the State to develop this industry. Today, China leads on production, manufacturing 58 per cent of all electric vehicles in 2023, and consumption, with 6.8 million cars sold in 2024 (IEA, 2024b). This is consistent with the current shift in global manufacturing from the 2010s to the present, marked by the emergence of a larger consumer market in China. There is heavy demand for electric vehicles in Europe and Northern America, with 4.6 million units sold in 2023 (IEA, 2024b), following the trend set in non-electric vehicles.

Nonetheless, the weight of batteries (which increase transport costs) and the logic of "produce where you sell" mean that most traditional automobile production zones will persist, albeit perhaps under different ownership. The ongoing displacement of Japanese-owned internal combustion engine vehicle production by Chinese-owned electric vehicle production in Thailand provides an example.

Sources: Doner et al. (2021); IEA (2024b); Klier and Rubenstein (2022); Yang (2023).

a Data from the International Organization of Motor Vehicle Manufacturers available at https://www.oica.net/production-statistics/.

Importing almost all manufactured goods, however, has proven to be a recipe for persistent relative and perhaps absolute poverty, as Prébisch (1950) argued. Raw materials exports have combined the worst of two worlds: secularly declining prices as Ernst Engel's (1895) law took hold combined with extreme cyclical volatility for both prices and export quantities. Engel's law underlay the declining terms of trade that Prébisch observed. As income rises, the proportion spent directly on food, fibres and other raw materials diminishes (box III.2).

Box III.2

Engel's law suggests the risks from relying on exports of raw materials

Ernst Engel, a Prussian statistician, observed in 1857 that, as household income rose, the percentage of income spent on food declined even if absolute expenditure on food increased. Although Engel did not directly address raw materials more generally, his analysis has important implications for the raw materials intensity of consumption and thus for the ability of developing countries to export raw materials.

Put simply, the rate of growth in a given developing economy is limited by the rate of growth of exports, as Thirlwall (2012) argues more generally. But here, specifically, if raw material exports and demand for them grows more slowly in an economy than overall global demand, income growth in that economy will lag the world in general. In short, the economy will lose ground relatively if not absolutely. This relative decline was Prébisch's (1950) core concern.

Box III.2 Engel's law suggests the risks from relying on exports of raw materials

A counterargument might be that absolute consumption of raw materials always increases. For example, past technological revolutions consistently involved shifts in the main source of energy (see the special focus section). Coal seemingly replaced waterpower or wood; petroleum seemingly replaced coal. But this displacement is more apparent than real, because in each case, the older source of inorganic energy continued to be important in terms of absolute volumes, even as its percentage share of total energy output declined. Global coal output and consumption grew even as oil and natural gas became dominant in transport and electricity generation.

The highest-ever level of coal production was in 2023, at 179 exajoules (Energy Institute, 2024). Globally, coal demand has spiked 75 per cent since the 1997 Kyoto Protocol and nearly 15 per cent since the 2015 Paris Agreement on climate change. Just five countries consumed nearly 80 per cent of the world's coal in 2023: China, India, Indonesia, Japan and the United States (Blas, 2024). In 2024, global consumption of coal is projected to rise to another all-time high. Under current trends, consumption will be greater in 2050 than in 2000 (Blas, 2024). Some oil companies apply this historical pattern in predicting a continued expansion of oil consumption.

Historically, population growth drove continued absolute increases in raw materials consumption. Given a global demographic shift towards slowing or even reversing population growth, an absolute decline in coal consumption (and by extension, other raw materials) cannot be ruled out. On a per capita basis, coal consumption (mostly indirectly through electricity, steel and cement consumption) has been essentially stagnant for the past 40 years. Much of the overall rise in consumption is due to the once-only urbanization of China; it today accounts for 56 per cent of coal consumption globally (Energy Institute, 2024; Blas, 2024).

A second historical pattern has been rising incomes driving increasing raw materials consumption. But consistent with Engel's observations, higher incomes among the poor largely account for increased absolute consumption. This chapter's main contention is that low- and middle-income countries potentially face growing headwinds in raising incomes, particularly if they rely on raw materials exports.

Low- and middleincome countries risk headwinds in raising incomes, particularly if they rely on raw materials exports.

This imposes a constraint on development because the elasticity of demand in advanced countries for developing country exports limits the rate of growth of those exports. This, in turn, presents a barrier to growth, in so far as development involves imports of capital goods paid for by those exports (Thirlwall, 2012). In the context of slow population growth in developed economies, generating, for instance, novel food exports would not necessarily increase income for the aggregate of developing countries. Simultaneously, price and quantity volatility have made debt servicing difficult and hindered investment (UNCTAD, 2023c). From a policy perspective, the intersection of Engel's law and self-reinforcing disincentives to productive investment suggest only one way out: export manufactured goods and use the export market to attain a profitable scale. Manufactures exports might not face the same saturation effects that agricultural exports confront, enabling the expansion of imports of capital goods needed to stand up industrial production. And manufactures exports usually generate productivity and knowledge spillovers – Verdoorn effects – through learning by doing and the need to meet global quality standards.¹⁴

¹⁴ The economist P. J. Verdoorn (1980) estimated that a 1 per cent increase in output generated a 0.5 per cent increase in productivity and a 0.5 per cent increase in employment in a wide range of industries.

These spillovers are essential for absorbing labour in industries linked to firms that export, and for the upgrading that induces upstream investment in training and education. Manufacture exports can thus be engines of economic and human development. The current stagnation of global trade, however, endangers potential gains from learning by doing, scale economies and employment spillovers into the service sector. Rodrik (2013) argues that this premature deindustrialization is a significant driver of the "middle-income trap".

If industrial exports were possible, what forms would they take? In the decades after World War II, decolonization removed externally imposed barriers to industrial exports. And the gradual reduction of trade barriers for manufactured goods under the General Agreement on Tariffs and Trade from the 1950s onwards enabled exports from newly independent developing countries. A wave of outsourcing and offshoring ensued, shifting the manufacturing of many labour-intensive products to developing economies.

Yet today, manufactured goods exports might face some of the same problems as raw materials exports, compounded by the nature of the current inflection point. To explore why, a special focus section presents Schumpeter's arguments about growth waves and how they relate to the more general and abstract process of structural transformation.

In the current ICT, or fifth growth wave, many developing countries have added manufactured goods exports to their traditional resource portfolio. Some were forced to do so because they simply lacked exportable natural resources. But the majority did so by choice, as shown by the rapid growth in the number of export processing zones after 1965.

Transnational firms and giant retailers organized most of those trade flows. By 2012, internal (administered) trade by multinational enterprises accounted for one third of global trade by value. Purchases from firms they indirectly controlled accounted for another sixth, and arm's length purchases brought the total to two thirds (UNCTAD, 2013: 163). At that point, as figure III.1 shows, global trade levelled off as a share of global GDP, with absolute declines in current dollar terms in 2016, 2019–2020 and 2023.

Figure III.1



World trade as a share of global GDP (Percentage)



Source: UNCTAD based on UNCTADstat database.

Growth waves shape the potential of exports for development

Joseph Schumpeter (1939, 1942) and Perez (2002) argued that the focus on equilibrium and competitive markets in textbook economics bore little relation to the reality of capitalist economies. Instead, as Joan Robinson (1962) and Nicholas Kaldor (1996) also argued, the economy was never in equilibrium. It was often characterized by high levels of oligopoly if not outright monopoly. Periods of relatively rapid growth and massive upheaval tended to be followed by eras of relative stagnation, the involution of new technologies, and the exhaustion of abundant social and material resources that fuelled the initial expansion. Schumpeter argued that six big changes characterized periods of rapid growth:

- 1 A new source of cheap energy, as with coal in the mid- to latenineteenth century and then oil in the mid-twentieth century
- 2 A new production process based on a new general-purpose technology, as with continuous flow and then continuous flow assembly line production using electrically powered equipment
- 3 New investment or mass consumption goods, as with steel and then standardized consumer durables

A new mode of transportation, as with steel steamships and bicycles, and then automobiles and aircraft **SPECIAL**

FOCUS

- A new form of corporate organization, as with the proliferation of vertically integrated firms with ownership divorced from management, and then Alfred Chandler's (1962) "M-form" multidivisional firm; related to that, new modes of financing investment
- **6** Less salient in Schumpeter but nonetheless very important: new modes of social and economic governance to balance supply and demand, as with early twentieth century cartels and then Keynesian welfare States (Boyer, 1990; Perez, 2002; Freeman, 2007).

Combined, these six changes manifest in rapidly expanding firms whose investment and increased sales drive waves of economic growth, as with the entire package of petroleum-fuelled, massproduced automobiles or consumer durables more generally. The table III.1 details the history of growth waves, including a speculative "sixth" wave.

Table III.1

Six Schumpeterian technological revolutions and growth waves

Developing economy effects	Intensification of enslaved labour and sugar exports	Transition from coerced to indentured and wage labour	Agricultural commodity boom	Import substitution era	New international division of labour, new agricultural exports	New emerging trends (see discussion in the text)
Financial innovation	Small private banks and local networks (e.g. the Quakers in the United Kingdom, notaries in France)	State investment subsidies and public debt	Corporations and open capital markets	State investment subsidies, public banks, segmented financial markets	Venture capital, securitization, institutional investors	Private equity and private debt, overt State industrial policy subsidies
Transport mode	Canals	Railroads	Steamships, urban trams and bicycles	Cars, trucks and airplanes	Telecommu- nications and containerization	Electrified vehicles
Energy source	Water	Coal, gas	Fossil fuel, electricity	Fossil fuels	Fossil fuels	Renewables
General- purpose technologies	Factory production	Metal machinery	Bessemer and open-hearth furnaces; continuous flow production	Continuous flow assembly line	Semiconductors and software, Internet, bioengineering	Artificial intelligence, nanotechnology, bioinformatics
17	71	9 187	4 191		70 202	20
	FIRST WAVE	SECOND WAVE	THIRD WAVE	FOURTH WAVE	FIFTH WAVE	SIXTH WAVE
	Industrial revolution	Railroad wave	First globalization era	Automobile wave	ICT wave and second globalization era	Potential sixth, techno- scientific wave

Source: UNCTAD based on Schwartz (2019).

Note: General-purpose technology encompasses technologies general enough to be used in various industries and with a strong impact on their functioning, given their potential for technical improvements and complementarities for innovation.

These growth waves positively and negatively shape the potential for using exports as a development engine. Positively, a new growth wave almost always increases demand for developing country exports above the current trend level. For example, the emergence of the bicycle and automobile industries in the late nineteenth century vastly increased demand for South-East Asian rubber and Balkan mineral exports (Lewis, 1970; Berend and Ranki, 1977). The proliferation of ICT goods created a niche for labour-intensive assembly in East Asia. In both cases, foreign and local actors created new production zones and export streams. These potentially generated local development as backward and forward linkages emerged, and as the corresponding increase in local aggregate demand induced more production for local consumption. Today, this kind of potential is visible in the increased demand for lithium and batteryrelated rare earths generated by the shift to electric vehicles (UNCTAD, 2024a).

In a second positive effect, the emergence of new growth sectors in advanced countries has often led to shifting older manufacturing sectors to developing countries, as in Akamatsu Kaname's "flying geese" model (Bernard and Ravenhill, 2011). Greater productivity in new sectors enabled higher wages in developed economies, which pushed less-productive sectors offshore in search of lower wage costs. The "flying geese" model captured a dynamic that was more common before the 1980s, namely, the shift of entire industries from developed to developing countries (UNCTAD, 1996). A classic case was the relocation of garment assembly and eventually massproduced textiles, from, for example, Japan to the Republic of Korea, from the Republic of Korea to China, and eventually from China to, among others, Ethiopia.

This shift was uneven. Not all developing countries benefited, and a subtle change occurred after the 1970s. Rather than entire industries moving, multinational enterprises allocated selected slices of their production processes to developing countries, seeking to optimize wage and productivity levels, skills and logistics costs (UNCTAD, 2002, 2003). Roughly two thirds of global trade involved intermediate goods, indicating a relatively significant degree of decomposition, particularly in the highly globalized automobile, clothing and electronics industries (Lund et al., 2019).

Financing for this shift was uneven with respect to the implications for the control and funding of companies. In the immediate post-war era, a handful of developing economies self-financed the roll-out of consumer goods production and some capital goods production. Development banks and aid largely provided relatively small volumes of external finance, often tied to purchases from donor economies. In both cases, public rather than private authorities controlled the sources and disposition of capital (e.g. UNCTAD, 1998, 2016).

In the 1970s, the removal of capital controls in developed countries and the recycling of petrodollar surpluses unleashed a flood of cross-border lending from privately owned banks to State financial companies in developing countries. While this seemed to free these economies from the financing constraints of the 1960s, it also exposed them to the vagaries of monetary policy changes in the advanced economies. The legacy of the debt crisis in the 1980s induced a desire to shift towards local currency-denominated debt, which some developing countries realized in the 2010s (Onen et al., 2023).

At the same time, companies from developing countries ventured into global capital markets to borrow in harder currencies (Glen and Pinto, 1995). This shift was largely complete by the 2010s. This period also saw a growing degree of passive ownership of larger developing country firms by advanced country institutional investors. Generally, shifts in financing modes that first emerged in developed countries arose later or not at all in the developing world. By 2011, among the top 500 asset managers The mix of private and State ownership in developing economies may foreshadow a global trend.

Only about 18% of global trade in the 2010s was based on labour cost arbitrage. across the world, only 36 were from large developing economies, namely, Brazil, China, India and South Africa (Towers Watson, 2012; Celik and Isaksson, 2013). That said, the combination of private (unlisted) and State ownership prevailing in developing economies possibly anticipates the broader global shift towards State ownership and sovereign wealth funds (Babić, 2023; Babić et al., 2023).

The global decomposition of production greatly affects how countries can respond to the major changes caused by the emerging sixth Schumpeterian growth wave. Some medium-technology industries will shift to some developing economies, although the lack of product differentiation and low barriers to entry can depress prices. Component production for multinational enterprises, however, might disappear as new products and production technologies displace older ones. Some estimates suggest that only about 18 per cent of global trade in the 2010s was based on labour cost arbitrage, defined as trade with countries where GDP per capita was only up to one fifth of that of its trading partner (Lund et al., 2019: 8).

The ongoing shift towards the "servitization" of manufacturing appears to confirm these trends. With services enhanced by rapid technological advances over the past 20 years, the share of investment in services activities within manufacturing industries has nearly doubled, from 38 per cent in 2003 to 69 per cent in 2023. Today, it represents the majority of foreign direct investment projects. The obvious corollary of rising investment in services is the steep decline in the share of investment in manufacturing activities, which halved, from 26 to 13 per cent, during the same period (UNCTAD, 2024b).

The end of Schumpeterian growth waves has often triggered enormous disruption, such as when entire raw materials export production sectors collapsed or faced sharply falling relative prices, as with guano after the 1909 Haber process began making artificial fertilizers. Similarly, and more relevant to the current inflection point, innovations creating synthetic replacements for raw materials could cap the rate of growth of commodity export volumes and values, as with natural and synthetic rubber. Cardoso and Faletto (1979) meticulously traced the effects of sequential resource export booms in Latin America, showing whether and how different societies were able to use those resource booms to generate local economic diversification and development in the sense of both their economies and State-building.

The more recent dispersion of manufacturing has often involved the transfer of highly codified production processes with little potential for learning by doing or the capture of enough profits to fund a broad programme of local industrialization. Amsden (2001) presents a more optimistic account of manufacturing-led development, albeit before the rapid expansion of Chinese exports globally. These geographic shifts are not necessarily permanent, however.



The "servitization" of manufacturing: A challenge for developing countries

Share of investment in manufacturing industries

2023

0000000000 36% 999999999999 Others 000000000000 $\mathbf{0}$ 26% 0000000000 Manufacturing activities **9999999999** 00000000000 0000000000

2003

38% 000000000 Services activities **GGGGGGGGGG**

.8

666666666 18% **66666666666** 000000000013% 8888888888 0000000000 0000000000 0000000000 0000000000 000000000069% While incomes rose, convergence with developed economies remained limited to a few developing countries over 40 years. Giant companies largely determined what was produced and where, and thus what was exported. Their rubric matched local wages to local productivity, local firms' internal capacity to design and produce components, and the size of the local market (Dunning, 1970; Fröbel et al., 1980; Gereffi et al., 2005). This variously generated full-scale production for local consumption in large, desirable markets such as Brazil or China; production of specific components for global commodity chains, such as automobile transmissions, in countries with mid-level manufacturing skills, including Brazil and Poland; and subcontracted production of various consumer nondurables, especially clothing and shoes, in countries with abundant cheap but

disciplined labour, such as Bangladesh or Viet Nam (e.g. Hollveg, 2019).

A handful of countries, particularly in East Asia, climbed up the technology ladder, bringing local incomes and production capacity to something near rich country levels. For example, nominal GDP per capita in the Republic of Korea in purchasing power parity (PPP) terms went from 17.3 per cent of the United States level in 1980 to 69.3 per cent in 2023. By contrast, per capita income in Brazil, which has remained relatively reliant on commodity exports, declined from roughly one third to one quarter of the United States level. Overall, the entire group of developing economies, excluding China, simply maintained a more or less constant sixth of the United States

Figure III.2

Despite exceptions, most countries have not closed gaps in per capita output relative to the United States

GDP per capita relative to United States, selected country (groups) (Percentage)



Source: UNCTAD based on the IMF World Economic Outlook database (April 2024). *Note:* GDP per capita, current PPP international dollars. United States GDP per capita for respective year = 100.

98

per capita income level in PPP terms, declining from 17.7 per cent in 1980 to 13.5 in 1999–2000, and then recovering to 16.2 per cent in 2023 (IMF, 2023).

As figure III.2 shows, some countries, such as the Republic of Korea and, to a lesser extent, China, dramatically closed the gap with United States per capita income levels, measured in PPP terms. Yet relative per capita income in Latin American and sub-Saharan African economies actually declined; Eastern European countries went back to their pre-transition level; and the rise in both Asian and all developing economies has been largely a function of China's astounding growth. While absolute incomes in most developing economies rose on average over the past 40 years, convergence towards developed economies occurred only in a handful of countries.

The hyperglobalization associated with the fifth, ICT-based Schumpeterian growth wave has effectively created a much more finely grained global division of labour than prior waves. Beyond the ambiguous effects just noted, while the fifth wave opened space for a manufactured goods-led export strategy that prior waves largely lacked, it has potentially locked developing economies into low value added production (Bruhn, 2014; Lectard, 2023). Even the automobileled fourth wave tended to produce more domestic market-oriented manufacturing sectors behind significant tariff and nontariff barriers, such as domestic content regulations in automobile production.

The rising proportion of manufactured exports in developing economies over the past 50 years generated productivity gains that were much larger than in prior resourcebased export waves. This was because multinational enterprises either brought parts of their own relatively advanced production processes to new production sites or, when subcontracting, helped local firms to upgrade production to a level closer to rich country norms. While multinationals and prime contractors often captured the bulk of productivity gains in the form of cheaper input or wholesale prices, learning by doing and scale effects helped some economies raise local incomes. As Branco Milanović (2016) has shown, income gains in developing countries changed the 1960s bimodal distribution of global income to a more unimodal distribution, albeit with a sharp increase in the very top incomes. That said, the bulk of this income increase occurred in China and developing Asia.

The current inflection point raises questions about what the likely sixth wave will entail, including around whether it will create economic and policy space for export-led development, particularly of manufactured goods. The fifth growth wave enabled export strategies but locked developing economies into low-value added production.

C. Three critical inflections



Going forward, developing economies are likely to face a radically changed global environment. Three major interacting changes endanger development strategies based on expanded manufactured exports and potentially even resource exports. These changes are a massive shift in market demand and the location of production as a potential sixth growth wave rolls out; the related high risk of deglobalization; and a worsening security environment amplifying deglobalization pressure.

Changing technology, deglobalization, and security issues threaten development strategies reliant on manufacturing and resource exports. During the last decade, new technologies that could underpin a sixth growth wave have gone from promising to probable. They plausibly comprise the classic elements of a Schumpeterian growth wave. All significantly affect developing country exports and the ability to use export-led development strategies:

- New energy sources: renewables in the form of solar and wind electricity plus geothermal heating. While efforts to generate "negawatts" through conservation will continue, the likely outcome is a huge wave of cheap, renewable electrical energy.
- 2 New general purpose production technologies: bioinformatics, artificial intelligence-enhanced biogenomics and precision biotechnologies. Broader uses of artificial intelligence are less likely to be significant but represent a wild card in manufacturing, particularly through automation.

3 New consumer products: a broader range of electrically powered products, including and especially vehicles, and personal transportation options (not just cars but also e-bikes, three-wheelers, etc.), plus new materials through second-generation biotechnologies. There is potentially a shift in consumption towards more personalized medicines.

- 4 New transportation modes: an evolution in the main energy source and thus production process for much of the transportation sector through electrification and a related expansion of developing country personal transport through two- and three-wheel electric vehicles.
- 5 New forms of corporate organization:

a factor that is far from clear, but private equity and private debt markets are replacing open capital markets.

6 New modes of social organization: the most opaque and unpredictable of all, yet at the same time, the most important, especially in balancing supply and demand at the global level.

Based on obvious interconnections between, for example, new energy sources and transport modes, the following analysis suggests examining these six factors in three sets of paired factors.

1. New energy sources and transportation modes

While it is probably too late to prevent a substantial increase in average global temperatures, policy efforts to decarbonize the economy now work with market forces to promote electrification, in general, and clean transportation, in particular.

A range of countries, advanced and developing, has subsidized emerging solar and wind industries. Prices for wind and solar electricity are now competitive with those for power from coal and in some cases natural gas. This suggests a secular decline in coal use and thus developing country coal exports, which comprised 49 per cent of the global total from 2003 through 2022. Colombia and Mozambique are among the countries that are particularly dependent on coal exports (ITC, 2024).

Further, the electrification of the vehicle fleet portends a massive decline in demand for fossil fuels in general and petroleum in particular (BP, 2023; IEA, 2021; McKinsey Global Institute, 2023). Oil is an even more significant export than coal for many developing economies, including those with relatively high per capita income levels but also high dependence on oil exports. Developing economies accounted for 81 per cent of total world exports of crude oil on average from 2010 to 2022.¹⁵ Demand for petrochemicals and aviation fuels is most likely to continue at current absolute although not per capita levels. But these two sectors jointly only account for about one fifth of global oil demand (BP, 2023; McKinsey Global Institute, 2023). By contrast, demand contraction is already visible for oil consumed in overland transportation, which comprises half the total used worldwide. Global oil production in 2022 was still below its 2018 peak, and major private sector oil firms are disbursing profits to shareholders rather than investing in new production, with spending on

greenfield curtailed. Market projections anticipate a sharp deceleration in the growth of global oil and gas capital expenditure from 2024 onwards, compared with the levels seen between 2021 and 2023 (BMI, 2023).

In several developing countries, energy is a large component of exports overall, often dominated by fossil fuels. Table III.2 shows 35 countries where energy exports comprise more than 30 per cent of total exports. For the 25 countries where energy exports constitute more than half the total, the expected permanent negative shock to the value of exports (including through prices) is projected to have a significant impact.

Energy exporters with substantial accumulations of past fossil fuel export revenues, such as Kuwait, Qatar and Saudi Arabia, may be able to transition into a more diversified economy, as smaller Arab and Persian Gulf States have done. These exporters often have low production costs, which provides a further advantage in a context of expected declining fossil fuel export prices and energy transition. But the scale of this shock cannot be overstated, given that fuel exports comprised about 44 per cent of all global commodity exports by value and 14 per cent of all commodity exports from 2012 to 2022. Based on UNCTAD data, fuel exporters account for roughly one third of the 101 most commodity-dependent exporters.

¹⁵ Calculated based on the Standard International Trade Classification (SITC) of the United Nations, group 333, comprising petroleum oils and oils obtained from bituminous minerals, crude.

Table III.2

Some countries are highly vulnerable to a downturn in energy exports

Developing countries with energy exports greater than 30 per cent of total merchandise exports, in descending order of shares, 2022

Country		Energy exports (Billio	Total merchandise exports ons of dollars)	Share of energy exports in total merchandise exports (Percentage)
Iraq	-	124.8	129.3	96.5
Algeria	۲	57.8	60.9	94.9
Angola		48.1	51.3	93.7
Libya	•	35.5	38.0	93.6
Nigeria	0	57.9	63.6	91.1
Azerbaijan	0	34.4	38.1	90.3
Turkmenistan	۲	11.8	13.2	88.9
Equatorial Guinea	•	6.6	7.5	88.5
South Sudan	©	0.7	0.9	84.5
Qatar		109.2	131.0	83.4
Brunei Darussalam	<u></u>	11.4	14.2	80.3
Venezuela (Bolivarian Rep. of)		3.6	4.7	77.2
Saudi Arabia		319.9	426.5	75.0
Guyana	\triangleright	8.3	11.3	73.3
Chad	0	2.4	3.5	69.4
Gabon	•	5.8	9.2	63.3
Congo	0	6.6	10.7	61.7
Kazakhstan		51.8	84.4	61.4
Colombia	-	35.1	58.6	60.0
Trinidad and Tobago		7.6	13.3	57.4
Oman	•	37.3	66.5	56.1
Mongolia		7.0	12.5	55.5
Cameroon		3.2	5.9	54.8
Kuwait	C	51.7	101.3	51.0
Iran (Islamic Republic of)	2	36.7	72.1	50.9
Timor-Leste	⊘	0.2	0.5	49.7
United Arab Emirates	C	262.1	532.8	49.2
Yemen	•	0.4	0.9	48.2
Mozambique	6	3.8	8.3	46.1
Papua New Guinea		5.6	14.5	38.5
Ecuador	8	11.7	32.7	35.9
Ghana	•	6.7	18.7	35.9
Lao People's Dem. Rep.	0	2.7	7.6	34.8
Indonesia	\bigcirc	100.4	292.0	34.4
Egypt	1	15.6	48.1	32.4

Source: UNCTAD based on UNCTADstat export data.

Note: The Bahamas, Jamaica and Saint Lucia are not included as their energy exports are dominated by re-exports. Energy exports from the Lao People's Democratic Republic are mostly electricity.

The growing disconnection between GDP growth and oil consumption that started in the mid-1980s in the developed economies now extends to many developing economies (figure III.3). Unlike the past, when rising incomes in developing countries spurred consumption of petroleum for personal and commercial transportation, future increases will likely be met by electrified light vehicles, especially scooters and very light vehicles. Global car sales peaked in 2017 and are currently below the 2011 level – itself a crisis year. Meanwhile, one seventh of new cars sold in 2022 were electric.

From 2002 to 2021, 8 of the 10 largest oil importers cumulatively were advanced countries with the ability to fund a roll-out of renewable energy (ITC, 2024). The other two were China and India, both of which have committed to expanding solar electricity production and would prefer to reduce dependence on imported oil. Future increases of demand for personal and commercial transportation are likely to be met by electrified light vehicles.

Figure III.3



World output compared to oil consumption growth (Index numbers, 1960 = 100)



Source: UNCTAD based on the LSEG Eikon database.

Although the large existing fleet of petroleum-fuelled vehicles necessarily slows change, countries that rely on petroleum exports for a substantial portion of export revenues will likely encounter increasing constraints in funding existing import levels over the next two decades. This difficulty will be existential for countries such as Angola, Azerbaijan and Libya, where fuel exports comprised over 40 per cent of total GDP – not just exports – on average from 2010 to 2022, and where past export revenue has been largely consumed. A second set of countries, where oil exports comprise over 25 per cent of GDP, such as Algeria, the Bolivarian Republic of Venezuela and Kazakhstan could also be affected by this shift. All told, crude oil exports comprise over 30 per cent of exports for 22 developing countries, and over 50 per cent for 14 of those 22. A third group of countries using oil exports to fund consumable imports is likely to find income constrained.



Figure III.4

As the energy transition moves forward, export-dependent countries with high shares of fuels could face a significant shock

Exports of fuels as shares of total commodity and merchandise exports (Percentage)



Source: UNCTAD based on the UNCTADstat database. *Note:* Based on the Standard International Trade Classification, Revision 3.

The fact that most developing countries are in locations favouring solar electricity generation might enable them to free themselves from oil imports and the related need to fund oil-import-driven trade deficits with debt. This has important implications for the centrality of the United States dollar in global trade and finance. From 1992 to 2021, roughly one fourth of the cumulative global current account deficit was attributable to net oil imports (IMF, 2023). This deficit required financing, which as a matter of accounting identities was offset by the corresponding current account surpluses of oil exporters. But as oil was and largely still is priced in dollars, net oil importers typically borrowed those surpluses in dollars, even if indirectly. This freed borrowing capacity to import goods for renewable energy infrastructure yet also introduced some uncertainty into trade invoicing, an issue considered in the next section.

Some developing economies will benefit from increased demand for raw materials critical for electrification. According to the latest UNCTAD analysis, the global response to surging demand for transition minerals mainly centres on growing minerals extraction (figure III.5). Importing countries aim to secure access to these minerals, often by ramping up domestic mining operations as part of widespread efforts to bridge gaps between supply and demand. Global exploration budgets rose by 16 per cent in 2022, following a strong 34 per cent rebound in 2021. Latin America was the primary destination of 25 per cent of this exploration in 2022. Africa was second, accounting for 17 per cent (Standard and Poor's Global Market Intelligence, 2023). Investment in critical minerals development rose sharply, by 30 per cent in 2022, following a 20 per cent increase in 2021 (IEA, 2023). It remains to be seen whether this investment will be enough to meet increasing demand (UNCTAD, 2024c: 43).

Figure III.5

Demand for key energy transition minerals is taking off and will likely grow significantly by 2050

Ratio to 2023 demand of the stated policy scenario and a net-zero emissions scenario, both by 2050

Total clean technologies Other uses
Copper
SPS 0.5 1.0
NZE 0.7 0.8
Nickel
SPS 0.7 1.1
NZE 1.0 0.9
Magnet rare earth elements
SPS 0.6 1.3
NZE 0.9 1.3
Cobalt
SPS 1.0 1.0
NZE 1.5 1.0
Graphite (all grades: natural and synthetic)
SPS 1.0 1.7
NZE 1.7 1.8
Lithium
SPS 6.3 0.9
NZE 9.5 0.9

Source: UNCTAD based on IEA, 2024b.

Note: SPS refers to a stated policy scenario and NZE to a net-zero emissions scenario, both by 2050.

It is important not to overstate the degree to which demand for minerals can drive development for more than a few countries. Some materials required for renewables, such as lithium, are widely dispersed geographically (table III.3), although processing is currently fairly concentrated. Others, such as cobalt or rare earths, are not. Advanced economies, such as Australia and the United States, are already inducing local production with new industrial policies. Norwegian authorities announced an 8.8-million-ton deposit of rare earth elements in June 2024. Security concerns are reinforcing efforts to find more readily and locally available materials for batteries, such as iron, rather than relying on minerals such as cobalt with concentrated supply sources. It is important not to overstate the degree to which demand for transition minerals can drive development for more than a few countries.



	Production		Reserves		Resources	
Regions	Tons (Thousands)	Number of countries	Tons (Thousands)	Number of countries	Tons (Thousands)	Number of countries
Africa	1	1	220	1	4,340,000	5
Asia and Oceania	54	2	6,200	2	11,550,000	3
Europe	1	1	60	1	5,870,000	7
North America	1	1	1,280	2	10,800,000	2
South America	26	3	11,19	5 3	52,950,000) 6
Unclassified			2,045		490,000	

Source: UNCTAD based on data from the International Lithium Association.

New technologies may disrupt markets, affecting trade and stability, while reliance on scarce materials increases risks.

This analysis highlights several risks for developing countries.

- First, electrification may reduce the development potential of raw materials exports. While quantities of some exports may increase in line with population growth, many will likely shrink on a per capita basis in terms of quantity and value.
- 2 Second, the introduction of new technologies may disrupt existing markets, impacting trade flows and economic stability. Dependence on critical and scarce materials for batteries further exacerbates these risks, as their supply chains are prone to disruptions and hence price volatility and shortages.
- 3 Third, fluctuations in demand, supply chain issues and geopolitical factors can cause significant price volatility in new energy technologies and transportation modes. As these technologies evolve, shifts in global economic power and trade balances may affect trade relationships and agreements.

These risks point to the importance of international agreements and mechanisms to help advance the global shift towards more sustainable transportation systems while addressing the complex challenges of the energy transformation (box III.3).



Box III.3

Cars, ships and planes – international policy mechanisms are steering more sustainable transportation

Towards achieving global emissions reduction targets, such as those established by the Paris Agreement, countries often set specific targets for reducing transportation emissions, including in nationally determined contributions. Such commitments have led to policies promoting cleaner transportation technologies and practices.

Greater policy harmonization fosters a unified global strategy for lowering emissions. International agreements urge countries to synchronize transportation policies with global standards, such as fuel economy regulations and electric vehicle incentives, towards expanding markets for clean technologies and cutting costs.

Standards and regulations by organizations such as the International Maritime Organization and the International Civil Aviation Organization help reduce emissions in shipping and aviation. For example, the International Convention for the Prevention of Pollution from Ships includes regulations to limit sulfur emissions and encourage the use of cleaner fuels and technologies.

Financing and investment provided by international mechanisms such as the Green Climate Fund and the Global Environment Facility support sustainable transportation and reduced emissions. Multilateral initiatives should not add to the existing debt burdens of developing countries, however. Vulnerable economies, such as landlocked developing countries, least developed countries and small island developing States, should receive needed official development assistance and financial support to navigate the macroeconomic consequences of potential technological disruptions and the energy transition.

International collaborations drive technology and innovation. The Technology Collaboration Programme and Mission Innovation of the IEA are advancing research on transportation technologies, for example. The Clean Energy Ministerial's Electric Vehicles Initiative and the Global Fuel Economy Initiative promote best practices and fuel efficiency. Regional efforts, such as the European Union's Green Deal, set ambitious targets for collective transportation transitions. International organizations also offer capacity-building and technical assistance for sustainable transportation policies. Expanding multilateral policy coordination to steer such initiatives should avoid disadvantaging developing and vulnerable economies, and support more inclusive global governance based on transparency and fairness.

The private sector can drive progress in new energy sources for transportation by investing in research and development for electric vehicles, hydrogen fuel cells and advanced biofuels. Companies including Tesla, Rivian and Plug Power lead in commercializing these technologies. While private investors invest in start-ups and projects, and businesses play major roles in developing essential infrastructure such as electric vehicle charging networks, the regulation and governance of these new segments is also critical to balance risks and benefits for societies. Public investment programmes and new industrial policies for a green transition can be vital in coordinating the development of new industries. Collaboration among businesses, Governments and research institutions could boost technology development and accelerate the shift to cleaner transportation. Companies could expedite this process by advocating for supportive policies and integrating sustainability into their own operations.

2. New general-purpose technologies and consumer and investment goods

Biotechnologies, bioinformatics, and Al could replace developing countries' exports with advanced economies' local production.

Data control in precision agriculture means the benefits may not reach most of the world's farmers. Artificial intelligence-enhanced biogenomics combined with other second-generation precision biotechnologies pose a second substantial threat to export-led development. The reason is simple. From 2013 to 2022, agricultural and mining exports on average constituted over 50 per cent of merchandise exports for 71 of the 155 countries in the IMF group of emerging market and developing economies. Forty-six of the 71 countries are among the poorest countries globally, constituting 58 per cent of low- and lowermiddle-income countries under the World Bank's 2022 criterion. Second-generation biotechnologies, bioinformatics and the artificial intelligence-based generation of potentially new materials threaten to replace exports from these countries with local production in advanced economies. Three sets of factors explain the risks.

First, agriculture as a whole has been transforming from a labour-intensive activity with irregular yields and long logistical chains to a complex, financialized and digitized system with predictable qualities, scalable quantities and proximity to endmarkets. Concentrated corporate control and financialization of the global food system tend to benefit large corporate groups that dominate the market, typically to the disadvantage of producers in the developing world (chapter IV). A few large corporations and financial institutions asymmetrically absorb profits from commodity booms and market volatility (UNCTAD, 2023c).

Within these institutional changes, new technologies and advanced robotics have made digital farming more affordable and accessible. In principle, these shifts can raise efficiency and productivity in agriculture, benefiting farmer incomes and the environment. Yet the digitalization of agriculture could also further accelerate the concentration of plant genome data in the hands of a few large seed companies. Data ownership and control associated with precision technologies in agriculture imply that the benefits, if realized, are unlikely to reach the majority of the world's farmers (Clapp and Ruder, 2020).

Second and related, artificial intelligenceenabled biogenomics and protein visualization programmes¹⁶ allow companies to reverse engineer protein structures. Once a structure is known, DNA and RNA can be precisely constructed to generate proteins, which may or may not be naturally occurring materials. Some advanced country firms¹⁷ have already devised manufacturing processes that produce spider silk analogues, albeit not yet at commercially viable prices. But that qualification indicates an engineering problem rather than some fundamental barrier. Novel biologically based materials are no longer the "unobtanium" of mechanical engineering.

Biologically based products have potential to shift the production of raw materials away from developing countries at the margin. These novel materials could easily displace production of fibres such as cotton on account of their greater strength, wearability and stain resistance (Tummino et al., 2023). In the case of cotton, the pain is likely to be shared across advanced and developing countries, given that roughly 40 per cent of global cotton exports are from the United States.

Overall, about 45 per cent of exports from the 55 most vulnerable countries are agricultural products. As with petroleum, new materials are unlikely to displace all existing production and exports. But they might limit volume growth and put downward pressure on values, which in turn would inhibit the growth of local demand needed to induce manufacturing investment. Developing economies may

¹⁶ See, for example, the Alphafold Protein Structure Database.

¹⁷ Such as Bolt Threads and Gingko Bioworks.

become producers of raw material inputs for new biologically based production processes, but this would consign them to a lower value added segment of the commodity or value chain.

Bioengineering might make it possible to grow some tropical fruits and vegetables in temperate climates, particularly in socalled vertical farming structures. It also may expand the range of agricultural goods produced in developing economies through land-intensive methods, whether for export or domestic consumption. The historical record, however, suggests that developed country owners of intellectual property related to these novel goods or necessary inputs tend to capture the bulk of revenue generated (Dosi and Stiglitz, 2013). Some developing economies have managed to overcome this problem. The engineering by Brazil of soya beans suitable for local soils is one such example. But most developing countries are unlikely to have this country's research capacity. They may struggle to face the giant firms dominating food processing and agrichemicals (Baines, 2017). Even Brazil has difficulty capturing the bulk of revenue from its soya bean commodity chain. Medina and Thomé (2021) estimate that it gains only 36 per cent of total profits, given its near total dependence on foreign firms for tractors and combines, seeds and marketing, along with lesser but still significant dependence on foreignmade fertilizers and pesticides (figure III.6).

Brazil, a top agro-exporter, captures just 36% of soy profits, relying heavily on foreign equipment and seeds.

Figure III.6

Brazil: The soya bean commodity chain loses much of its value through continued dependence on inputs from foreign firms

Selected components of the soya bean supply chain in Brazil, 2020 (Percentage)



Source: UNCTAD based on Medina and Thomé (2021: 63).

Notes: Only two firms are active in the Brazilian market for soya seed production, which enables showing the country- and firm-level market composition. The number of firms active in Brazilian pesticides and trading markets is larger, thus panels B and C only display country-level market composition.

Petrochemical demand may endure vehicle electrification, but plastic pollution drives bio-substitutes, limiting future petroleum exports. Bioengineered products pose a dual threat to petroleum exporters. First, the bioengineering of crops better able to fix nitrogen is likely to reduce demand for fertilizer, the bulk of which is derived from methane. Rising demand for organic food and agriculture may reinforce this trend. Second, while demand for petrochemicals may survive the electrification of the vehicle fleet, plastic pollution has galvanized a search for biologically based substitutes. As with enhanced crops, this limits volumes and values for petroleum exporters going forward. Plastic is a highly profitable part of the fossil fuel value-chain, as it is derived at very little cost as a refinery byproduct. From a climate perspective, a reduction in excessive plastic use and a move towards non-plastic substitutes is good news.

This step-change presents both policy challenges and opportunities for countries dependent on petroleum exports. A new global treaty regulating plastics is currently being negotiated, including the establishment of a fund for supporting the costs of transition and transformation. Profits could also be made from shifting to non-plastic substitutes. Some countries heavily exposed to plastics are already embracing alternatives, including from seaweed. Not all countries that are fossil fuel exporters are big plastic producers, however; they may even be net plastic importers if they lack necessary chemical plants or refineries. Overall, multifaceted health, economic and environmental benefits come from regulating plastics production, trade and use, and promoting the evolution into less problematic options (Barrowclough and Deere-Birkbeck, 2022; UNCTAD, 2023a).

The combination of artificial intelligence and new additive manufacturing processes is a third threat to exports. Additive manufacturing technologies such as three-dimensional printing enable rapid prototyping and the customization of parts, allowing the production of time-sensitive goods and components much closer to the end user (e.g. Calignano and Mercurio, 2023). The dispersal of labour-intensive, loosely coupled component production by multinational enterprises and of fully builtup consumer non-durable production by retailers made economic sense only as long as logistics and labour costs as well as time sensitivity were relatively low. Logistics costs are approximately 30 per cent of the final cost for goods moved from Asia to the United States or Europe. Such costs can rise if Governments get serious about taxing the carbon content of fossil fuels used for water and air transport. Brent oil prices averaged \$24 per barrel from 1990 through 2005, but from 2006 through 2023, they averaged \$77 per barrel (figure III.7).

Figure III.7

While lower-cost transport helped drive the dispersal of production, oil prices now hover far above levels in the 1990s

Brent crude oil price per barrel, January 1990-May 2024 (Dollars)



Source: UNCTAD based on United States Federal Reserve System economic data.

While prices did moderate to \$68 on average from 2014 through 2023, they remain significantly higher than during the 1990s. In inflation-adjusted terms, using the United States consumer price index as most oil is priced in dollars, oil is now roughly twice as expensive as it was during the hyperglobalization era. Meanwhile, decreased security for water transit has raised insurance costs and transit times for sea routes and some air freight routes from Asia to Europe.¹⁸ Any long-term reversal of the exceedingly low interest rates of the post-2010 era is likely to escalate logistics costs because inventory in the transport pipeline (such as goods in containers on ships) must be financed (figure III.8).

Figure III.8

Higher interest rates on long-term government bonds may lead to spikes in logistics costs

Interest rates on 10-year government bonds in Germany, Japan and the United States (Percentage)



Source: OECD Monthly Monetary and Financial Statistics data set.

Rising logistics costs incentivize the use of new, onshore production technologies. The so-called third manufacturing revolution – the application of information technology to all phases of manufacturing, and particularly artificial intelligence-enabled additive manufacturing – can lower capital costs relative to wages by reducing downtime, errors and unsold inventory. It may also serve localized markets for highly customized, on-demand products suited to advanced country markets. By putting a premium on design and quality features that are difficult to find and sustain in developing economies, this shift could substitute local production for goods made in distant lowwage labour locations. On the cost side, artificial intelligence will probably increase the efficiency of automation, removing some of the cost of expensive developed country labour from corporate location decisions. In this regard, ILO warns that Risks of further increases in inequality need to be addressed if the benefits from Al-based technological progress are to be broadly shared.

¹⁸ Based on an UNCTAD rapid assessment in February 2024 available at <u>https://unctad.org/publication/</u> navigating-troubled-waters-impact-global-trade-disruption-shipping-routes-red-sea-black.

risks of further increases in inequality need to be addressed if benefits from artificial intelligence-based technology are to be broadly shared (Ernst et al., 2018).

While artificial intelligence in general tends to be overhyped, it likely entails significant negative consequences for labour-intensive offshore services such as telephone-based, low-level technology help and customer service. Routine, codifiable customer service exports are already being handed to artificial intelligence chatbots, decreasing labour demand and thus the aggregate value of such exports (Chang and Phu Huynh, 2016).

New technologies and abundant renewable energy could trigger deflation in primary commodities and undifferentiated manufactured goods. This shift can be especially hard on providers in India and the Philippines. In 2023, seven of the giant information technology companies of India, including the two biggest, Tata Consultancy Services and Infosys, collectively laid off 75,000 employees or about 4 per cent of their combined workforce (*The Economist*, 2024). Such indicators are mirrored in current shifts in the pattern of foreign direct investment globally, where the share of greenfield investment into high-value-added sectors has grown from 45 per cent in 2004–2007 to 63 per cent in 2020–2023 (UNCTAD, 2024b). This presents formidable challenges for policymakers in low-income countries that are still in early stages of global value chain development.

More broadly, the uptake of new generalpurpose technologies combined with potentially abundant renewable energy might spark an era of deflation for many primary commodities and undifferentiated manufactured goods. This is likely to generate two financial problems for developing economies. First, it can reduce export revenues and slow aggregate demand. In turn, this can hinder local investment and global demand for investment goods. Second, falling prices for exports imply less revenue to service debts with the interest and principal fixed in nominal terms (figure III.9). This can intensify stress from external debt on both the macroeconomic balance and, again, local aggregate demand. If left unaddressed by policymakers, these two forces are likely to combine into a cascade of complex, system-level crises, akin to the lost decade that Latin American and other countries experienced in the wake of the 1982 debt crisis.

Figure III.9



Rising external debt servicing relative to export revenues could provoke cascading crises

Proportion of export revenues spent on debt service by type of economies (Percentage)

Source: UNCTAD calculations based on World Bank International Debt Statistics and the IMF World Economic Outlook.

Summing up, any broad implementation of sixth growth wave technologies – keeping in mind too that climate change considerations could accelerate the energy shift – threatens to reduce major sources of export revenues for developing countries. This process might impede the traditional path to economic development, since exports are critical in addition to local aggregate demand. While not all features of this technological revolution are negative, most are for developing economies. Reducing current debt burdens is thus vital for enabling their financial sustainability in the changing economy.

The discussion above largely left aside geopolitical factors that will be discussed in section D; these too are largely negative.

3. Corporate and social organization

Earlier editions of this report in 2017 and 2018 examined some likely impacts of digitalization on the international organization of production and employment. In 2018, the report suggested that digitalization may reduce dominance by lead firms and shift relationships away from captive governance towards more relational and modular types. Increased possibilities for product customization could move the control of value chains towards customers, whose specific desires for product functionality and features could guide design and production patterns.

Reaping these benefits, however, crucially depends on a supplier's digital capabilities. This is because digitalization also satisfies demands for more granular financial and managerial control and contributes to greater flexibility for lead firms in choosing among an increased number of suppliers. This could heighten the risk that producers without digital capabilities could be marginalized or excluded (UNCTAD, 2018: 76). In this respect, the example of the digital public infrastructure of India (India Stack) highlights the role public policy can play in enabling countries to capitalize on the benefits of digital ecosystems (Alonso et al., 2023).

Despite growing research on the effects of digitalization and artificial intelligence, corporate organization remains an unobvious and unpredictable part of the emerging sixth growth wave. Social organization is, if anything, even less obvious, along with the outcome of diverse political and social struggles in different countries, but Perez (2002) and Schwartz (2019) provide some historical examples. That said, the ongoing turn towards stronger antitrust and anti-monopoly stances in the United States and Europe, in the face of the growing power and size of multinational enterprises (Babić, 2023; Babić et al., 2023; Wang, 2015; UNCTAD, 2023c), points to a challenge to the shareholder-owned, public equity market-based, large-firm model prevailing after 1990. Some new forms of corporate organization are also discernible.

First, in principle, technological imperatives should shape corporate organization to a degree (Kitschelt, 1991). Heavy industry cannot be run by small firms; biotechnology research seems better suited to small, independent teams. In practice, however, institutional mimesis - the human desire to try to emulate what seems like obvious forms of corporate organization (Dimaggio and Powell, 1983) - remains, regardless of technological imperatives. An issue crucial for development is that most companies are enmeshed in complex commodity chains. The nature of their linkages determines the distribution of value generated (see also chapter IV).

For example, consider the difference in profit per employee at Apple, Taiwan Semiconductor Manufacturing Co. (TSMC) and Hon Hai (the parent of electronics assembly giant Foxconn). In this commodity chain, Apple possesses significant intellectual property rights in the form of design patents and software copyrights. TSMC possesses tacit production knowledge and a huge investment in Sixth wave technologies and energy transition threaten developing countries' exports, making debt reduction crucial for sustainability.

Stronger antitrust policies in Europe and the United States challenge the large, shareholderowned firm model dominant since 1990. physical capital for producing the key processing chip going into the iPhone. Foxconn marshals over 1 million workers in China to assemble the iPhone and other electronics. While Foxconn brings significant production knowledge to the table, it relies on key machinery owned by Apple to attain Apple-level quality for fit and finish (Satariano and Burrows, 2011). Consequently, Apple generated €465,451 in cumulative profit per employee from 2004 to 2022, TMSC €257,919 per employee and Hon Hai only €12,984.19

Private equity is displacing public firms in advanced economies, while State ownership dominates in developing economies. Second, with respect to institutional emulation, two somewhat different models seem to be emerging. Both involve some degree of absentee ownership, in which a holding company model and firms appear to be disposable collections of assets. In advanced countries, private equity (Appelbaum and Batt, 2014) and institutional ownership (Braun, 2022) are on the rise, displacing traditional publicly listed firms (Feldman and Kenney, 2024; Murugaboopathy and Oguy, 2022). In many developing economies, State ownership through sovereign wealth funds or, in a reprise of the old Gerschenkron model, State-owned banks seem to be the emerging model (Babić, 2023; Babić et al., 2023; Wang, 2015).

While these changes may not seem particularly important relative to the roughly 25 to 30 per cent GDP share of publicly listed firms, the private equity share has been rising and the publicly listed share falling for the past 30 years (Schlingemann and Stulz, 2022). The private equity (as distinct from private ownership) share of GDP in the United States grew to roughly 6.6 per cent in 2022 (Ernst and Young, 2023). Although private equity is less important outside the United States, the share of equity market capitalization intermediated through the United States and other institutional investors has been growing, as has the presence of private equity firms.

Third, there are signs of a reversal in the vertical disaggregation characterizing corporate structures from the 1980s to the present. After the 1980s, many firms, including and especially in the United States, spun out some labour-intensive and physical capital-intensive activities to concentrate on "core activities" (Pralahad and Hamel, 1990) that were often very human capital-intensive.

The paradigmatic but not unique firm here would be Apple. Apple used to manufacture its own products in its own factories. But from the mid-1990s onwards, it has largely only designed software and more recently semiconductor chips. It subcontracted the production of chips and other physical components going into its products to a variety of Japanese and European firms, and then had components assembled by labourintensive firms in Asia. Lately, however, Apple is increasingly absorbing what used to be discrete components into its internally designed central processing unit, the brain of the computer. While this is not fullscale vertical reintegration, it does reverse the earlier trends insofar as it brings the production of value in-house. Apple also exerts considerable surveillance and control over its assemblers and some component producers in a kind of de facto reintegration.

Similarly, Chinese automobile producer BYD has returned to the comprehensive, vertically integrated model of vehicle production that used to characterize automobile firms in the 1960s and 1970s. Other car makers are taking stakes in or establishing battery producers, suggesting that reintegration is an emerging phenomenon in the critical vehicle sector. These examples reflect a general process of reconfiguring global value chains towards less complex and fragmented structures in the quest for security and resilience (UNCTAD, 2024b, 2024c).

Visualizing the potential social and political institutions that might bring supply and demand into balance is even more difficult.

¹⁹ Calculated based on data from the European Union Economics of Industrial Research and Innovation Directorate available at https://iri.jrc.ec.europa.eu/data.

This is particularly so at a global level, given the difficulties involved in any largescale multilateral agreement. Few such negotiations have succeeded since the inconclusive WTO Doha Round. Still, persistent global imbalances (figure III.10) driven by supply and demand imbalances at the local level in key economies will put considerable pressure on global institutions regulating trade and domestic politics in both net-exporting and netimporting economies. As Michael Pettis (2024) has argued, the three big non-oil surplus countries all repress wages relative to underlying productivity or repress demand across the whole economy.

Figure III.10

Global imbalances in supply and demand will pressure both trade and domestic politics

Share of cumulative current account deficits and surplus allocations, 1992–2022 (Percentage)



Source: UNCTAD based on the IMF World Economic Outlook Database (April 2024).

Note: Surplus crude oil exporters are Algeria, Angola, Azerbaijan, Bahrain, Brunei Darussalam, Ecuador, Gabon, Iran (Islamic Republic of), Iraq, Kuwait, Libya, Nigeria, Norway, Qatar, Russian Federation, Saudi Arabia, United Arab Emirates and Venezuela (Bolivarian Republic of).

That said, the significant gap between the supply side and domestic demand in key net exporters is increasingly unsustainable, although for oil exporters this is, as noted above, a more complicated situation. Put simply, the top 10 net merchandise exporters, including oil-exporting Norway, the Russian Federation and Saudi Arabia, accounted for roughly 77 per cent of cumulative global current account surpluses from 1992 to 2022. Virtually all have continuous, not just continual, surpluses over that period, indicating structural rather than conjunctural surpluses. And all had household final consumption shares of GDP well below the global average, indicating some degree of repressed

domestic demand. Over this extended time period, some surplus countries had household final consumption shares in the range of 30 to 50 per cent of GDP.

The reason to focus on surplus countries rather than deficit ones is that adjustment towards more consumption in the former is less deflationary for the world economy than a reduction of consumption in the latter. The mismatch between supply and weak demand might increase if recent national efforts to expand local supply through industrial policy are successful. This leads to the final challenge for development models built on exporting, namely, the inflection point in the global trade regime.

Global

imbalances may grow if national efforts to boost local production through industrial policies are not paralleled by an increase in demand. The erosion of rewarding manufacturing jobs, or perceived impossibility of such jobs in the future, have fed fears of economic insecurity rooted in the fragility of livelihoods.

D. Understanding the drivers and effects of a fragmenting trade system

Trade fragmentation can be defined "as a policy-driven change in global trade flows and rearrangement of [global value chains], often guided by strategic considerations" (Gaal et al., 2023: 2). While in the short run, it is easy to ascribe such changes to heightened geopolitical risks, from a longer-term perspective, policy-driven changes to international trade have deeper causes. A range of factors influences the balance of benefits and losses from globalization and, crucially, public perceptions of such

a balance. But the relationship between liberalization policies and manufacturing tends to resonate most strongly in political attitudes to trade policies, past and present.

Today, many workers in advanced countries, "having been brought up on the promise of a middle-class democracy underpinned by stable industrial jobs, find themselves toiling in the gig economy" (Galbraith, 2024; figure III.11). The erosion of rewarding manufacturing jobs and the perceived impossibility of such jobs in the future have

Figure III.11

Workers in advanced countries could long count on stable jobs but many no longer find them in manufacturing

Share of manufacturing in total employment, selected developed countries (Percentage)



Source: UNCTAD based on data from the OECD and United States Bureau of Labor Statistics.

fed fears of economic insecurity rooted in the fragility of livelihoods (Azmanova, 2023).

It is a dangerous trend. In societies where citizens feel disempowered, central authority may grow stronger but also more arbitrary (Azmanova, 2023). This feeds fragility internally and contributes to risks of fragmentation internationally. Trade tensions, protectionism, home-shoring and the securitization of supply chains have become hallmarks of international trade during the past decade. In part, these measures stem from competition and frictions among leading economic powers (China, the United States and the European Union). But new industrial and trade policies also offer a political response to public discontent with the consequences of globalization.

The turn to protectionism in major regional markets adds to existing pressures on the multilateral system. As preceding chapters show, losses to global GDP from economic fragmentation are substantial. Yet when evaluating the potential effects of current tendencies, in the short to medium term, trade (in services and goods) is driven more by demand than changes in efficiency triggered by policies on tariffs and regulation. Trade, as Alan Beattie notes, tends to follow the economic cycle but with a bigger amplitude (Beattie, 2024). It is therefore important not to overstress the extent of deglobalization.

First, outside China and the United States, other advanced economies – such as France and Japan – have increased their openness (Posen, 2021). Second, in absolute terms, global trade and financial flows have continued to grow. In that sense, there has been no deglobalization that might hinder developing country exports.

Yet relative to global GDP, both trade and financial flows are stagnant. Global trade grew twice as fast as global GDP from 1995 to 2007 (Lund et al., 2019: 5). As a proportion of global GDP, however, global trade essentially peaked in 2008 at 16 per cent. As explained in chapter II, despite the rebound in 2023-2024, it remains below pre-pandemic levels. Value added in exports reached its highest level in 2008 and declined through 2022. The pandemic clearly depressed trade even more than GDP in 2020 and 2021 but does not account for stagnating trade from 2011 to 2019. According to World Bank data, for low- and middle-income countries, total trade as a percentage of GDP declined by nearly 8 percentage points from 2008 to 2019. China and India undoubtedly account for much of the drop. But low-income countries saw an even larger 10 percentage-point decline. Further, the ratio of gross to value added exports - a measure of how many times goods and services crossed borders before their final sale - rose from 1.5 in 1993 to a high of 1.9 in 2011 before declining to 1.8 by 2019 (Subramanian et al., 2023: 7).

Policymakers in various developing and some developed economies are concerned about a structural issue: the "reprimarization" of their economies. Reprimarization is the shift from exporting manufactures as part of global commodity chains to exporting raw materials. According to ICT data, in Brazil, for example, raw material exports doubled from 31 per cent in 2003 to 61 per cent in 2022, while manufactured goods exports fell from 38 to 18 per cent. Trade tensions, home-shoring, and supply chain securitization reflect economic power competition and public discontent with globalization. Figure III.12 presents three snapshots of the export mix of Brazil over the last 25 years, showing the growing sophistication of manufactured exports from 1995 to 2003 and then the reversal to minerals and foods after 2003 (see chapter IV for further discussion of the effects of commodity boom). Australia has seen a similar shift from manufacturing to raw materials exports. It seems unlikely that this erosion of manufacturing will be politically sustainable in the long run.

Figure III.12

Wither manufacturing? Brazil's move towards commodity exports Brazil export mix, 1995, 2003 and 2022

(Percentage)



Source: UNCTADstat database.

Note: Manufactured goods categories include some raw materials items. Relevant in the case of Brazil, non-ferrous metals as well as pearls, precious and semi-precious stones, and non-monetary gold represented between 2 per cent and 5 per cent of the country's export mix between 1995 and 2022.

Reprimarization, combined with premature deindustrialization (Rodrik, 2013) shuts off the historic path to development and rising per capita income provided by manufactured goods exports. UNCTAD has long promoted the structural transformation of developing economies from labourintensive agriculture towards manufacturing and higher value services because this marked the historic rise in income and living standards in developed economies. The capitalization of agricultural production, in both physical and human terms, has reduced agriculture's 40 to 80 per cent share of the labour force to less than 3 per cent in most developed economies today.20 Workers went into industry and services.

In developing countries, by contrast, informality has increased as agriculture modernized and shed labour, even as industrial employment stagnated or declined outside the BRICS countries. From 1991 to 2022, manufacturing employment rose globally, from 24 to 28 per cent of total employment.²¹

Almost two thirds of that increase occurred in China, however. Brazil saw an essentially flat manufacturing share of employment. Rising informality is one factor contributing to faltering local economic capabilities, as measured by the UNCTAD productive capacity index.²²

^{••••••}

²⁰ OECD employment data available at <u>https://www.oecd.org/en/data/indicators/employment-by-activity.html</u>.

²¹ ILOStat Explorer series available at https://rshiny.ilo.org/dataexplorer37/?lang=en&id=EMP_2EMP_SEX_ECO_NB_A.

²² The UNCTAD productive capacity index is available at <u>https://unctad.org/topic/least-developed-countries/productive-capacities-index.</u>

Figure III.13



A lack of structural transformation has spurred rising informality and weakened productive capacity

Source: UNCTADstat database.

Notes: Structural changes in selected countries. Structural change refers to the movement of labour and other productive resources from low- to high-productivity economic activities. This shift is currently captured by the sophistication and variety of exports, the intensity of fixed capital and the weight of industry and services in total GDP. Higher numbers indicate greater sophistication and development in an economy.

The index of structural change shows a roughly 20 per cent increase in developing economies from 2000 to 2015 but then a slow-down and decline for the BRICS from 2020 to 2022 (figure III.12). Reprimarization is already generating political pressure for trade protectionism, on-shoring and local industrial subsidies. Geopolitical tensions add to pressures to take policy steps that might decrease trade and financial flows relative to global GDP.

This dynamic resembles that of the 1990s, when protectionist measures in the United States against Japan motivated firms to expand electronics and other manufacturing capacity in South-East Asia – but without any capacity reduction in Japan itself. This triggered a short boom era in South-East Asia as investment capital flowed in. But the subsequent surge in excess production caused falling prices, debt servicing difficulties, competitive devaluations and the 1997–1998 financial crisis in the region and beyond.

Global financial flows have also declined secularly. After expanding more than tenfold in current United States dollars from 1992 to 2007 and by ninefold on a per capita basis, the absolute level of foreign direct investment by 2022 had fallen by one third from its 2007 peak and by over two fifths on a per capita basis. While developing economies still experienced growth in foreign direct investment inflows through 2022, these were slowing relative to the era before 2008 and declined absolutely from 2022 to 2023, despite the recovery from COVID-19 (UNCTAD, 2024d).

Similarly, portfolio investment flows fell by 9 per cent from 2020 to 2022, with lending dropping by an even greater 14 per cent.²³ This decline has not been offset by a rise in other type of inflows (chapter II). Reprimarization pressures and geopolitics drive protectionism, on-shoring, and subsidies, reducing trade and financial flows globally.

²³ Derived from IMF Coordinated Portfolio Investment Survey data available at <u>https://data.imf.org/regular.aspx?key=60587819</u>.

South-South trade, net of trade with China, expanded by almost 150% from 2007 to 2023. Given that underlying data are in current dollars rather than being adjusted for inflation, the real effect on global growth is probably even greater. Global bank lending has also been stagnant. In constant dollar terms, the stock of outstanding cross-border bank loans is below the 2007 level.²⁴ The exception is total crossborder portfolio investment, which roughly doubled in real terms from 2008 until the COVID-19 shock in 2020, and then declined in nominal terms by roughly 10 per cent.²⁵

Finally, the economic shock from the United States Federal Reserve Bank's recent increase in interest rates has motivated a search for alternative financing, invoicing and settlement channels. This rate hike resonates with historical memories of the 1982 debt crisis triggered by the bank's similar efforts at inflation reduction. Conventional wisdom sees interest rate increases as a net good, because they tend to strengthen the dollar and make developing country exports more attractive in the United States. But UNCTAD and other recent research (Aldasoro et al., 2018) suggests that rate hikes are a net negative.

A stronger dollar means that local firms in developing economies face a double price shock as the cost of imported, dollar-invoiced intermediates rises, and the interest cost of borrowing to buy those imported intermediates also climbs. Interest rate hikes in the United States tend to reverberate through developing countries' financial markets, depressing economic growth (UNCTAD, 2022, 2023c). Foreign portfolio holdings of developing country sovereign debt, regardless of denomination, declined by 13 per cent from 2020 to 2023 as investors abandoned developing country bonds in favour of higher-yielding instruments in the United States (figure III.8).26

The growing degree of South–South trade integration can offset dollar effects (UNCTAD, 2022). South–South trade, net of trade with China, expanded by almost 150 per cent from 2007 to 2023, faster than the doubling of overall South– South trade net of China and of overall global trade growth (figure III.14).

But South–South trade remains largely dollar-invoiced, as most currencies are soft and/or thinly traded. Trade between the global South and China, which has almost tripled over the same period, could be invoiced in renminbi, reducing exposure to dollar exchange and interest rate swings. A shift to renminbi invoicing so far seems largely limited to a portion of oil imports of China and a smaller share of its iron ore imports.

Figure III.14

Exports from the global South almost doubled from 2007 to 2023

Global South exports (excluding China), by trade partner (Trillions of dollars)



Source: UNCTADstat database.

²⁴ Based on the Bank for International Settlements BIS Data Portal available at https://data.bis.org/.

²⁵ Derived from IMF CPIS data available at https://data.imf.org/regular.aspx?key=60587819.

²⁶ Based on the IMF Sovereign Debt Investor Base for Emerging Markets and Developing Economies available at https://www.imf.org/~/media/Websites/IMF/imported-datasets/external/pubs/ft/wp/2014/Data/wp1439.ashx.

While alternative channels may have beneficial effects by delinking local export invoicing from the dollar and perhaps creating alternative sources of financing, the transition is likely to be fraught. Obvious alternative currencies run into several difficulties. While the currencies of large, well-established surplus economies might seem like a clear choice, in the aggregate, credit creation would require a current account deficit so that borrowers could earn enough euros, renminbi or yen to service new debts. None of the surplus economies is likely to countenance such deficits, however. Globally acceptable synthetic currencies, such as the special drawing rights or a BRICS-based currency, run into similar conflicting interests, hindering renewed trade negotiations.

Alternative payment channels could reduce dollar reliance and create new financing, but the transition will be challenging.



E. Summary and policy lessons



The current inflection point is not novel. Yet the historical record reveals mixed messages about the geoeconomic and geopolitical transformation of the global economy. Successful development rests on an open trade regime that expands limited domestic aggregate demand, incentivizes and enables industrial investment. That investment, in turn, generates growth and development, understood as increased productive capacity, by means of backward and forward linkages in the domestic economy as well as increased productivity and quality.

A rise in geopolitical tensions and the fragility of the current rules-based trade regime institutionalized in the WTO threaten to disrupt this process. The WTO dispute settlement mechanism is currently not functioning due to vacancies in its appellate body. Such tensions may accelerate rapidly rising South–South trade, enabling growth similar to that powering early industrialization in late nineteenthcentury Asia (Abe, 2005; UNCTAD, 2022). The global trade landscape may also provide opportunities for developing countries to bargain for favourable trade, aid and financing conditions.

Geopolitics could accelerate investment in advanced economies in the new, disruptive technologies discussed above. These technologies have complex effects, however, including through the related concentration of corporate control. They are likely to be mostly negative for commodity exporters, though lower-cost electrical power will surely be beneficial.

Exporters of manufactured goods may leverage the artificial intelligence-enabled codification of manufacturing processes to leap forward on productivity, although complementary investment in education and social stability is critical. The subsequent imbalance between production and demand should prompt attention to both the domestic and global distribution of income and thus consumption power.

In short, the developing world today faces challenges similar to those when UNCTAD was first formed. Few observers in 1964 would have discerned the degree to which information and communications technology would help drive globalization and transform the industrial profile of many developing countries. Even fewer would have predicted how the geopolitical tensions of the Cold War would culminate. It is clear that the technological characteristics of the emerging sixth biotechnology and renewable energy wave do not offer a well-defined guide to the next two decades, let alone the next six. Much will depend on the mature management of the stresses on current trade and financial architecture, where geopolitics poses opportunities but could also constrain policy space for developing countries.

Is such management possible? In an ideal world, negotiations in available global forums – the United Nations, WTO, G20, etc. – might help resolve some potential problems from emerging industrial transformation while dampening geopolitical tensions. But the new technological wave is distinct from earlier ones. In addition

New technologies, concentrated in few companies, replace labour and favour home-shoring, heightening governance and policy coordination needs. to being labour-replacing, as in the past, new technologies are concentrated in a handful of companies. Further, some technologies favour home-shoring.

Governance issues and international policy coordination are therefore increasingly important in three key areas.

First, there is a growing need to ensure greater coordination and coherence among various policies, including those related to competition, trade, industrial strategy, data protection, digitalization, labour, consumer protection and taxation (see chapter V). More stringent enforcement should tackle the national and international concentration of economic power and control.

Closing data gaps and innovating more granular methodologies to define the sectoral composition of corporate profits, especially in developing economies, should be a national and international priority.

2 Second, artificial intelligence needs to be globally governed by agreed principles and standards. Policies and governance arrangements on precision technologies for agriculture, as one example, are sparse and fragmented. Without legislation, private actors propose codes of conduct or certification schemes (Clapp and Ruder, 2020) that may or may not align to broader development benefits. A delayed or absent political response to the sway of new technologies will likely leave a vast and critical area of the global economy controlled by large corporations and private regulatory bodies. This will be neither inclusive nor necessarily in the public interest.

The discussion above outlined some major risks facing developing economies. Least developed and landlocked developing countries, small island developing States and African economies are particularly vulnerable to the new technological disruption. At the multilateral level, these countries must have access to resources (ODA, financing for a green transition, debt relief, etc.) as well as technology.

Third and related, many countries have access to self-help policies. But those must be nested inside a greater global trade and investment regime to avoid debilitating trade conflicts and deflation. Services-export-led growth as a path to development will only remain feasible if new policy barriers are not enacted and access to markets and technologies is safeguarded.

Systematic information exchange on existing regulatory frameworks can be a step towards a comprehensive monitoring of global market concentration trends, identifying the economic footprint of multinational enterprises and coordinating international best practice guidelines and policies.

Several self-help policies stand out in developing national policy space. In the potential shift from fossil fuels as the basis for transport and power generation more generally, for example, most developing countries do not have domestic capacity to produce necessary equipment; much will have to be imported. The silver lining is that every incremental increase in renewable energy production should pre-empt or reduce fossil fuel imports. Electrification is not an additional burden in that sense. But as with net oil imports, it requires access to global credit.

For transport equipment, local industrial policy could substitute for imports given that production knowledge is already widely dispersed. Scooters, three-wheeled vehicles and basic transport such as the Bajaj Qute or a revived Tata Nano are more amenable to local production than the electronics-heavy Closing data gaps and developing granular methods to define sectoral corporate profits in developing economies is essential.

Delaying political action on new technologies risks corporate control over key economic areas, excluding public interest. While the 1990s saw the unbundling of manufacturing, the coming decades may see unbundling of services globally. internal combustion vehicles comprising the bulk of developed country car fleets.

Baldwin and Forslid (2020) suggested that tradable services, particularly those that are artificial intelligence-enhanced, might replace manufactured exports as an engine of demand. Just as the 1990s era of globalization saw the unbundling of and geographical redistribution of manufacturing, the next decades could see an unbundling of services. In some sense, this has already occurred with the relocation of consumer call centres, copyediting and some backend computer services. While this is a trivial example, some restaurants in New York City have begun using Zoom meeting software to have workers in the Philippines take orders and cash out patrons (Chen, 2024). Governments could encourage a similar unbundling of other parts of the services production chain, such as long-distance telehealth, machine monitoring and time-shifted activity.

Yet self-help policies suffer from two defects. First, low-income developing countries are unlikely to execute such strategies as they still lack manufacturing capacity and telecommunications bandwidth. Second, policies promoting extra productive capacity for transport equipment or unbundled services run up against the same fallacy of composition that plaqued historical efforts to boost raw materials or basic industrial capacity. If everyone rushes into the same market, prices inevitably fall, and debt service becomes problematic. This will exacerbate the destructive impact of high debt service costs already affecting developing countries, with 19 currently spending more on debt servicing than on education and 45 spending more on interest than on health (UNCTAD, 2024d). International agreements are therefore a necessary complement to local selfhelp industrial policy. They could guide a range of mostly win-win policies.

First and foremost, the advanced world could live up to existing promises under the United Nations Framework Convention on Climate Change and the Paris Agreement to help fund the energy transition in developing economies (UNCTAD, 2019, 2021b, 2023c). While this inevitably will reduce oil exporters' revenues, it also will help avoid extreme climate changes that impose particularly large costs on their own populations and economies. Many net oil exporters could be encouraged to take advantage of their abundant sunlight to power new industries. Accelerating the energy transition could enable oil importers to meet expanding transportation needs without provoking balance-of-payments problems.

Second, WTO rules on industrial subsidies and trade barriers need to be reconfigured to enable market access and fair competition, and to support raw materials exporters to expand the value added of their exports. Under the existing approach, the effort of Indonesia to induce more local smelting of nickel and chromium ores needed for expanded battery production as well the local production of those batteries stands out as the kind of scenario where WTO disputes are likely to become more common. To the extent that relatively low domestic consumption in export surplus economies stems from the underprovision of domestic public goods, the WTO or similar multilateral agreements could help reduce trade tensions that could potentially spiral into limits on free trade. These kinds of agreements might also spur more South-South trade.

Finally, coordinated policy mechanisms to stabilize domestic agricultural and raw materials production and prices (Schwartz, 2023; Weber, 2024) would help relieve current financial stress and defaults in the global South, largely stemming from higher advanced country interest rates and the potential transition to bioengineered replacements for traditional raw materials. The years of COVID-19 and post-pandemic instability have only increased the need to forge a new global economic compact. It must mitigate mounting geoeconomic and geopolitical challenges and assist countries to navigate the risks of a fragmenting trade system, weak demand and the climate crisis, while achieving the Sustainable Development Goals.

References

- Abe T (2005). The Chinese market for Japanese cotton textile goods. In: Sugihara K, ed., *Japan, China, and the Growth of the Asian International Economy, 1850–1949.* Oxford University Press. New York.
- Aldasoro I, Ehlers T and Eren E (2018). Business models and dollar funding of global banks. BIS Working Papers No 708. Bank for International Settlements.
- Alonso C, Bhojwani T, Hanedar E, Prihardini D, Uña G and Zhabska K (2023). Stacking up benefits: Lessons from India's digital journey. IMF Working Paper 23/78. March. International Monetary Fund.
- Amsden A (2001). The Rise of 'the Rest': Challenges to the West from Late-Industrializing Economies. Oxford University Press. New York.
- Appelbaum E and Batt R (2014). Private Equity at Work: When Wall Street Manages Main Street. Russell Sage Foundation. New York.
- Azmanova A (2023). Precarity for all. Post-neoliberalism. 29 November. Economic Democracy Initiative.
- Babić M (2023). The Rise of State Capital: Transforming Markets and International Politics. Agenda Publishing Limited. Newcastle.
- Babić M, Dixon AD and Fichtner J (2023). Varieties of state capital: What does foreign state-led investment do in a globalized world? *Competition & Change*. 27(5):663–684.
- Baines J (2017). Accumulating through food crisis? Farmers, commodity traders and the distributional politics of financialization. *Review of International Political Economy*. 24(3):497–537.
- Bairoch P and Kozul-Wright R (1996). Globalization myths: Some historical reflections on integration, industrialization and growth in the world economy. Paper prepared for the WIDER Conference on Transnational Corporations and the Global Economy. Kings College.
- Baldwin R and Forslid R (2020). Globotics and development: When manufacturing is jobless and services are tradable. NBER Working Paper No. 26731. National Bureau of Economic Research.
- Bank for International Settlements (2024). Statistical release: BIS international banking statistics and global liquidity indicators at end-December 2023. 30 April.
- Barrowclough D and Deere-Birkbeck C (2022). Transforming the global plastics economy: The role of economic policies in the global governance of plastic pollution. Social Sciences. 11(26).
- Beattie A (2024). The protectionist president who's has been good for trade for now. *Financial Times*. 22 July.
- Berend T and Ránki G (1977). *East Central Europe in the 19th and 20th Centuries*. Akadémiai Kiadó. Budapest.
- Bernard M and Ravenhill J (2011). Beyond Product Cycles and Flying Geese: Regionalization, Hierarchy, and the Industrialization of East Asia. Cambridge University Press. Cambridge.
- Blas J (2024). Old king coal remains omnipotent and omnipresent. Bloomberg. 25 July.
- BMI (2023). Oil & Gas Global Capex Outlook. Fitch Group. December.
- Boyer R (1990). The Regulation School: A Critical Introduction. Columbia University Press. New York.
- Braun B (2022). Exit, control, and politics: Structural power and corporate governance under asset manager capitalism. *Politics & Society*. 50(4):630–654.
- British Petroleum (2023). BP Energy Outlook 2023. London.
- Bruhn D (2014). Global value chains and deep preferential trade agreements: promoting trade at the cost of domestic policy autonomy? German Development Institute Discussion Paper 23/2014.
- Calignano F and Mercurio V (2023). An overview of the impact of additive manufacturing on supply chain, reshoring, and sustainability. *Cleaner Logistics and Supply Chain*. 7.
- Cardoso F and Faletto E (1979). *Dependency and Development in Latin America*. University of California Press. Berkeley.
- Celik S and Isaksson M (2013). Institutional investors as owners: Who are they and what do they do? OECD Corporate Governance Working Papers. Organisation for Economic Co-operation and Development.
- Chandler A (1962). Strategy and Structure: Chapters in the History of the Industrial Empire. Harvard University Press. Cambridge.
- Chang JH and Huynh P (2016). ASEAN in transformation. The future of jobs at risk of automation. ILO Working Paper No 9. International Labour Organization.
- Chen S (2024). The fried chicken is in New York. The cashier is in the Philippines. The New York Times. 11 April.
- Clapp J and Ruder SL (2020). Precision technologies for agriculture: Digital farming, gene-edited crops, and the politics of sustainability. *Global Environmental Politics*. 20(3):49–69.

Trade and development report 2024

Rethinking development in the age of discontent

- Clark G (2004). The price history of English agriculture, 1209–1914. In: *Research in Economic History*. Emerald Group. Leeds.
- Collins W and Williamson J (2001). Capital-goods prices and investment, 1870–1950. *The Journal of Economic History*. 61(1):59–94.
- DiMaggio P and Powell W (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*. 48(2):147–160.
- Doner RF, Noble GW and Ravenhill J (2021). *The Political Economy of Automotive Industrialization in East Asia*. Oxford University Press. New York.
- Dosi G and Stiglitz J (2013). The role of intellectual property rights in the development process, with some lessons from developed countries: An introduction. LEM Working Paper Series No. 2013/23. Scuola Superiore Sant'Anna, Laboratory of Economics and Management.
- Dunning J (1970). Studies in International Investment. George Allen and Unwin. London.
- The Economist (2024). Will chatbots eat India's IT industry? 9 May.
- Energy Institute (2024). Statistical Review of World Energy: Production of Coal. London.
- Engel E (1895). Die Lebenskosten Belgischer Arbeiter-Familien Früher und Jetzt. C. Heinrich. Dresden.
- Ernst E, Merola R and Samaan D (2018). The economics of artificial intelligence: Implications for the future of work. ILO Research Paper No 5. International Labour Organization.
- Ernst and Young (2023). Economic contribution of the U[nited] S[tates] private equity sector in 2022.
- Feldman M and Kenney M (2024). *Private Equity and the Demise of the Local*. Cambridge University Press. Cambridge.
- Freeman C (2007). The political economy of the long wave. In: Hodgson G, ed. *The Evolution of Economic Institutions: A Critical Reader*. Edward Elgar. Cheltenham.
- Fröbel F, Heinrichs J and Kreye O (1980). The New International Division of Labour: Structural Unemployment in Industrialised Countries and Industrialisation in Developing Countries. Cambridge University Press. Cambridge.
- Gaál N, Nilsson L, Perea JR, Tucci A and Velazquez B (2023). Global trade fragmentation: An EU perspective. Economic brief 075. European Commission, Directorate General for Economic and Financial Affairs.
- Galbraith J (2024). Industrial policy is a nostalgic pipe dream. Project Syndicate. 25 June.
- Garnaut R and Song L, eds. (2006). *The Turning Point in China's Economic Development*. Australian National University Press. Canberra.
- Gereffi G, Humphrey J and Sturgeon T (2005). The governance of global value chains. *Review of International Political Economy.* 12(1):78–104.
- Gerschenkron A (1989). Bread and Democracy in Germany. Cornell University Press. Ithaca.
- Glen B and Pinto J (1995). *Capital Market and Developing Country Firms, Finance and Development*. International Monetary Fund. Washington, D.C.
- Haber S (1992). Assessing the obstacles to industrialisation: The Mexican economy, 1830–1940. *Journal of Latin American Studies*. 24(1):1–32.
- Harasty C and Ostermeier M (2020). Population ageing: Alternative measures of dependency and implications for the future of work. ILO Working Paper 5. International Labour Organization.
- Hollveg C (2019). Global value chains and employment in developing economies. In: *Technological* Innovation, Supply Chain Trade, and Workers in a Globalized World. World Trade Organization. Geneva.
- International Energy Agency (2021). IEA Global Energy Review 2021. Paris.
- International Energy Agency (2023). World Energy Outlook 2023. Paris.
- International Energy Agency (2024a). Global Critical Minerals Outlook. Paris.
- International Energy Agency (2024b). Global EV Outlook 2024. Paris.
- International Monetary Fund (2023). World Economic Outlook database. Available at https://www.imf.org/en/Publications/WEO/weo-database/2023/October.
- International Monetary Fund (2024). Coordinated Portfolio Investment Survey. Available at https://data.imf.org/?sk=b981b4e3-4e58-467e-9b90-9de0c3367363.
- International Trade Centre (2024a). Trade Map. Available at https://intracen.org/resources/tools/trade-map.
- International Trade Centre (2024b). Trade Statistics database. Available at <u>https://intracen.org/resources/</u> <u>data-and-analysis/trade-statistics#export-of-goods</u>.
- Jenkins R (1987). *Transnational Corporations and the Latin American Automobile Industry*. MacMillan. London.
- Jones B and Malcorra S (2020). Competing for Order: Confronting the Long Crisis of Multilateralism. IE School of Global Public Affairs and The Brookings Institution. Madrid and Washington, D.C.
- Kaiser RW (1979). The Kondratieff cycle: Investment strategy tool or fascinating coincidence? *Financial Analysts Journal*. 35(3):57–66.

Chapter III Globalization at an inflection point

- Kaldor N (1996). Causes of Growth and Stagnation in the World Economy. Cambridge University Press. Cambridge.
- Kitschelt H (1991). Industrial governance structures, innovation strategies, and the case of Japan: Sectoral or cross-national comparative analysis? *International Organization*. 45(4):453–493.
- Klier T and Rubenstein J (2022). North America's rapidly growing electric vehicle market. Chicago Federal Reserve Bank.
- Kondratieff ND and Stolper WF (1935). The long waves in economic life. *The Review of Economics and Statistics*. 17(6):105–115.
- Langley W and Sandlund W (2024). China exports rise at fastest pace in more than a year. *Financial Times*. 12 July.
- Latham A (1988). From competition to constraint: The international rice trade in the nineteenth and twentieth centuries. *Business and Economic History*. 17:91–102.
- Latham A and Neal L (1983). The international market in rice and wheat, 1868–1914. *The Economic History Review*. 36(2):260–280.
- Lectard P (2023). Manufacturing exports: A virtuous circle of industrialization or a lock-in development pattern? The case of the machinery and textiles sectors. *Structural Change and Economic Dynamics*. 65.
- Lewis W (1954). Economic development with unlimited supplies of labour. *The Manchester School*. 22(2):139–191.
- Lewis W (1970). Tropical Development. Northwestern University Press. Evanston.
- Lund S, Manyika J, Woetzel L, Bughin J, Krishnan M, Seong J and Muir M (2019). *Globalization in Transition: The Future of Trade and Value Chains*. McKinsey Global Institute. New York.
- McKinsey Global Institute (2023). Global Energy Perspective 2023. New York.
- McKinsey Global Institute (2024). Help wanted: Charting the challenge of tight labor markets in advanced economies. 26 July.
- Medina G and Thomé K (2021). Transparency in global agribusiness: Transforming Brazil's soybean supply chain based on companies' accountability. *Logistics*. 5(3):58–73.
- Milanović B (2016). *Global Inequality: A New Approach for the Age of Globalization*. Harvard University Press. Cambridge.
- Murugaboopathy P and Oguy C (2022). Private equity firms pounce to take companies private. Reuters. 21 July.
- Nowells G (2002). Imperialism and the era of falling prices. *Journal of Post Keynesian Economics*. 25(2):309–329.
- Nurkse R (1952). Growth in underdeveloped countries. American Economic Review. 42(2):571-83.
- Onen M, Shin HS and von Peter G (2023). Overcoming original sin: insights from a new dataset. BIS Working Paper #1075. Bank for International Settlements.
- Open Markets Institute (2024). Rebalancing Europe: A New Economic Agenda for Tackling Monopoly Power. April.
- Perez C (2002). Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages. Edward Elgar. Cheltenham.
- Pettis M (2024). Can trade intervention lead to freer trade? Carnegie Endowment for Peace.
- Posen A (2021). Testimony to the Select Committee on Economic Disparity and Fairness in Growth. Peterson Institute for International Economics.
- Prahalad C and Hamel G (1990). The core competence of the corporation. *Harvard Business Review*. 68(3):79–93.
- Prébisch R (1950). *The Economic Development of Latin America and Its Principal Problems*. Economic Commission for Latin America. New York.
- Robinson J (1962). Economic Philosophy. Doubleday. New York.
- Rodrik D (2013). Unconditional convergence in manufacturing. *The Quarterly Journal of Economics*. 128(1):165–204.
- Satariano A and Burrows P (2011). Apple's supply-chain secret? Hoard lasers. Bloomberg Businessweek.
- Schlingemann F and Stulz R (2022). Have exchange-listed firms become less important for the economy? *Journal of Financial Economics*. 143(2):927–958.
- Schumpeter J (1939). Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process. Harvard University Press. Cambridge.
- Schumpeter J (1942) Capitalism, Socialism, Democracy. Harper and Row. New York.
- Schwartz H (1994). States Versus Markets: History, Geography, and the Development of the International Political Economy. St. Martins. New York.
- Schwartz H (2007). Dependency or institutions? Economic geography, causal mechanisms, and logic in the understanding of development. *Studies in Comparative International Development*. 42(1):115–135.

Trade and development report 2024

Rethinking development in the age of discontent

Schwartz H (2019). States Versus Markets: Understanding the Global Economy. Bloomsbury Publishing. London.

Schwartz H (2023). The NIEO as global Keynesianism. Progressive International. 11 January.

- Setser BW, Weilandt M and Baur V (2024). China's record manufacturing surplus. Council on Foreign Relations. 10 March.
- Standard and Poor's Global (2023) S&P Global Market Intelligence. 2023 Corporate Exploration Strategies.
- Subramanian A, Kessler M and Properzi E (2023). Trade hyperglobalization is dead. Long live...? Peterson Institute for International Economics Working Paper 23-11. Peterson Institute for International Economics.
- Thirlwall A (2012). Balance of payments constrained growth models: History and overview. In: Soukiazis E and Cerqueira P, eds., *Models of Balance of Payments Constrained Growth: History, Theory and Empirical Evidence*. Palgrave. Basinsgtoke.
- Thorp R and Bertram G (1978). *Peru, 1890-1977: Growth and Policy in an Open Economy*. Columbia University Press. New York.
- Truxal S (2024). State subsidies and aircraft financing in the EU, USA, and China: a balancing act. *Uniform Law Review*. 29(1).
- Tummino ML, Varesano A, Copani G and Vineis C (2023). A glance at novel materials, from the textile world to environmental remediation. *Journal of Polymers and Environment*. 31:2826–2854.
- UNCTAD (1996). *Trade and Development Report 1996* (United Nations publication. Sales No. E.96.II.D.6. Geneva).
- UNCTAD (1998). *Trade and Development Report 1998: Financial Instability Growth in Africa* (United Nations publication. Sales No. E.98.II.D.10. Geneva).
- UNCTAD (2002). *Trade and Development Report 2002: Developing Countries in World Trade* (United Nations publication. Sales No. E.02.II.D.2. Geneva).
- UNCTAD (2003). *Trade and Development Report 2003: Capital Accumulation, Growth and Structural Change* (United Nations publication. Sales No. E.03.II.D.7. Geneva).
- UNCTAD (2016). *Trade and Development Report 2016: Structural Transformation for Inclusive and Sustained Growth* (United Nations publication. Sales No. E.16.II.D.5. Geneva.
- UNCTAD (2018). *Trade and Development Report 2018: Power, Platforms and the Free Trade Delusion* (United Nations publication. Sales No. E.18.II.D.7. Geneva).
- UNCTAD (2019). *Trade and Development Report 2019: Financing a Global Green New Deal* (United Nations publication. Sales No. E.19.II.D.15. Geneva).
- UNCTAD (2021a). *State of Commodity Dependence* (United Nations publication. Sales No. E.21.II.D.17. Geneva).
- UNCTAD (2021b). *Trade and Development Report 2021: From Recovery to Resilience: The Development Dimension* (United Nations publication. Sales No. E.22.II.D.1. Geneva).
- UNCTAD (2022). Trade and Development Report 2022: Development Prospects in a Fractured World (United Nations publication. Sales No. E.22.II.D.44. Geneva).
- UNCTAD (2023a). *Plastic Pollution: The Pressing Case for Natural and Environmentally Friendly Substitutes to Plastics* (United Nations publication. Sales No. E.23.II.D.11. Geneva and New York).
- UNCTAD (2023b). *Trade: Unlocking Sustainable Strategies for People, Planet and Prosperity* (United Nations publication. Geneva).
- UNCTAD (2023c). Trade and Development Report 2023: Growth, Debt, and Climate: Realigning the Global Financial Architecture (United Nations publication. Geneva).
- UNCTAD (2024a). Digital Economy Report (United Nations publication, Sales No. E.24.II.D.12. Geneva).
- UNCTAD (2024b). Global Economic Fracturing and Shifting Investment Patterns. A Diagnostic of 10 FDI Trends (United Nations publication, Geneva).
- UNCTAD (2024c). Global Investment Trends Monitor. 46.
- UNCTAD (2024d). A World of Debt: A Growing Burden to Global Prosperity (United Nations publication, Geneva).
- UNCTAD (2024e). World Investment Report: Investment Facilitation and Digital Governance (United Nations publication. Sales No. E.24.II.D.11. Geneva).
- Verdoorn P (1980). Verdoorn's law in retrospect: A comment. The Economic Journal. 90 (358):382-385.
- Wang Y (2015). The rise of the "shareholding state": Financialization of economic management in China. Socio-economic Review. 13(3):603–625.
- Weber I (2024). Stabilizing prices for a new NIEO. Progressive International. 24 June.
- World Bank (2020). The potential impact of COVID-19 on GDP and trade. Policy Research Working Paper 9211.
- Yang Z (2023). How did China come to dominate the world of electric cars. *MIT Technology Review*. February.