

3. SPECIAL ISSUES

3.1. GLOBAL VALUE CHAINS AND PROTECTIONISM

A surge in protectionism has contributed to the slowdown in world trade growth since 2017 but it is arguably the high level and persistence of uncertainty surrounding trade policies that has had the biggest effect.⁽⁶⁷⁾ Uncertainty also has had a great impact on global value chains (GVCs) and thrown their continued viability into question.

World trade expanded rapidly in the 1990s and 2000s before slowing after the financial crisis. The expansion of GVCs has been a key driver of global trade flows since the 1990s, while the recent retrenchment in GVCs is often identified as one of the key factors behind the recent trade slowdown. This section sheds light on the factors driving the medium-term trends in GVCs, including in the period just after the financial crisis. It then looks at the current escalation in trade tensions and increases in tariffs to investigate the channels of impact and takes stock of existing literature on the topic.

Global value chains in a medium-term perspective

Global value chains developed rapidly in the two decades up to the financial crisis of 2008-2009, thriving on unprecedented waves of trade liberalisation as well as falling transport, transaction and telecommunication costs. Corporations took advantage of these positive supply shocks to fragment the production process in order to exploit cross-country differences in factor costs, such as labour, capital and raw materials and benefit from economies of scale. Complex value chains were thus formed that involved all stages of the production process needed to bring a final good to the consumer, including the conception of a product, its design, production, marketing and logistics. An international value chain can involve several firms

or a single firm that is spread over different geographical locations.⁽⁶⁸⁾ Firms can either outsource or offshore specific tasks or decide to specialise in a specific task and join an existing global value chain. The gradual expansion of GVCs over the last three decades has led to a profound reshaping of the international division of production, labour and trade.

GVCs expanded rapidly in the two decades up to the financial crisis

The most comprehensive indicators that capture the degree to which countries are integrated in GVCs are indicators of backward (or downstream) and forward (or upstream) participation in GVCs based on international input-output tables. Backward participation is defined as a share of foreign value added in a country's gross exports, while forward participation is a measure of domestic value added embedded in other countries' exports, as a share of the gross exports of the reporting country.

Graphs I.3.1 and I.3.2 present developments in backward and forward participation in GVCs in selected regions and countries between 1990 and 2018. These indicators are based on the UNCTAD-Eora Global Value Chains Database that consists of a multi-region input-output table available for 190 countries for the years 1990 to 2015.⁽⁶⁹⁾ Data for 2016-2018 in the database are nowcast based on the IMF World Economic Outlook.⁽⁷⁰⁾

Following a rapid expansion in the two decades before the global financial crisis, participation in GVCs fell sharply in 2009 before recovering swiftly in 2010 and 2011. After that, participation declined steadily until 2016 for most countries and regions before starting to edge up modestly again

⁽⁶⁷⁾ See for example: International Monetary Fund (IMF) (2019). 'Trade Tensions, Global Value Chains, and Spillovers Insights for Europe'. *IMF working paper No. 19/10* and Gunella, V. and L. Quaglietti (2019). 'The economic implications of rising protectionism: a euro area and global perspective'. *ECB Economic Bulletin*, Issue 3/2019.

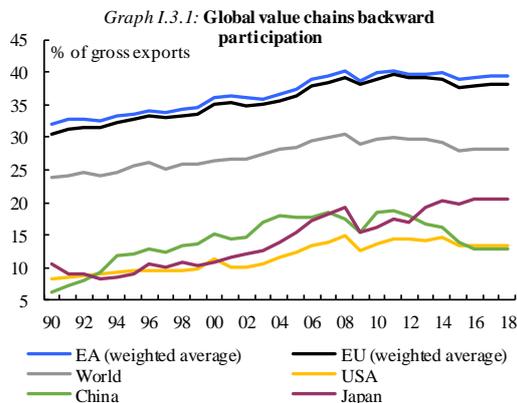
⁽⁶⁸⁾ De Backer K. and S. Miroudot (2014). 'Mapping global value chains'. *ECB Working Paper Series No 1677*

⁽⁶⁹⁾ UNCTAD-Eora GVC Database was used rather than the OECD-TiVA Database due to larger country coverage and longer sample, covering in particular the 1990s and the most recent period 2016-2018. For methodological underpinnings of the UNCTAD-Eora database please see Casella, B. , R. Bolwijn, D. Moran and K. Kanemoto (forthcoming). 'Improving the analysis of global value chains: the UNCTAD-Eora Database'. *Transnational Corporations* 26(3). New York and Geneva: United Nations

⁽⁷⁰⁾ Nowcasts are performed by and added to the database by the authors of the UNCTAD-Eora.

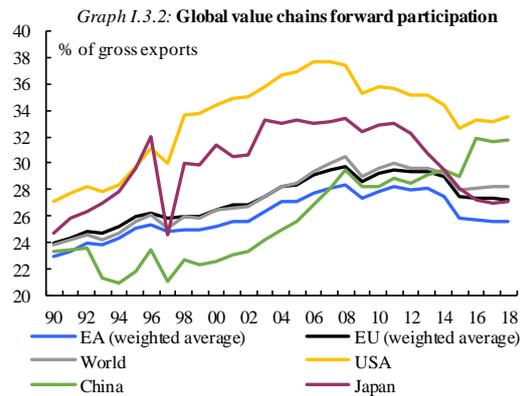
in 2017 and 2018. While indices of participation of various regions tend to move rather closely together, reflecting the cross-country fragmentation of production, their levels differ significantly across countries and regions, and these differences persist over time.

The relative position of the EU/EA has been consistently very strong in terms of backward participation but visibly weaker in terms of forward participation. The position of the United States, for example is significantly more upstream, mainly thanks to high shares of activity in sectors such as natural resources, research and development (R&D) and financial services, which provide intermediate inputs to the production chain. ⁽⁷¹⁾ Trends in GVC participation in China and Japan appear to be reverse images of each other. China has shifted gradually towards providing intermediate inputs to other countries' exports (forward participation) amid a gradual decline in Japan's respective participation rates. This suggests that China has been replacing Japan as the key trade hub in Asia.



Source: UNCTAD-Eora Global Value Chains Database
 Note: Share of foreign value added in a country's gross exports

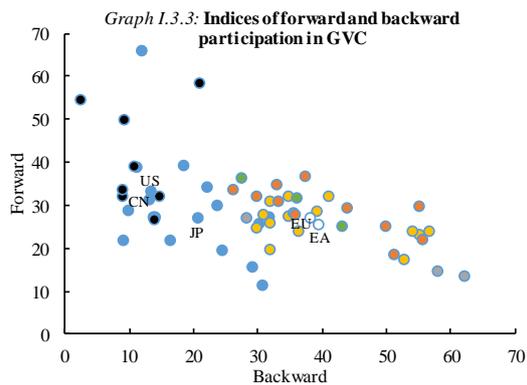
⁽⁷¹⁾ European Central Bank (ECB) (2019). 'The impact of global value chains on the euro area economy'. *Occasional Paper No 221*.



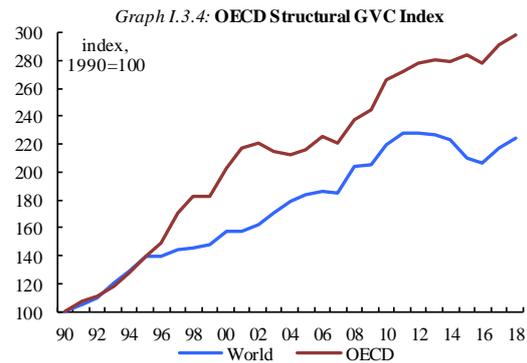
Source: UNCTAD-Eora Global Value Chains Database
 Note: Domestic value added embedded in other countries' exports, as a share of gross exports of the reporting country

Graph I.3.3 provides more insights into cross-country differences in terms of participation in GVCs. The chart points to very high backward participation in GVCs of several smaller euro area Member States, such as Luxembourg, Malta, Ireland and Belgium; Central and Eastern Europe (Slovakia, Czechia, Hungary) as well as Korea and South-East Asia (Vietnam, Malaysia and Thailand). This clearly reflects the high degree of integration of these countries in downstream regional (European) and global value chains. On the other hand, commodity exporters (Saudi Arabia, Australia, Norway and Russia) and countries with high levels of R&D (Japan, United States) rank high in terms of forward participation, reflecting their upstream position in the supply chain. ⁽⁷²⁾

⁽⁷²⁾ It is important to note that traditional GVC participation indices capture only the flows of goods that cross borders at least twice. They therefore do not capture, for example, traded intermediates that are used in domestic production for final consumption. Consequently, they tend to underestimate the GVC participation of those economies whose exports of intermediate goods are largely for the final use in a destination country. Another limitation is that they only take into account the flows related to intellectual property rights between a firm and its foreign affiliates, which are recorded as trade; and exclude those flows which are recorded as primary income flows. As a result, the index can underestimate the participation of countries where the parent companies are located. For more information, see Ahmad, N., (2017). 'Indicators on global value chains: a guide for empirical work'. *OECD Working paper No.84*.



Source: UNCTAD-Eora Global Value Chains Database
 Note: orange dots - CEE countries; yellow dots - non-CEE EA MS; green dots - other EU; grey dots - ASEAN and advanced Asia except Japan; black dots - commodity exporters; blue dots - other countries



Source: OECD calculations based on Haugh, D., et al. (2016), « Cardiac arrest or dizzy spell? Why is World Trade So Weak and What can Policy Do About It? », *OECD Economic Policy Papers*, n° 18, OECD

However, traditional GVC indicators based on shares of current-price trade flows in current-price gross exports have serious shortcomings. They are only available with a long lag⁽⁷³⁾ and are sensitive to business cycles and commodity price fluctuations. To remedy this, Haugh et al. (2016)⁽⁷⁴⁾, Borin and Mancini (2017)⁽⁷⁵⁾ and Gaulier et al. (2019)⁽⁷⁶⁾ developed indicators that offer an analogous insight into the process of fragmentation of production (based on intermediate goods trade) but have been corrected for the impact of these two distorting effects. The indicator developed by Haugh et al (2016) proxies GVC participation with the ratio of intermediate goods imports to final domestic demand. At the global level, this indicator does not suggest any retrenchment in GVC during the 2008/2009 crisis (Graph I.3.4), but points to a decline from 2013 to 2016, followed by a gradual rebound in 2017 and 2018. Overall, this indicator suggests that the GVC intensity of the global economy in 2018 was only slightly below its 2011-2012 peak. Moreover, in OECD countries, GVC trade does not show, on average, any signs of retrenchment, even between 2013-2016. In fact, GVC trade continues to rise in 2017 and 2018, indicating that GVCs recorded a new historical peak in 2018.

Likewise, the analysis by Gaulier et al (2019) suggests that it may be premature to talk about the unwinding of global value chains, at least until 2016 (last data point in the analysis). Gaulier et al (2019) show that the volume of intermediate goods trade,⁽⁷⁷⁾ and in particular that of parts and components (typically associated with the expansion in GVCs), have actually been on the rise since the crisis, reaching an all-time high in 2016 (last available data).

What drives GVCs in the medium term?

While the evidence on recent developments in GVCs appears mixed, there are increasing signs that some of the key impulses behind the earlier expansion of global value chains may now be largely exhausted, and that some new medium-term trends would be at play. These largely structural factors appear to have been driving the dynamics of GVCs in recent years and are set to remain important in the near future.

- *Automation could favour nearshoring.* In the past, advances in Information and Communication (ICT) technology have strongly supported the unbundling of tasks and the rapid development of GVCs, by reducing the costs of fragmenting production processes across tasks and locations⁽⁷⁸⁾. Looking forward, new ICT technologies such as block chain, the internet of things and e-commerce are bound to contribute to the further decline in transaction and coordination costs. However, at

⁽⁷³⁾ The data for 2016-2018 in the UNCTAD-Eora database are based on UNCTAD nowcasts, and not actual input-output data.

⁽⁷⁴⁾ Haugh, D., A. Kopoin, E. Rusticelli, D. Turner and R. Dutu (2016). 'Cardiac Arrest or Dizzy Spell: Why is World Trade So Weak and What can Policy Do About It?' *OECD Economic Policy Papers* 18.

⁽⁷⁵⁾ Borin, A., and M. Mancini (2017). 'Follow the Value Added: Tracking Bilateral Relations in Global Value Chains'. *MPRA Paper* 82692.

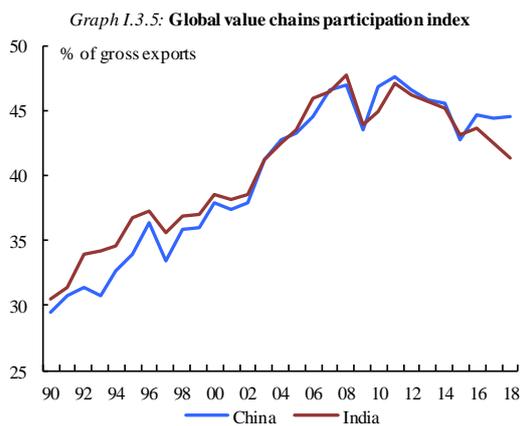
⁽⁷⁶⁾ Gaulier, G., A. Sztulman and D. Ünal (2019). 'Are global value chains receding? The jury is still out. Key findings from the analysis of deflated world trade in parts and components'. *CEPII Working Paper* 2019-01.

⁽⁷⁷⁾ As a share of volume of global manufacturing trade, and adjusted for global business cycle.

⁽⁷⁸⁾ Baldwin, R. (2011). 'Trade and industrialisation after globalisation's 2nd unbundling: how building and joining a supply chain are different and why it matters'. *NBER Working papers* 17716.

the same time, the technological revolution also creates scope for the automation of production tasks and hence reduces incentives for outsourcing and offshoring them to locations with lower labour costs. Therefore, with new technologies, the advantage of proximity to consumers may start to dominate labour cost considerations and thus favour nearshoring and further regionalisation (rather than globalisation) of trade. ⁽⁷⁹⁾

- *Maturing domestic supply chains reduce GVC trade.* The expansion of global value chains facilitated the access of emerging economies to global production processes by allowing them to participate in specific parts, without the need to build comprehensive supply chains on their own. ⁽⁸⁰⁾ Maturing industrial structures and strengthening domestic demand have gradually created room for the development of more comprehensive *domestic* supply chains, especially in larger emerging market economies. Reflecting these processes, GVC participation indices for India, China and as well as most other big emerging markets, have been declining since the financial crisis, following a rapid expansion in the two preceding decades (see Graph I.3.5). This process weighs on regional and global value chains trade and is set to dampen the expansion in GVCs in the medium term.



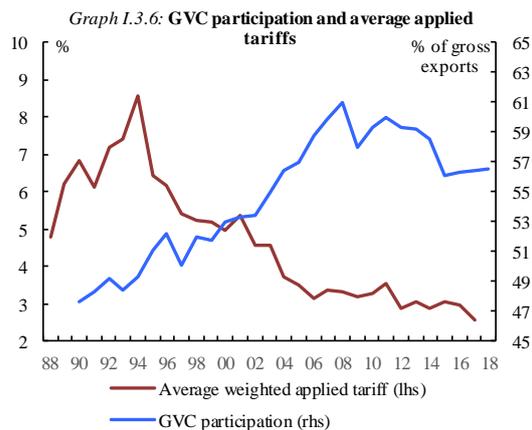
- *The slower pace of trade liberalisation* has often been cited as one of the key factors

behind the post-crisis unwinding in GVCs. Their robust expansion in the two decades prior to the financial crisis was clearly underpinned by the rapid pace of liberalisation, which included milestones such as the creation of the WTO, China’s accession to the organisation and several waves of EU enlargement. The result was a sharp reduction in average applied tariffs from 9% in the early 1990s to 3% in 2006 (see Graph I.3.6), or from around 40% to 10% in the case of tariffs applied by emerging markets. However, since then, very little progress has been made and average tariffs have edged down only marginally in the last decade. This may reflect higher political and social costs attached to further tariff reduction and the ensuing shifts towards protectionism. Moreover, new non-tariff measures have been put in place in recent years. The WTO secretariat reports that the stock of trade-restrictive measures increased nearly fivefold between 2010 and 2017 despite a commitment by G-20 members to resist protectionism. From a European perspective, the 2018 Trade and Investment Barrier Report confirms that additional barriers to trade which negatively affect European firms have been on the rise. It is therefore clear that the trade policy environment had become significantly less conducive to GVCs even before the most recent protectionist shifts by the US. Moreover, local content requirements and other regulatory measures have increasingly become headwinds to GVC expansion. These new barriers are often more subtle than previous tariff and non-tariff measures and are aimed at reducing imports by, for example, tailoring licence requirements in such a way as to promote domestic purchases, or provide tax incentives for local procurement. ⁽⁸¹⁾

⁽⁸¹⁾ Bhatia, K., Evenett S. J., and Hufbauer, G. C. (2016). “Why General Electric is localising production”, *Voxeu.org*, 21 June.

⁽⁷⁹⁾ See for example McKinsey Global Institute (2019). “The globalization in transition: the future of trade and value chains”. *McKinsey*, January 2019.

⁽⁸⁰⁾ Baldwin, R. (2011). “Trade and industrialisation after globalisation’s 2nd unbundling: how building and joining a supply chain are different and why it matters”. *NBER Working papers 17716*.



- *Other factors have played a role as well.* Following the 2011 earthquake and tsunami in Japan and disastrous floods in Thailand, which both led to supply-side disruptions in many sectors, a number of companies decided to contain their supply risks by reducing the length of their supply chains, ⁽⁸²⁾ in turn dampening GVC participation.

Implications of the recent rise in protectionism on global value chains

While some evidence suggests that global value chains bottomed out already before the current bout of protectionism, there is no doubt that the ongoing escalation of trade tensions between the US and China will weigh further on their near-term prospects. Several empirical studies look at the impact of new tariffs and trade policy uncertainty on trade flows and the expansion of GVCs. While some of the conventional studies indicate already high costs of protectionism at the global level and in specific countries, adding the complex GVC linkages amplifies this cost considerably.

Global value chains amplify the cost of tariff hikes....

Traditional trade analysis looks at countries trading *final goods* in which they have a comparative advantage. The development of global value chains complicates this picture, shifting the focus towards a production process organised around specific *tasks* in which firms/countries have a comparative advantage. ⁽⁸³⁾ Fragmentation of the production process has been most profound in manufacturing and sectors that have higher R&D

⁽⁸²⁾ De Backer, K. and S. Miroudot (2014). 'Mapping global value chains'. *ECB Working Paper Series No 1677*.

⁽⁸³⁾ Ibidem.

intensities. ⁽⁸⁴⁾ In global value chains, components cross borders several times before they are assembled into a final good and sold to a consumer. As a result, every time a good or service crosses a border it may be subject to trade-restrictive measures.

As such, industries/countries, which rely to a higher extent on imported inputs further downstream, may face a higher cumulative tariff. A study of Mao and Görg (2019) ⁽⁸⁵⁾ shows that tariff hikes in the context of the US-China trade confrontation, levies an additional burden via these indirect effects of between \$500 million and \$1 trillion on the US' closest trade partners, namely the EU, Canada and Mexico. Likewise simulations by the IMF ⁽⁸⁶⁾ show that closer integration has increased the sensitivity of upstream and downstream tariff changes. Therefore, a 1pp. tariff increase by all countries would have a larger negative effect today than it would have two decades ago. Naturally, losses in countries that are highly integrated in GVCs would likely be much higher.

The effect is amplified because when imposing higher tariffs on imports from a targeted country, a country imposes them also partially on their own exports (via domestic value added contained in imports) and exports of all other countries further downstream or upstream in the supply chain. Therefore, theoretically, the incentive to impose tariffs should decrease when the domestic value added of imported goods increases and the foreign value added increases in domestic final goods. ⁽⁸⁷⁾ Fontagné and Bellora (2019) ⁽⁸⁸⁾ provide evidence from the general equilibrium model that tariff hikes not only hurt the targeted country but also countries linked via global value chains, including the country imposing tariffs itself. Specifically, in the case of the US-China trade confrontation, this means that the negative impact on the US and China is reinforced by the linkages via

⁽⁸⁴⁾ OECD, WTO, World Bank Group, IDE-JETRO, UIBE (2019). 'Technological innovation, supply chain trade, and workers in a globalized world'. *Global value Chain Development report*, April 2019.

⁽⁸⁵⁾ Mao, H. and H. Görg (2019). 'The impact of the US-China Trade war on Global Value Chains'. *KCG working paper No 17*.

⁽⁸⁶⁾ International Monetary Fund (IMF) (2019). *World Economic Outlook Update: growth slowdown, precarious recovery*. Washington, DC: IMF, April.

⁽⁸⁷⁾ Blanchard, E., C. Bown, R. Johnson (2018). 'Global supply chains and trade policy'. *NBER Working Paper 21883*.

⁽⁸⁸⁾ Bellora, C. and L. Fontagné (2019). 'Shooting oneself in the foot? Trade war and global value chains'. *CEPII blog, 23 April*.

intermediate trade. Thus, even for the country imposing tariffs, the trade war comes at a cost. One can therefore interpret the decision of China to exempt certain sectors (aircrafts, semi-conductors and pharmaceuticals) from additional levies, as a way of minimising the additional cost of the trade war.⁽⁸⁹⁾

More specifically, a study by the IMF⁽⁹⁰⁾ finds that in the case of a hypothetical 25% tariff on imports of cars and car parts, about a half of the impact would be transmitted directly towards the affected countries, but another half would be propagated via supply chains. A study by the ECB⁽⁹¹⁾ on the impact of car tariffs by the US, indicates that taking into account the complex GVC linkages would add around 50% to the negative welfare effect for Germany and Italy, and around a third of the negative impact on the euro area, on average.

...and affect business decisions.

Global value chains not only alter the distribution costs related to protectionism, they also influence the sourcing and investment decisions of firms⁽⁹²⁾. Production networks as we know them today are the result of firms optimising their business plans taking into account all the relevant factors including trade barriers but also geopolitical tensions. Trade barriers enter these business decisions as an extra cost variable. In the short run, it will increase the cost of imports for producers and consumers and induce firms to diversify trade and to postpone new investments.^{(93), (94)} The more geographically wide-spread the trade restrictions and uncertainty are, the smaller the scope for trade diversification.

Trade uncertainty and recent tariff hikes can be seen as temporary factors, but the longer they persist, the more likely they are to turn into

structural ones. As such, firms could be forced to shorten, reshape or diversify global supply chains to mitigate risks. Ultimately, this could imply a less efficient global allocation of resources, less technology diffusion and lower productivity growth. The degree to which global value chains will be reshaped or shortened will depend on several factors such as the type of the trade-restrictive barrier, the complexity and governance of the global value chain, and the costs associated with disruption (as value chains tend to be inflexible due to the associated costs of building them⁽⁹⁵⁾). Trade diversification becomes more complex if the degree of specialisation is higher, as in the semi-conductor industry, for example. However, if the cost of a disruption in a supply chain is high (e.g. an outright ban on importing essential components), it could become efficient for even highly complex value chains and/or vertically integrated firms to reshape or shorten their existing value chains. Additionally, trade policy uncertainty and protectionism will also affect the future development of value chains and investment decisions, as they add another complex layer of risks to future decisions. Higher trade and transportation costs favour nearshoring and more regional supply-chains.⁽⁹⁶⁾

Given the depth of regional trade integration in Asia, the recent tariff hikes between the US and China expose the broader Asia region to negative economic impacts via its trade channels. However, opportunities for trade diversion in the form of reshaping value chains could arise for certain countries such as Vietnam and Indonesia. Exports from Vietnam to the US have surged in 2019. However, this could be due to the relabelling of goods that originated in China to avoid tariffs, or could represent trade diversion that is only temporary. Moreover, it is not possible to assess whether FDI has been diverted to these countries on the basis of the FDI data currently available. As such, it is too soon to indicate if global value chains are reshaping or shortening permanently but anecdotal evidence suggests that the trade confrontation has affected the foreign investment decisions of companies.

⁽⁸⁹⁾ See for example Bown, C., (2019). 'US-China Trade War: The Guns of August'. *Peterson Institute for International Economics, Trade and Investment Policy Watch*, 20 September.

⁽⁹⁰⁾ International Monetary Fund (IMF) (2019). 'Trade Tensions, Global Value Chains, and Spillovers Insights for Europe'. *IMF working paper No. 19/10*.

⁽⁹¹⁾ Gunella, V. and L. Quaglietti (2019). 'The economic implications of rising protectionism: a euro area and global perspective'. *ECB Economic Bulletin*, Issue 3/2019.

⁽⁹²⁾ See for example Blanchard, E. (2019). 'Trade wars in the global value chain era'. *VoxEU.org*, 20 June.

⁽⁹³⁾ which would then weigh on trade given the high trade-intensity of investment

⁽⁹⁴⁾ See for example Handley, K. (2014). 'Exporting under trade policy uncertainty: Theory and evidence'. *Journal of International Economics volume 4 issue 1, pp 55-60*.

⁽⁹⁵⁾ See for example Bayoumi, T., J. Barkema and D. Cerdeiro (2019). 'The inflexible structure of global supply chains'. *IMF working paper WP/19/193*.

⁽⁹⁶⁾ Baldwin, R. (2012). 'Global supply chains: why they emerged, why they matter, and where they are going'. *CEPREI working papers No 9103*.

Conclusion

Global value chains have become a symbol of globalisation. They thrived for more than two decades in the run-up to the financial crisis supported by rising trade openness, lower tariffs and declining transportation and telecommunication costs. There is more evidence that this process has stagnated after the crisis and is likely to go into reverse in the near term.

The presence of global value chains amplifies the immediate negative impact of recent tariff hikes on the global economy by propagating their negative supply shocks down the supply chain. Moreover, the recent shift to protectionism and trade policy uncertainty has clearly pushed the global economy in the direction of less interdependence and integration. Additionally, given some medium-term trends (such as automation and maturing domestic supply chains), a further slowing or possible reversal of GVC trade appears likely in the near future.