

Gupta, Neha

Working Paper

G20's contribution to inclusive and resilient global value chains while promoting involvement of least developed countries

ADB Working Paper, No. 1446

Provided in Cooperation with:

Asian Development Bank Institute (ADBI), Tokyo

Suggested Citation: Gupta, Neha (2024) : G20's contribution to inclusive and resilient global value chains while promoting involvement of least developed countries, ADB Working Paper, No. 1446, Asian Development Bank Institute (ADBI), Tokyo, <https://doi.org/10.56506/RUXV2787>

This Version is available at:

<https://hdl.handle.net/10419/301951>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/3.0/igo/>



ADB Discussion Paper Series

G20'S CONTRIBUTION TO INCLUSIVE AND RESILIENT GLOBAL VALUE CHAINS WHILE PROMOTING INVOLVEMENT OF LEAST DEVELOPED COUNTRIES

Neha Gupta

No. 1446
May 2024

Asian Development Bank Institute

Neha Gupta is a fellow at the Indian Council for Research on International Economic Relations (ICRIER), New Delhi.

The views expressed in this paper are the views of the author and do not necessarily reflect the views or policies of ADBI, ADB, its Board of Directors, or the governments they represent. ADBI does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use. Terminology used may not necessarily be consistent with ADB official terms.

Discussion papers are subject to formal revision and correction before they are finalized and considered published.

The Working Paper series is a continuation of the formerly named Discussion Paper series; the numbering of the papers continued without interruption or change. ADBI's working papers reflect initial ideas on a topic and are posted online for discussion. Some working papers may develop into other forms of publication.

The Asian Development Bank refers to "China" as the People's Republic of China.

Suggested citation:

Gupta, N. 2024. G20's Contribution to Inclusive and Resilient Global Value Chains While Promoting Involvement of Least Developed Countries. ADBI Discussion Paper 1446. Tokyo: Asian Development Bank Institute. Available: <https://doi.org/10.56506/RUXV2787>

Please contact the authors for information about this paper.

Email: ngupta@icrier.res.in

All the views expressed by the author in this paper are personal. The author would like to specifically thank Peter Morgan, Arpita Mukherjee, Rajat Kathuria, Saon Ray, and Piergiuseppe Fortunato for their useful comments on the subject.

Asian Development Bank Institute
Kasumigaseki Building, 8th Floor
3-2-5 Kasumigaseki, Chiyoda-ku
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500
Fax: +81-3-3593-5571
URL: www.adbi.org
E-mail: info@adbi.org

© 2024 Asian Development Bank Institute

Abstract

This paper uses export and import shares of intermediate goods to assess the extent of integration of G20 and non-G20 nations, including least developed countries (LDCs), in global value chains (GVCs). The G20's intermediate trade, especially the imports, recovered fast during and immediately post-pandemic, exhibiting many members' inherent capacity to adjust to shocks. The G20's developed countries, mainly G7 and other EU nations, are found to have greater supply chain resilience (SCR) scores. However, a wide gap continues to exist between G20 developed nations' demand for inputs and G20 developing nations' supply of inputs, despite rising exports for many developing countries. This implicitly points to lower south-south cooperation, i.e., the limited intermediate trade among G20 developing nations and of this subgroup with LDCs. The share of non-G20 nations, covering several countries from the south, has also declined in global intermediate trade post-pandemic. Nevertheless, this group, mainly ASEAN, has a decent presence in intermediate exports. The primary issue is the incessantly low involvement of LDCs in intermediate trade, reaching just around 1% in GVCs. G20-developing nations' imports from LDCs are marginally growing with shares in the range of 2%–3%, compared to shares below 1% in the case of linkages with the G20-developed nations' supply chains. This implies slower and limited fulfillment of the G20's long-standing commitment to creating inclusive GVCs. It is found that LDCs' infrastructure quality and FDI inflows have been very low with continually lower supply chain visibility, presenting many of them as least resilient countries. This paper affirms that creating resilient GVCs needs a holistic long-term solution where no country, especially low-income ones, is left behind (inclusiveness). Domestic reforms in the G20's developing countries will play an influential role. These reforms can stimulate LDCs to learn and adopt best practices. The paper suggests vigilant identification of barriers to the integration of LDCs. This is to be followed by more capacity building and resilient improvement programs, sharing of information on markets and regulations, and regular training programs by the G20 in collaboration with multilateral agencies on labor and environmental standards. It is a prerequisite for upgrading in GVCs especially to link with the lead firms mostly located in the developed countries. More aid and technical assistance from the G20 are required for LDCs to build regional connectivity, support their MSMEs, expand exports, and build the required digital infrastructure. South-south trade enhancement will help to deeply connect G20-developing nations, ASEAN, and LDCs. The G20 can act as an active discussion forum for GVCs, regularly bringing all the leaders together to discuss challenges and devise knowledge databases for joint solutions.

Keywords: global value chains, G20 and trade, LDCs, inclusive GVCs, supply chain resilience

JEL Classification: F13, F15, F40, O50

Contents

1.	CONTEXT AND INTRODUCTION: GVCs AND G20	1
2.	G20's COMMITMENTS TO GVCs AND THEIR PARTICIPATION IN INTERMEDIATE TRADE.....	5
2.1	G20's Enduring Commitments to Inclusive and Resilient GVCs	5
2.2	Recovery of Intermediate Trade Post-Pandemic and G20's Prominence.....	7
3.	G20's ROLE IN STRENGTHENING INCLUSIVE GVCs, MAINLY FOR LDCs.....	11
3.1	Degree of Concordance in G20's Demand for, and non-G20's Supply of, Inputs.....	11
3.2	Each G20 Country's Contribution to Inclusivity Goal for LDCs	15
3.3	Concerns over LDCs' Integration and Relative Measures by G20.....	19
4.	GROWING ROLE OF G20 IN CREATING RESILIENT GVCs: WHERE DO LDCs STAND?	24
4.1	Few Reshoring Trends: Supply Chain Diversification as a More Viable Option.....	24
4.2	Measurement of SC Resilience Index: G20 Developed Countries as More Resilient, LDCs as Least	28
5.	CONCLUSION AND POLICY RECOMMENDATIONS	32
	REFERENCES	38

1. CONTEXT AND INTRODUCTION: GVCs AND G20

In the grand tapestry of international cooperation, the G20 stand as a collective force that significantly influences the shape of the global economic map. The G20 comprises major developed and developing countries, which account for more than 75% of global trade. Their growing collaboration can reset the entire course of global value chains (GVCs). The G20's Trade and Investment Working Group is mainly active post-pandemic to navigate the new challenges and opportunities presented by GVCs, mainly for low-income and developing countries.

In fact, GVCs significantly improved the developing countries' livelihood basics mainly during the 1990s and 2000s. It happened owing to back-to-back transactions in intermediate goods across national borders. This was facilitated by advances in technologies and the emergence of the People's Republic of China (PRC) as the world's factory and the assembly hub. Greater FDI inflows were the major contributor. In the case of Asian developing countries, this increased 40 times during between 1985 and 2005 (Chang 2011), which led to higher economic growth in East and Southeast Asia. Countries thus increasingly developed comparative advantages in different production processes, inputs, and tasks carried out in various locations. Instead of spending years developing entire industries at the initial development stage, GVCs enabled countries to join the already established chains by engaging in simple labor-intensive manufacturing tasks or by importing intermediates for assembling. This helped them to acquire production capabilities fast due to better access to the lead firms and the new markets (Nathan 2010; Humphrey and Schmitz 2001).¹

The cost and efficiency gains continue to accrue maximally to those countries that work as per their comparative advantages in intermediate goods. Although in 2011–2012, two thirds of international trade belonged to trade in intermediate goods (Johnson and Noguera 2012), this was significant at 60% even in 2021. This rose to about 70% in 2022, despite supply chain disruptions and rising protectionism. More than 60% of the G20's trade still consists of intermediate goods. The paper sheds light on the G20's intermediate exports and imports in bolstering supply chain linkages.

A notable aspect since 2020–2021 is the innovative management and more-planned restructuring of GVCs. As soon as the pandemic hit, many G20 and ASEAN countries quickly resorted to using digital platforms as solutions for trade. This indicated to a certain extent countries' inherent capacity to adjust to shocks. However, nothing could be granted, given the dynamic interplay of forces. The way the G20 interplays with GVCs encapsulates the complex web of international economics, geopolitical issues, and the quest for stable global economic development – all in pursuit of achieving inclusiveness, resilience, and sustainability at an unimaginable level.

Consequently, the debate around extremities, hyperglobalization, and multilateralism versus protectionism, localization, and plurilateralism is heightening more than ever. In his interview, Economist Dani Rodrik argued illustratively that policymakers need to rethink “neoliberalism,” (Rodrik 2022) which implies the “dichotomy between the market or the state, or the firms and the government.” He underscored the complementarity between the two – this understanding is essential to create a resilient version of globalization that is beneficial to all. It implies that trade must be free from suspicion and in tandem with labor rights, social standards, and environmental sustainability.

¹ Higher GVC integration also supports developing countries' workforce, as it is argued that “higher earnings and employment within sectors and firms is associated with GVC integration” (Hollweg 2019).

Such a debate on hyperglobalization and related economic uncertainties have been distressing since the 2008 global financial crisis (GFC) and mainly the US-PRC Trade War (Kwan 2019; Kapustina et al. 2020; Pohit, Chadha, and Pratap 2019). The latter forced international firms to look for alternative supply chains in Asia, including India, Viet Nam, etc. But it was the severity of the spread of the pandemic and geopolitical tensions viz. the Russian invasion of Ukraine that jolted the world economy. This invited a new series of deliberations to suggest how firms and government must respond. Using the case of the G20, different kinds of shocks/disruptions have been identified, namely idiosyncratic, country-specific, global, geopolitical, and industry-specific shocks. Supply chains' recovery steps have also been deliberated for the Asia and Pacific region (covering a few G20 members) with a view to managing raw material shortages, rising freight costs, logistics, and infrastructure bottlenecks, which have been encouraging companies, customs, and trade professionals to opt for restructured GVCs (KPMG 2021; Furusawa and Ing 2022; etc.). Literature has demonstrated a frantic urge among G20 economies, mainly the US, Japan, the EU, Australia, etc., to speedily explore options for achieving supply chain resilience. Simultaneously, GVCs' complex networks are perhaps assumed to be split into multiple regional supply chains (RSCs) – a few involving the PRC, with others pursuing the PRC+1 strategy – or following reshoring and enhancing domestic value chains (Escaith 2022).

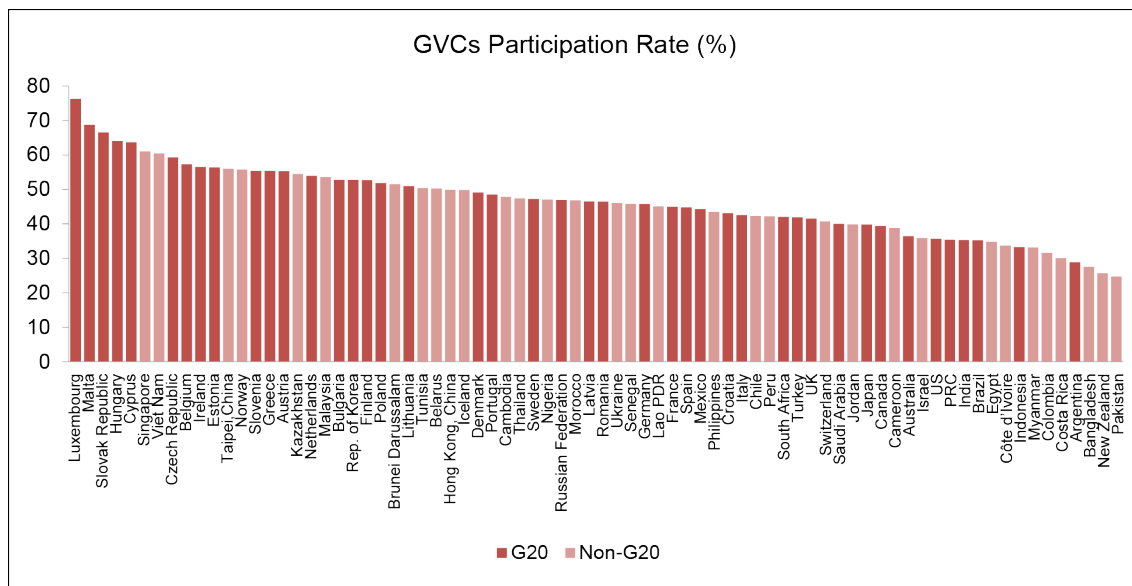
That said, global firms have exhibited the renewed levels of acceptability and adaptability in the current crisis sooner than the previous ones. This is evidenced in a recent World Economic Forum (WEF) survey, which found that over 65% of multinational corporations (MNCs) are ready to adapt to the uncertain changing landscape and align shifts in GVCs with new geopolitical fault lines (WEF 2023). This is a commendable recovery sign. Yet, faster consolidation of GVCs or RSCs would always need a realistic and strategic approach to trade and investment liberalization (UNCTAD 2020). This is because although supply chains have recovered after each crisis, this becomes possible only through strenuous and collective efforts at both international and domestic levels. For instance, ever since the 2008 Summit, the G20 has always given the leaders and the Ministers of Trade an open platform to promote free trade and restrict protectionist policies to help many developing countries and the poorest countries in crisis, enhance economic growth, save jobs, and promote equality. In 2023 too, the G20 embodied an enormous ability to resolve the exposed fragility of GVCs. This is because G20 countries are the most integrated ones (Figure 1). They have been directing global rules for the most sought-after “Trade and GVCs” agenda.² The G20's potential can be fully unleashed if the group continues to maintain a strong and collective lead, with the possibility of introducing a binding toolkit.

To provide some background, the 2012 G20 Summit was revolutionary when members emphasized the relevance and promotion of GVCs/RSCs. The matter came under the spotlight during the 2016 Hangzhou Summit, where members endorsed the G20 Strategy for Global Trade Growth. It stated that “G20 members recognize the particular importance of GVCs as drivers of global trade and investment flows, and commit to adopting policies that support expanded, sustainable, and more inclusive GVCs, and that encourage greater participation and value addition by business in developing countries.” But, over time, policymakers have shown apprehension over the G20's real contribution. The central aspect concerns the extent to which G20 members have successfully addressed their GVC commitments. In this paper, the G20's commitments

² The OECD-WTO TiVA database shows lower rates for the US, Japan, the PRC, and India, despite most of them being large trading economies. This is because of their higher global exports, which also covers final products. This indirectly reflects the stronger role of these large economies across the entire economic landscape, not only restricted to trade of inputs.

and actions pertain to the inclusiveness of developing mainly the least developed countries (LDCs) into GVCs and to achieving supply chain resilience (SCR). The Indian Presidency's Outcome Document from the Trade and Investment Ministerial Meeting in August 2023 has been instrumental in reiterating these twin objectives of the consortium. The document states: "Building upon the work done during previous Presidencies, we will continue our efforts to promote and uphold building of resilient and inclusive GVCs that can withstand future shocks; make GVCs work for inclusive development; and support businesses in reviving GVCs growth."³ This is a much-needed commitment to resolving shocks.

Figure 1: G20 Countries Have Shown Higher Participation in GVCs



Note: GVC participation rate is equal to the sum of backward linkages and forward linkages divided by gross exports.

Source: OECD-WTO TiVA database, latest available data up to 2020.

It is agreed that low-income countries or LDCs are particularly vulnerable to shocks that can disrupt GVCs. They often have limited resources and funds and thus lower economic diversification. They tend to rely heavily on a few exports, mainly raw materials, minerals, or some low-value-added items relating to the leather or textiles industry. But, on the positive front, they have also received help from international organizations like the United Nations in organizing decade-wise conferences since 1981 in order to understand and resolve their matters and promote sustainable growth therein. There has been a modest push since the 2009–2010 G20 Summits to increase LDCs' voice and participation in the global economic system. LDCs received increasing support from the G20 over the years in terms of aid-for-trade and commitments for technical assistance. There has been growing commitment among members since 2015-2016 and mainly post-2020 to facilitate LDCs' involvement in GVCs. This paper delves into a content analysis of the G20's commitments in this regard. Admitting the African Union (AU) as a permanent member of the G20 is a noble step in this direction, as 60% of the AU is made up of LDCs.

³ Refer page 5, para 16 in G20 2023 India (2023).

The paper uses export and import shares of intermediate goods to assess the extent of integration of G20 and non-G20 nations, including LDCs, into GVCs. This is because countries can participate in GVCs⁴ by exporting (forward-linking) and/or by importing (backward-linking) intermediates. That said, the paper addresses four specific areas: (i) assessing the changing trade landscape in intermediate goods and linkages in GVCs to explain the variation across G20 countries over time; (ii) finding out the differential roles and involvement of the G20's developed and developing countries in meeting the commitments of inclusive GVCs to benefit LDCs; (iii) analyzing the contribution of G20 commitments for supply chain resilience vis-à-vis the position of LDCs and ascertaining how the G20 can enhance overall resilience in GVCs; and (iv) providing key policy recommendations on how the G20 can promote the involvement of LDCs in GVCs.

The paper uses logical methodology: the greater the trade in intermediate goods with global and/or with G20 countries, the better integrated a country is into GVCs and/or in the supply chains (SCs) of the G20. The shares in global intermediate exports and imports are assessed first. This is followed by an assessment of the demand for intermediate goods/inputs of the G20's developed and developing countries and its linkages with the supplies by other G20 and non-G20 countries, mainly LDCs. Box A in the Appendix provides a list of G20 developed and G20 developing subgroups and 46 LDCs. The paper has used the latest available trade data for the period 2013–2022⁵ from UN COMTRADE (World Integrated Trade Solutions (WITS) software) as well as GVC linkage data from the OECD-WTO Trade in Value added (TiVA) database (latest available up to 2020). It has employed content analysis and a discussion with a few policymakers. Intermediate goods (parts/inputs, primary, processed) are defined using Broad Economic Categories (BEC) codes.⁶

The rest of the paper is organized as follows. The next section analyzes the G20's GVC commitments and marks out their patterns in global intermediate exports and imports. The third and fourth sections assess the fulfillment of the G20's commitments

⁴ The GVC integration measurement has been largely gauged for the highly fragmented machinery industry, including electronics, by using the “export share of intermediate goods/inputs” indicator. This is because a home country supplies inputs to foreign countries either to meet their final consumption or to gainfully link to many production chains (via forward linkages) in terms of further processing or exports (for the usefulness of exports of inputs, see Gupta 2016; Obashi and Kimura 2016; Banga 2014; Ando and Kimura 2009; etc.). Forward linkages (FLs) in GVCs are beneficial because the domestic value added (DVA) incorporated in intermediate goods is exported to a partner country, which then re-exports them to third countries. At the same time, even participation at lower ends is essential for the economic growth of many low-income or developing countries, thereby necessitating the measure of “imported intermediates” and backward linkages (VA in inputs imported for exports) (Goldar et al. 2017; Baldwin and Lopez-Gonzalez 2015; and Hummels, Ishii, and Yi 2001 show the usefulness of imports to produce or export foreign VA in exports, etc.).

⁵ Note that information/data from 2022 may be slightly affected due to the nonreporting of trade data in WITS by Indonesia, Saudi Arabia, and the Russian Federation from the G20 group and by many countries from the non-G20 group (mainly LDCs and small-island countries). Accordingly, mirror data have been used for 2022, wherever possible in time series figures, which might have pushed up the overall values of global intermediate exports and imports. Nevertheless, the trend is not affected. In fact, due to weak reporting of direct trade data by LDCs, the mirror data as “all countries” imports and exports to LDCs have been used for all years from 2013 to 2022.

⁶ Codes used: “111 – Food and beverages, primary, mainly for industry; 121 – Food and beverages, processed, mainly for industry; 21 – Industrial supplies not elsewhere specified, primary; 22 – Industrial supplies not elsewhere specified, processed; 31 – Fuels and lubricants, primary; 322 – Fuels and lubricants, processed (other than motor spirit); 42 – Parts and accessories of capital goods (except transport equipment); 53 – Parts and accessories of transport equipment,” as taken from <https://unstats.un.org/wiki/display/comtrade/Intermediate+Goods+in+Trade+Statistics>.

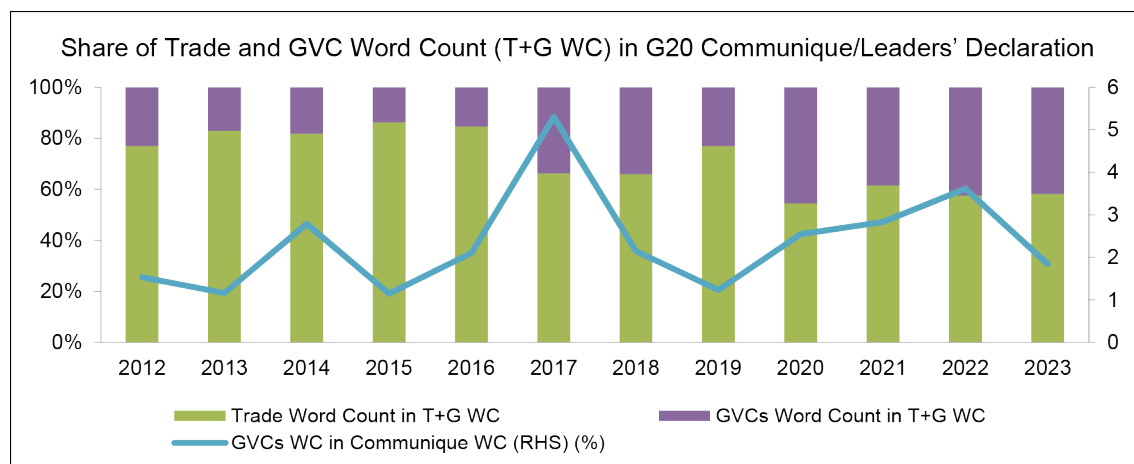
to inclusiveness and resilience in GVCs, respectively. The last section concludes with key policy recommendations.

2. G20'S COMMITMENTS TO GVCs AND THEIR PARTICIPATION IN INTERMEDIATE TRADE

2.1 G20's Enduring Commitments to Inclusive and Resilient GVCs

The trade and GVC texts from the G20's key Leaders' Declaration or Communique document were examined for 2008–2022. **First, GVC commitments had had a weighty space in this document from 2012 and now the pandemic proved to be a boon (Figure 2).** During 2012–2013, there was significant recognition of GVCs as the engine of trade and economic growth. GVC commitments, having declined from 2014 to 2019 (except for the peak in 2017), increased from 2020.

Figure 2: GVCs as the Significant Commitment in the G20 Key Document, More So Since the Pandemic, Marking 40% in Total “Trade and GVC” Word Count



Note: declining GVC commitments in 2023 are not a true picture due to noninclusion of substantial text on GVCs, which was rather given in the Trade and Investment Ministerial Meeting's Outcome Document.

Source: G20 Official Website, Authors' Calculations.

Second, as a success narrative, G20 summits during the period 2012–2014 involved greater collaborative works on GVCs. Large commitments were sooner and easily implemented to make progress on GVCs. For instance, the WTO, OECD, and UNCTAD were asked “to accelerate their work on analyzing the functioning of global value chains and their relationship with trade and investment flows, development and jobs...and to report on progress under the Russian Federation's Presidency.”⁷ These commitments were fulfilled in a timely manner: (i) The revolutionary OECD-WTO Trade in Value Added (TiVA) database on GVCs was launched in January 2013. (ii) These agencies delivered the required report titled “Implications of Global Value Chains for Trade, Investment, Development and Jobs” for the Russian Federation's Presidency (OECD, WTO, and UNCTAD 2013). They were further invited to deliver

⁷ Refer to page 5, para 29 of the G20 Leaders Declaration document of 2012 at G20 Los Cabos Mexico. G20 Leaders Declaration. <http://www.g20.utoronto.ca/2012/2012-0619-loscabos.pdf>.

another report by the first half of 2014. They were asked “to seek the views of governments and continue their research on the impact of GVCs, particularly in relation to the influence of GVCs on trade, economic growth, development, job creation and distribution of value-added along GVCs.” OECD welcomed the World Bank Group for this work. As committed, a new report titled “Global Value Chains: Challenges, Opportunities, and Implications for Policy” was presented in 2014 (OECD, WTO, and World Bank 2014).

Third, over the years, GVC commitments moved beyond just the manufacturing:

(i) 2018 and 2022 Communiqués focused on sustainable and inclusive robust agriculture supply chains. (ii) Mainly since 2016, the focus has been on creating decent workspaces within GVCs, with support for skills. (iii) Commitments to boosting trade facilitation, connectivity, and investments mainly in infrastructure have been the main attractions. (iv) 2021 Communiqué focused on strengthening supply chains in the health and pharma sector to recover from the pandemic. (v) Since the Indonesian Presidency, linking inclusive digital trade with GVCs emerged as another mainstream area (Tripathi 2022).

Fourth, most importantly, the Communiqué Analysis shows that GVC texts have been ardently using the three terms “inclusive,” “sustainable,” and “resilience.”

The paper comprehends “inclusiveness” as integrating developing countries and LDCs in the GVCs and in the supply chains (SCs) of the G20. It excludes an analysis of MSMEs.⁸ Sustainability implies aligning GVC goals with social, economic, and environmental standards as per frameworks internationally approved by the UN, OECD, etc., as initiated in the 2017 Summit. But the scope of this paper does not cover this aspect either. The paper rather focuses on “resilience,” which is the persistent ability of countries to adjust quickly to the risks caused by SC disruptions or shocks.

- 1) G20 Summits held from 2014 made commitments to encourage developing countries’ participation in promoting inclusive GVCs and generating greater value addition. The PRC’s G20 Presidency of 2016 incorporated the integration of low-income countries/LDCs.

On request, two reports have been delivered by the OECD and World Bank on inclusive GVCs as the initial policy steps (OECD and World Bank 2015; OECD, World Bank, and ITC 2016): The first one was “Inclusive Global Value Chains,” where barriers to the participation of MSMEs in GVCs have been addressed, along with policy options to facilitate market access and GVC integration for low-income developing countries (LDCs). The second report is a subsequent version, “G20 strategy for promoting inclusive GVCs,” which added the targeted initiatives for capacity building.

- 2) The 2020 Communiqué keenly mentioned the commitment to supply chain resilience, along with the inclusiveness goal. It stated: “We recognize the need to increase the sustainability and resilience of national, regional, and global supply chains that foster the sustainable integration of developing and least developed countries into the trading system, and share the objective of promoting inclusive economic growth including through increased participation

⁸ The commitments to integrate MSMEs into GVCs received a boost after 2013 and more since the 2020 Summit. Measures taken as “G20 Policy Guidelines on Boosting MSMEs’ International Competitiveness” and the “G20 non-binding MSMEs Policy Toolkit.”

of micro-, small-, and medium-sized enterprises (MSMEs) in international trade and investment.”⁹

- 3) The 2023 Presidency proved to be strong-minded with explicit commitment to working towards both the objectives of (1) and (2). Interestingly, members recognized the importance of a rules-based multilateral trading system under the aegis of the WTO. They underscored the improvement of this system to help in achieving resilient, sustainable, open, inclusive, and reliable GVCs.
- 4) To achieve resilience, the radical “G20 Generic Framework for Mapping GVCs” was launched in 2023. This is endorsed to reduce adverse impacts of shocks and take corrective measures in a timely manner. This provides a guidance tool to assist all the countries involved in identifying risks/vulnerabilities in different sectors (and firms) within GVCs and mapping the suppliers according to the sectors. The more diversified the list of suppliers, the more resilient the economy is.
- 5) Commendably, this framework emphasizes the need to promote the inclusivity of developing countries and LDCs in GVCs to lead to robust GVC resilience. Annex A of the Trade and Investment Ministerial Meeting Outcome Document shows interlinkages of these two prime goals: “When collaborating on GVCs, G20 members will endeavour to promote inclusion and sustainability. Many developing countries, especially LDCs, lag in their inclusion and level of participation in GVCs. Expanded participation and moving up the value chains can provide diversification to enhance GVC resilience as well as the opportunities for economic growth, job creation and poverty reduction. In this regard, G20 members welcome efforts to promote participation of those developing countries, especially LDCs, to move up in their GVCs.”

Overall, the G20 has been making sincere efforts in collaboration with multilateral agencies to come up with solutions for inclusive and resilient GVCs, especially with respect to developing countries and LDCs. But the G20’s official documents lack any exact measurable target for the same. Further, the GVCs’ Mapping Framework is advisory and nonbinding, making it difficult to realize the nuances of GVC commitments in the dynamic interplay, especially for low-income countries.

2.2 Recovery of Intermediate Trade Post-Pandemic and G20’s Prominence

This subsection uses two quantitative methodologies for estimating trends in global intermediate exports and imports. These indicate activities in GVCs.

The G20’s GVC Participation Using the “Growing Use of Imported Inputs” Method/Indicator: This confirms the growth possibility of regions less integrated in GVCs through different approaches – say, by undertaking assembling or low-cost labor-intensive manufacturing activities. Developed countries use it to save costs and to concentrate on those segments on the GVC curve that can render maximum rents. Employing this method, the G20’s imports of intermediate goods were found to increase to 79% in 2022 (as a share of global intermediate imports/GIM – Figure 3, Panel B and Appendix Figure A2). This saw a 4 percentage point rise in the last ten years and from the COVID year. Much credit goes to the increase in shares of G20 developed countries (5 percentage point rise from 2020 to 2022). This is possibly due

⁹ Refer to page 4, para 12 of the G20 Communique of 2020, available at http://www.g20.utoronto.ca/2020/G20_Riyadh_Summit_Leaders_Declaration_EN.pdf.

to the opening up of the economy in 2021–2022 with a hike in global demand. Developed countries usually deal more in the exchange of intermediate goods. The G7 and the rest of the EU contributed about 48% in 2022 (a rise from 44% in the previous year – mainly owing to the growing engagement of Europe (WTO 2023; UNCTAD 2022a), say, with North America and Africa). However, there has been a rise of only 2 percentage points since 2013. This share was much higher in 2007, pre-GFC, at 64%, which continued to decline afterwards. All this shows that the imports of inputs bounced back soon after the pandemic crisis, unlike the previous crisis.

In contrast, G20 developing nations demonstrated comparatively lower imports of intermediate goods, at 27% during 2022. But over the years, there have been improvements, such as 2 percentage points from 2013 and 6 percentage points from 2009. The reason has mainly been the PRC. Note that India's share increased only marginally over the years (3% in 2009 to 3.6% in 2013 and 2021 to 4.3% in 2022). Intermediate imports by other developing countries¹⁰ in fact declined in GIM (from 34% in 2013 to 30% in 2019 to 28% in 2021/2022). That said, India made some slower yet relatively better progress in using a few imported inputs to rise in GVCs. This is evidenced in its share in G20 developing nations' intermediate imports, which jumped from 13% in 2021 to 16% in 2022. This is an indication of its rising role in assembling.¹¹ The PRC's import share in the G20 developing nations' subgroup declined from 67% in 2007 to 53% in 2013. This, however, rose to almost 60% in 2020, but it decreased again to 55% in 2022. This is because the PRC's role as an assembly hub extended to being the manufacturer and consumer in GVCs. Similarly, although the PRC's share in global intermediate imports increased from 13% in 2013 to 16% in 2020, it fell again in 2022. This happened due to a slowdown in overall production chain activities during the last quarter of 2022 (WTO 2023), mainly owing to a decline in the PRC's intermediate imports (particularly from the Republic of Korea with a sharp decline of almost 30%, year-on-year basis).

G20's Upgrading in GVCs using the “Rising Export Shares of Intermediate Goods” Method/Indicator: This is a sign of industrial growth, depending on the type of sophisticated inputs exported. Advanced economies contribute more value to GVCs by producing and exporting specialized and complex parts and components/inputs. This is more useful for developing or emerging economies to access new markets and adopt new learnings and technologies. In the case of the G20, exports of intermediate goods were found to rise slightly in global intermediate exports (GIX) to 72% during 2022 (only a 1 percentage point rise from 2021 and just 3 percentage points from 2013) (Figure 3, Panel B; Appendix Figure A1). This slowdown in export growth is partly attributable to a fall in global exports of intermediate goods by 10% in Q4 of 2022, owing to high energy costs, a shortage of commodities, and weaker consumer and industrial demands. In particular, there was a fall in the exports of industrial supplies and machinery parts, followed by ores and precious metals, due to a decline in prices and demand (WTO 2023).

However, a small rise that was achieved in GIX in 2022 was not only due to the growing supply of certain parts and components, but mainly to food and beverages and primary industrial supplies. G20 developing countries' exports largely contributed to this rise – from 20% in 2009 and 24% in 2013 to 25%–26% during 2021–2022. This was

¹⁰ But Mexico has notably registered a rise in its shares due to its continuous engagement with the US and Canada under USMCA/NAFTA.

¹¹ Since 2020, a few developing countries' participation in the assembly of inputs, such as India, has become more prevalent in certain industries, such as electronics. Several factors are responsible, including the growing demand for IT hardware due to Work from Home, for electronic components used in Internet of Things (IoT) devices, inflow of more foreign investments, etc.

due to the rising share of other G20 developing nations (other than India and the PRC) from 44% in 2021 to 47% in 2022, as a proportion of the G20 developing subgroup's intermediate exports. The PRC's share, however, decreased therein to 47%. This was mainly because of a fall in its exports of integrated circuits. In 2022, the PRC also reduced exports of semi-manufactured metals, partly due to the fall in its crude steel production to reduce carbon emissions. Yet, the PRC is still the most prominent exporter (12% share in GIX in 2022, as against just 7% in 2009).

Although India's share doubled from 1% in 2009 to almost 2% in 2021 (and slightly declined in 2022), it is still a relatively small supplier in GVCs. The rising share of other developing countries in global intermediate exports (9% in 2020 to 12% in 2022) is commendable.

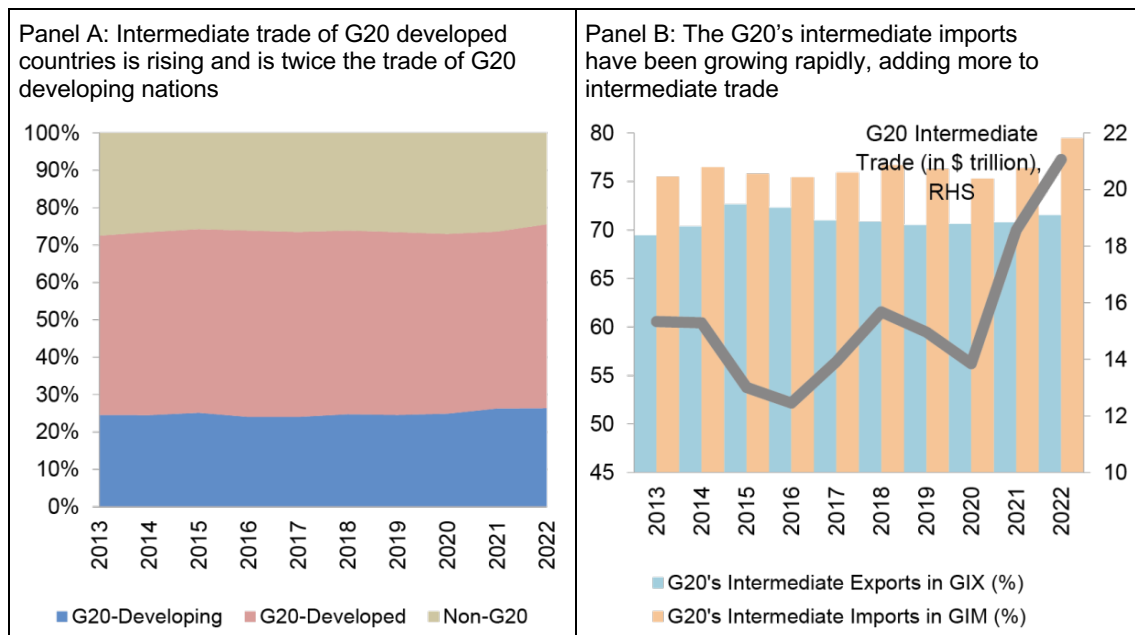
On the other hand, the G20's limited intermediate exports emanate from continuously falling exports of the G20 developed countries from 55% in 2009 to 48% in 2012 and further to 46% in 2022¹². This was due to the decline in their exports of parts and components of capital goods. Another reason for the downfall is attributable to Europe's falling exports of metals in the last quarter of 2022, mainly aluminium alloys. This happened due to factory closures and a reduction in production, affected by high energy prices as triggered by the Russian invasion of Ukraine.

Overall Results on Intermediate Trade: Even in value terms, trade in intermediate goods soared, especially post-2020 (Figure 3). Mainly from 2021 onwards, it was relatively higher sourcing of intermediates by developed countries. More intermediate exports from G20 developing nations further contributed to the trend. Nevertheless, G20 developed countries' shares were almost double that of G20 developing nations. This gap, however, decreased over the years: The percentage of G20 developed countries in global intermediate trade declined from above 60% in 2007–2008 to below 50% (trend since 2012). The G20's developing countries have shown a slow rise in the range of 23%–26%.

G20 economies thus have a growing presence in intermediate trade as compared to non-G20 ones. This is despite including many East and Southeast Asian economies, in the latter group, who have higher GVC participation (Figure 1). Non-G20 economies mainly cover many LDCs and island countries of America and Africa. These have been generally less integrated. A decline in many of their trade values, mainly on the imports side, post-2020–2021 is said to be the factor behind non-G20 economies falling share (Figure 3, Panel A). Due to supply disruptions in the last quarter of 2022, the exchange of intermediate goods was further affected even for Hong Kong, China and ASEAN.

The above discussion holds key implications: First, intermediate trade shares show that many developed countries, mainly the G7, still largely dominate policy space. Second, the PRC's highest share in intermediate trade among developing countries continues, making other G20 players less viable alternatives (with some exceptions, such as India and Mexico). Third, despite improvement in the performance of many G20 developing countries, huge potential still remains to be unleashed to get the true benefit of south-south trade and cooperation.

¹² Shares of leading groups in the G7 and the rest of the EU also declined by 3 percentage points between 2018 (pre-Covid year) and 2022.

Figure 3: The G20's Intermediate Trade Has Shown Greater Recovery Post-2020

GIX = Global Intermediate Exports; GIM = Global Intermediate Imports.

Source: WITS Software, Authors' Calculations.

Fourth, the quick recovery of the G20's intermediate goods as soon as the pandemic slowed down suggests that many of the shocks to demand and supply caused by the pandemic might have been temporary. This is because countries were able to quickly adjust their trade flows under GVCs.¹³ This trend can mainly be attributed to the release of pent-up demand during COVID. The IMF report also discussed a similar finding: The stringent lockdown-based supply disruptions had international spillovers during the early phase, mainly the early four months of 2020. At that time, overall goods trade declined, particularly those based on GVCs, such as automobiles, due to shortages of critical inputs such as semiconductors. However, the IMF study found that these adverse effects were relatively short-lived and were reduced depending on the level of work conducted from home/teleworking. Asian economies, mainly led by the PRC, although seriously hit, were able to rebound their market shares even in June 2020 in Europe (also in 2021) and North America in GVC industries by 4.6 and 2.3 percentage points, respectively (IMF 2022). Unlike previous crises, this study found that the traditional factors of demand and relative prices of imports did not explain the quick recovery during the pandemic. Our above analysis also argues that imports of intermediate goods declined more spontaneously post-GFC with a more long-lasting impact, but the comeback was faster after surviving the initial COVID-19 impact. So, this paper perhaps supports the view of the IMF study that the domestic COVID-based factors may now be more responsible, viz. the severity of the pandemic and containment policies and less mobility, which led to excess import demand for goods.

¹³ Overall trade rebounded in 2021 and 2022, according to UNCTAD (2022a).

Thus, the rise and revival in intermediate trade of the G20 during and post-pandemic (2021–2022) revealed that many countries already have an inherent degree of resilience to absorb shocks. Nevertheless, as discussed above, falling global intermediate exports resulting in a slowdown in the SC activities of most developed economies and the PRC in the last quarter of 2022 is a matter of concern. The year 2023 could be a decisive year to show the true worth of the resiliency power of GVCs based on changes in the direction of trade in intermediate goods.

3. G20'S ROLE IN STRENGTHENING INCLUSIVE GVCs, MAINLY FOR LDCs

3.1 Degree of Concordance in G20's Demand for, and non-G20's Supply of, Inputs

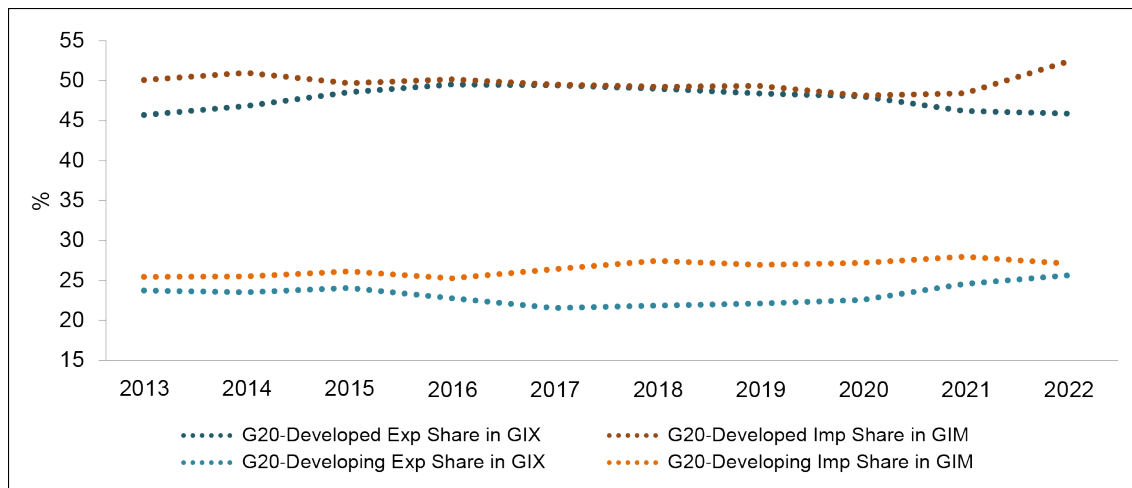
The growing intermediate trade of the G20 further signals its prominent linkages among the member countries and with non-G20 nations. The rule applied is that the greater the degree of interlinkages and concordance in the G20 and the rest of the world demand-supply matrices, the more inclusive the GVCs and the G20's supply chains (SCs). A simple methodology is used: measurement of global shares of the G20's intermediate exports and imports vis-à-vis non-G20 countries, followed by assessment of the extent to which the demands for intermediate inputs of G20 developed and developing countries have been met by non-G20 countries, particularly the LDCs. The section assesses this association to gauge the involvement of LDCs, which are mainly part of the African Union, in GVCs and the G20's SCs.

Data analysis shows a considerable divergence between the G20's developed and developing subgroups in exports and imports of inputs and their forward and backward participation in GVCs over the decade 2013–2022 (Figure 4 and Appendix Figure A3). There is substantial demand for, and supply of, intermediates by G20 developed countries. To elaborate, G20 developed countries' exports of intermediate goods particularly increased until the middle of this decade. But during this period, the exports of G20 developing countries in global intermediate exports declined significantly. However, this trend reversed post-2017, when intermediate imports of G20 developing nations from G20 developed ones started to decrease. Instead, imports of G20 developed and non-G20 countries increased from G20 developing countries. This raised the latter's supply of inputs dramatically (Figures 6 and 7, Panel C). As a result, G20 developing countries' intermediate exports rose faster, especially during the pandemic.

Nevertheless, G20 developing countries have continuously experienced excess demand for inputs. But the trend is still likely to be quite unpredictable. This is because along with rising exports, many developing countries are increasingly engaging in both assembling and attracting MNCs. For instance, India's imports have been higher over the years. However, at the same time, it is operating "Make in India for the World" for export expansion, say, in the case of mobile phones. Plus, India is being increasingly used as a production base for iPhone, Samsung, etc.

The G20's developed countries have also seen changing trends. Post-2020–21, rising imports of this subgroup's intermediate goods far surpassed their falling exports. This also includes the component of rising intermediate imports of G20 developed from non-G20 countries, including LDCs.

Figure 4: Higher Demand for, and Supply of, Intermediate Goods by G20 Developed Countries



GIX = Global Intermediate Exports; GIM = Global Intermediate Imports; Imp = Imports; Exp = Exports.

Source: WITS Software, Authors' Calculations.

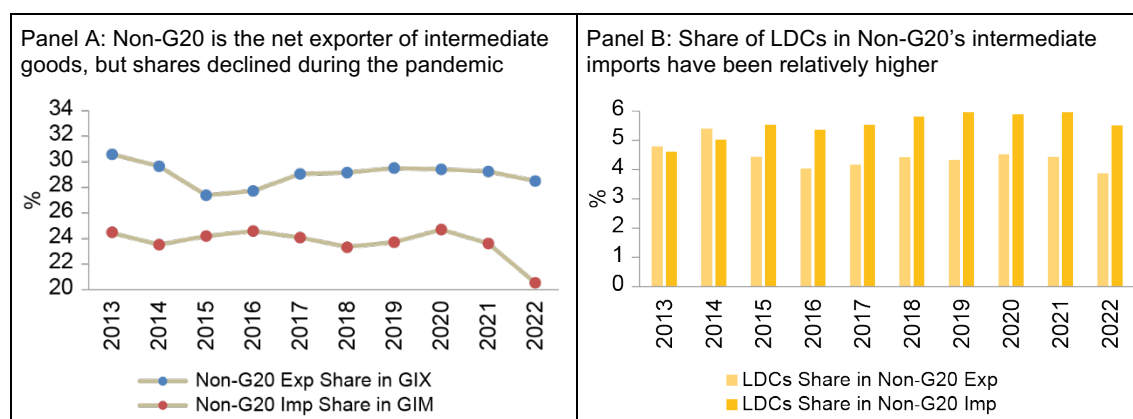
The above discussion points to the rising linkages of the G20's trade with non-G20 countries. In fact, the share of imported inputs of non-G20 countries (other than LDCs) picked up rapidly from 2014. First, it coincided with a rising supply of intermediate goods by G20 developed countries and then by G20 developing nations from 2017 onwards. **However, as a proportion of global intermediate exports and imports, the GVC integration of non-G20 countries has been declining since the pandemic** (Figure 5, Panel A), as discussed in the previous section. Yet, many of these countries are still the net exporters of inputs. Moreover, interestingly, the share of LDCs in non-G20 countries' imports has been growing, accounting for almost 6% even during the pandemic (Figure 5, Panel B). This is indicative of the industrial progress in some of these low-income countries.

The paper reaffirms the much lower integration of LDCs in GVCs, as can be seen in their meager share of intermediate trade of just around 1%, even in 2022. To provide some background, LDCs exported relatively more significant inputs until 2014 (Appendix Figure A1): 1.2% in 2010, which increased to 1.6% in 2014. The share of LDCs' imports was then lower at 0.9% and 1.2%, respectively (Appendix Figure A2). The trend changed later: LDC imports rose from 1.4% in 2015 to 1.5% in 2021 before falling to 1.1% in 2022. Exports increased at a lower rate from 1.2% in 2015 to 1.3% in 2021 before declining to 1%. Overall, LDCs' share decreased in GVCs, indicating low achievement of the inclusiveness goal.

Looking closely at the demand-supply interlinkages between G20 and non-G20 countries over a decade, differential results have been obtained for G20 developed and G20 developing countries regarding their supply chain linkages within the G20 and the rest of the world. Evidently, rapidly rising imports of G20 developed countries may have been met only to a certain extent by the relatively smaller exports of G20 developing nations. The question arises as to whether the massive demand for inputs by G20 developed countries has been fulfilled via non-G20 nations, including LDCs, or by strategizing within its own subgroup of G20 developed countries. The answer is clearly yes in terms of the latter. Most of the intermediate imports of G20 developed countries, more than 55%, have been taken from other G20 developed countries – though this share is also declining post-COVID (Figure 7,

Panel C). G20 developing countries, as the second major supplier, have exported to G20 developed countries with a share of about a quarter. This is closely followed by non-G20 countries (other than LDCs). This is because many advanced countries are pursuing a PRC+1 strategy, which involves engaging with more competitive ASEAN countries, particularly Viet Nam, Thailand, and Cambodia.

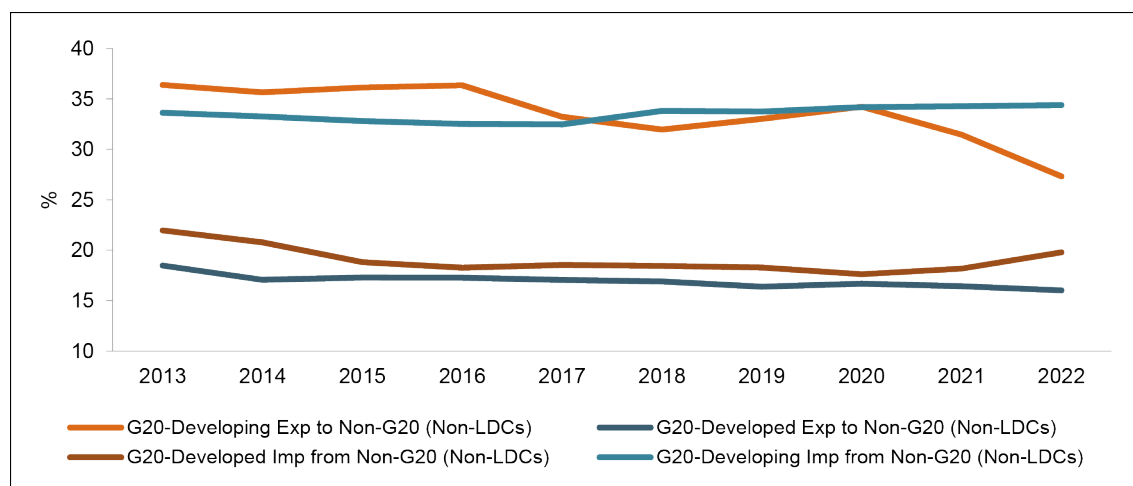
Figure 5: Non-G20 Countries' Intermediate Trade Declined in Pandemic, but LDCs Are Improving



GIX = Global Intermediate Exports; GIM = Global Intermediate Imports; Imp = Imports; Exp = Exports.

Source: WITS Software.

Figure 6: Non-G20 Countries (Excluding LDCs) Have a Relatively Stable Supply of Intermediate Goods to G20



Imp = Imports; Exp = Exports.

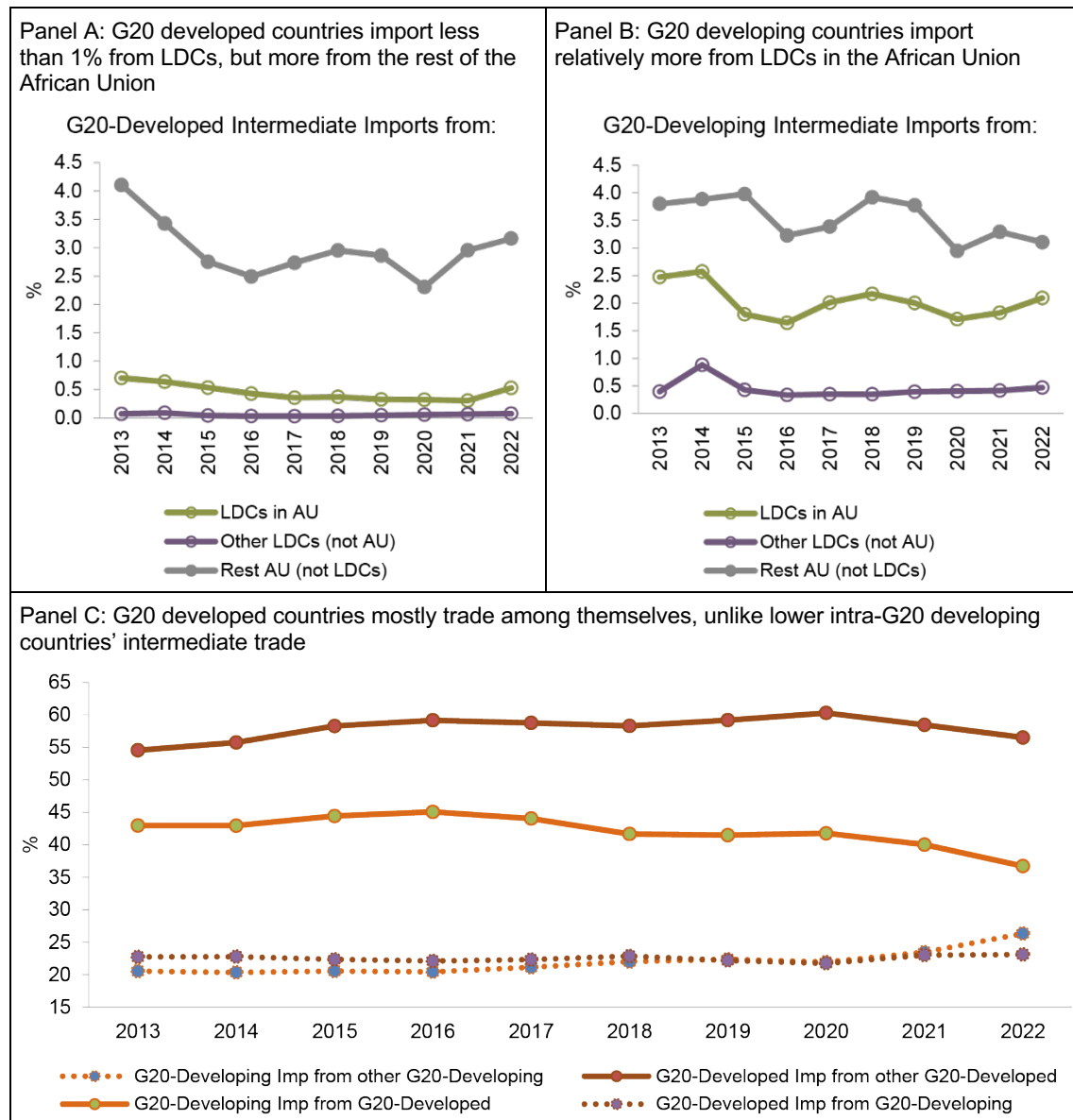
Source: WITS Software, Authors' Calculations.

The above implies almost a trivial level of share of LDCs in G20 developed countries' intermediate imports. In other words, LDCs' involvement is not only extremely low globally, but also almost 1% into the SCs of G20 developed nations (Figure 7, Panel A). However, on deeper analysis, even a minor rise in shares for such low-income economies is helpful for them from their perspective. Note that the percentage

of imports of G20 developed countries started to rise marginally for 33 LDCs (out of a total of 46 LDCs), who are part of the African Union (AU).¹⁴

On the other hand, G20 developing countries have relatively higher imported inputs from all of the 46 LDCs – 2% in 2020 to almost 3% in 2022, against 0.4% to 0.6%, respectively, in the case of imports by G20 developed countries. LDCs thus have better integration in G20 developing countries' supply chains (Figure 7, Panel B). Again, the rise is more prominent for the LDCs in the AU.

Figure 7: LDCs' Involvement with G20 Supply Chains is Still Minuscule



Imp = Imports; Exp = Exports; AU = African Union.

Source: WITS Software, Authors' Calculations.

¹⁴ G20 developed countries have been providing greater market access to the remaining developing AU countries, mainly post-pandemic.

Further, G20 developing nations' level of engagement with G20 developed and non-G20 countries (and LDCs) now plays a more decisive role due to its growing voice in international forums like BRICS, WTO, etc. However, unlike G20 developed countries, G20 developing ones did not import much from other G20 developing countries (just a quarter, but shares increased by 4 percentage points from 2020 to 2022). Rather, G20 developing countries' imports still account for above 40% of G20 developed ones.

The above trends imply still lower south-south trade. This can be gathered from lower intra-G20 developing countries' trade and lower imports of G20 developing countries from LDCs. Although this subgroup's share of intermediate imports is rising steadily from other non-G20 countries (non-LDCs), contributing about 34%, the non-G20 nations also include significant shares of high-income developed countries of East Asia and ASEAN (with a share of more than 25% during 2022 in G20 developing countries' intermediate imports from non-G20 nations).

3.2 Each G20 Country's Contribution to Inclusivity Goal for LDCs

Given the lack of a specific yardstick for creating inclusive GVCs by the G20, the paper has utilized the export and import shares of the G20 and LDCs as a logical test for inclusivity. This section further evaluates the changes in the percentage of intermediate imports of each G20 country from LDCs and even G20 developing countries:¹⁵ (i) out of the G20's total intermediate imports in that particular year, and (ii) as a proportion of a country's own domestic intermediate import (IM) basket.

It is found that even in value terms, LDCs' intermediate exports to G20 developed countries are minuscule, almost half of those to G20 developing nations. Their exports to the latter have become relatively more significant, though with a sporadic pattern (Figure 8). Post-pandemic, these have increased rapidly, surpassing the pre-pandemic higher level of 2018. Share-wise, the PRC accounted for more than 50%, as a share in the G20's total intermediate imports from LDCs in 2017 and 2022. Its share increased in the decade 2013–2022 (Figure 9). India is the next big market for LDCs within the G20 developing subgroup. Its shares, although decreased, still account for more than 10%. The shares of the remaining developing countries have not only been much lower but also declined in the last decade (from 7% in 2013 to 5% in 2022).

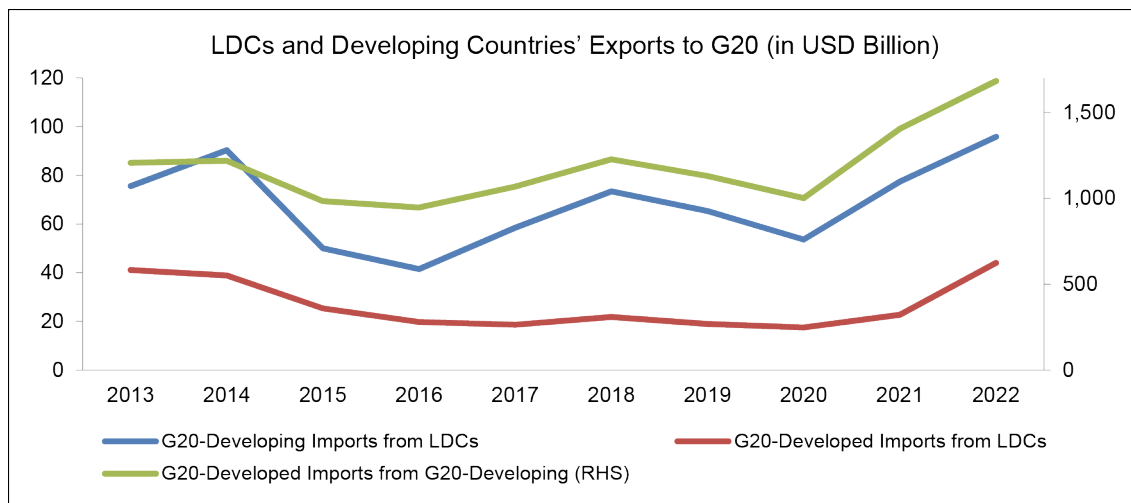
In contrast, G20 developed countries' imports from LDCs were much lower, but they bounced back after the pandemic – steadily growing in value and share terms (increasing by 7 percentage points in the last five years). A rise can be seen for most developed countries, except for a significant decline in the case of the US, the Republic of Korea, and Japan. Note that before 2013–2014, LDCs' exports to G20 developed countries were higher, at around 35%. But this declined after that to reach 24% in 2017. This trend has also been indicated in the literature (UN 2021), so that since the early 2000s, LDCs have started to divert away from the traditionally preferred markets of the EU and US towards developing countries, mainly the PRC. This is visible in LDCs' rising intermediate exports to the PRC.

Along with this, LDCs have also experienced diversification of exported products since 2010. This is supported in our analysis as well. Data show that the share of LDCs' exports of primary fuel and lubricants to both G20 developed and G20 developing

¹⁵ Due to mismatching between the lists of developed and developing countries by different agencies, the paper does not focus on the developing countries in the non-G20. This group has just been split into LDCs and other than LDCs/non-LDCs.

countries fell to almost half in 2022 (around 30%–35%) of their level in 2013 (around 60%–65%). On the other hand, their shares in the case of industrial supplies have increased in the last 7–8 years.

Figure 8: Sporadic Yet Budding Exports of LDCs to G20 Mainly During Pandemic



Source: WITS Software, Authors' Calculations.

Nevertheless, despite the above trends, the developed countries remain the primary focus market for LDCs. Even in 2022, LDCs continued to have reasonable shares of exports to the US and EU-27. But a matter of concern is that other G20 developed countries still have lower shares of just 1%–2% in the G20's total intermediate imports from LDCs (Figure 9).

LDCs have thus been integrated at low ends in the supply chains of G20 developed countries. This is also evidenced in the LDCs' share of less than 1% in most of the G20 developed countries' own intermediate import basket (Table 1). Relative exceptions have been Australia, France, and Italy.

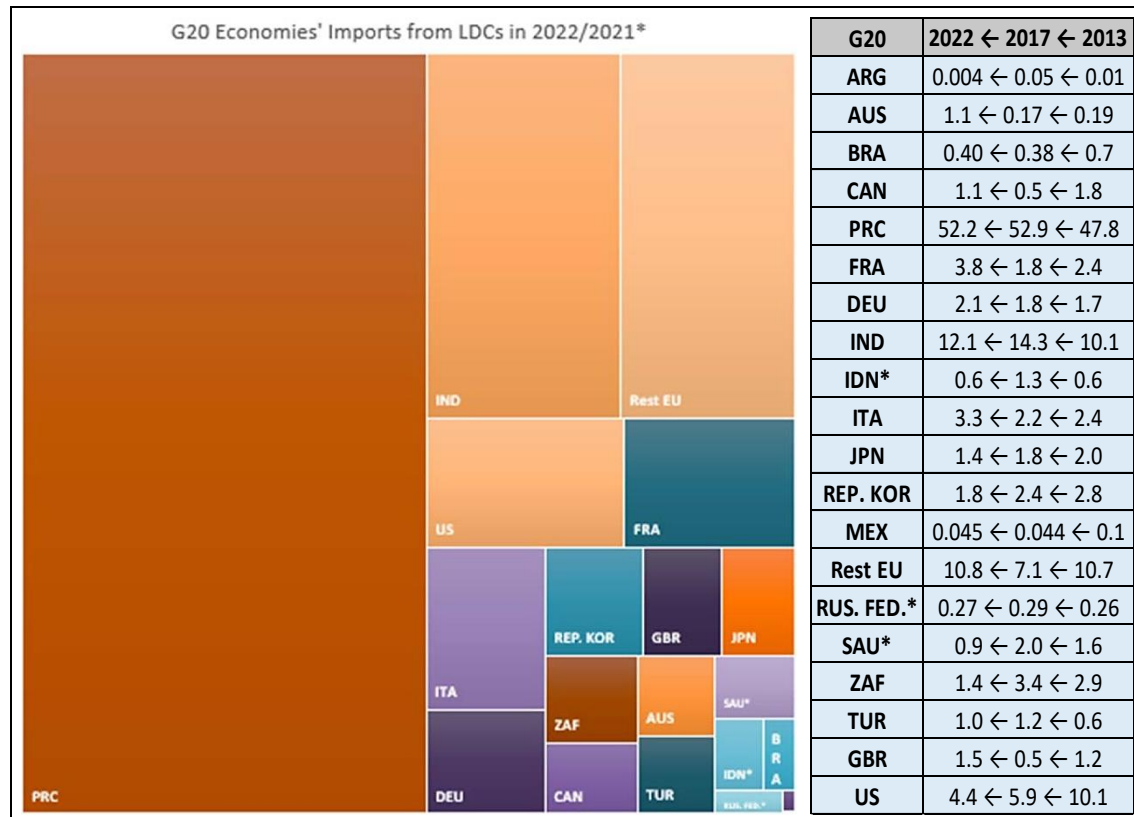
Similarly, only a few developing countries' domestic intermediate import baskets account for a relatively higher share of 2%–4% from LDCs, such as South Africa, the PRC, India, and Saudi Arabia. But, overall, LDCs have better linkages to the supply chains of G20 developing countries.

Note that LDCs' predominance in fuels and growing industrial development led to their rising share in the G20. For instance, the G20's developed countries still largely import primary and processed fuel and lubricants, at about 50%, from LDCs, followed by industrial supplies (mainly processed, above 25% – this accounts for roughly 40% with primary industrial supplies). Better linkages of LDCs with G20 developing countries are visible in the former's dramatically growing import shares of processed industrial supplies (rising from about 12% in 2013 to about 40%), followed by fuel and lubricants (share halved, though), and primary industrial supplies whose shares have been stable at around 15%–18%. G20 developing countries import reasonable amount of food/beverages for industrial use from LDCs.

Unlike patterns of LDCs, G20 developed countries mostly imported processed industrial supplies (around 45%) from G20 developing countries, followed by parts and components of capital goods (above 15%) and of transport equipment (above 10%). The G20 developing nations thus provided more value-added items. That is why the

share of G20 developing countries in each G20 developed country's domestic IM basket has been much higher (Table 1): above 35% in the case of Australia and the Republic of Korea (with a greater rise from 2013), 31%–32% for the US and Japan, and about 15%–20% for others.

Figure 9: Participation of LDCs in G20 Developed Countries Has Remained Much Less than Expected

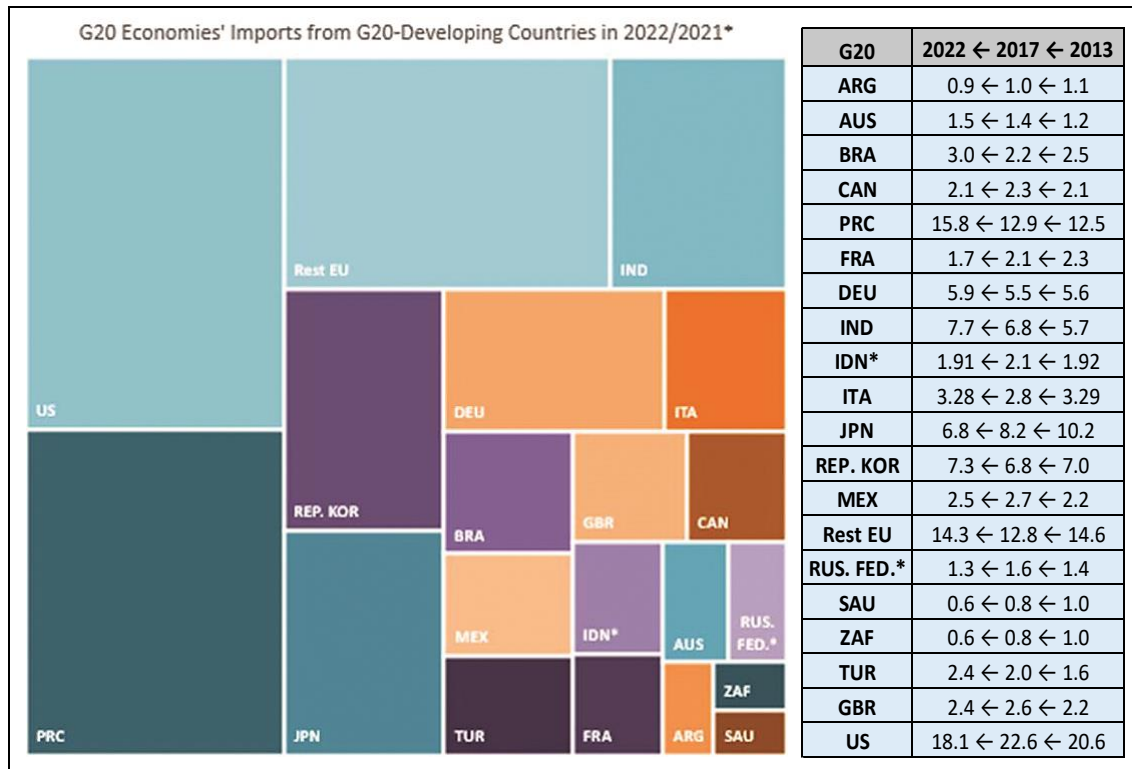


* Data are for 2021.

Source: WITS Software, Authors' Calculations.

However, as a proportion of the G20's total intermediate imports from G20 developing countries, the EU-27 is leading with a 25% share in 2022, followed by the US (above 40%). The PRC is the third-leading buyer (Figure 10). Developed countries imported more than 60% from G20 developing countries (2 percentage point rise from 2017). These findings show the growing inclusiveness of G20 developing countries in the supply chains of G20 developed ones. However, shares have been comparatively lower for intra-G20 developing countries' trade (as also found in the previous subsection), despite growth by more than 5 percentage points in the last ten years.

But, as a part of the country's own IM basket (Table 1), many G20 developing countries have imported from many fellow countries in the group in the range of 35%–45%. The Russian Federation, Saudi Arabia, the PRC, and Mexico have imported less than 30% (but each has grown by 5 percentage points from 2013). The PRC has thus been importing more from G20 developed and non-G20 countries.

Figure 10: Growing Inclusiveness of G20 Developing Countries in G20 Supply Chains

* Data are for 2021.

Source: WITS Software, Authors' Calculations.

Table 1: G20 Countries' IM Basket Has Greater Proportion for G20 Developing Countries and not LDCs

G20	Share of Imported Inputs from LDCs (2022) in Country's IM	Percentage Point Change in IM from LDCs (2022–2013)	Imported Inputs from G20 Developing Countries (2022) in Country's IM	Percentage Point Change in IM from G20 Developing Countries (2022–2013)
Argentina	0.01	–0.02	46.1	2.2
Australia	1.38	1.14	36.0	12.1
Brazil	0.28	–0.23	39.5	11.9
Canada	0.59	–0.33	20.5	4.6
PRC	3.46	–0.49	19.7	4.2
France	1.23	0.41	10.5	–1.0
Germany	0.33	0.04	17.4	2.8
India	2.79	–0.26	33.4	7.6
Indonesia	0.60	0.02	37.3	8.2
Italy	1.06	0.08	19.9	0.1
Japan	0.33	–0.12	30.9	–2.8
Rep. of Korea	0.49	–0.35	37.6	5.6
Mexico	0.02	–0.03	21.0	4.5
Rest EU	0.68	–0.16	16.9	–0.2
Russian Federation	0.30	0.06	28.9	8.9
Saudi Arabia	2.05	–0.47	27.7	5.0
South Africa	3.91	–2.86	34.9	0.3
Türkiye	0.70	0.20	30.9	9.9
UK	0.50	0.03	15.3	2.6
US	0.42	–0.69	32.4	–1.6

IM = Intermediate Imports.

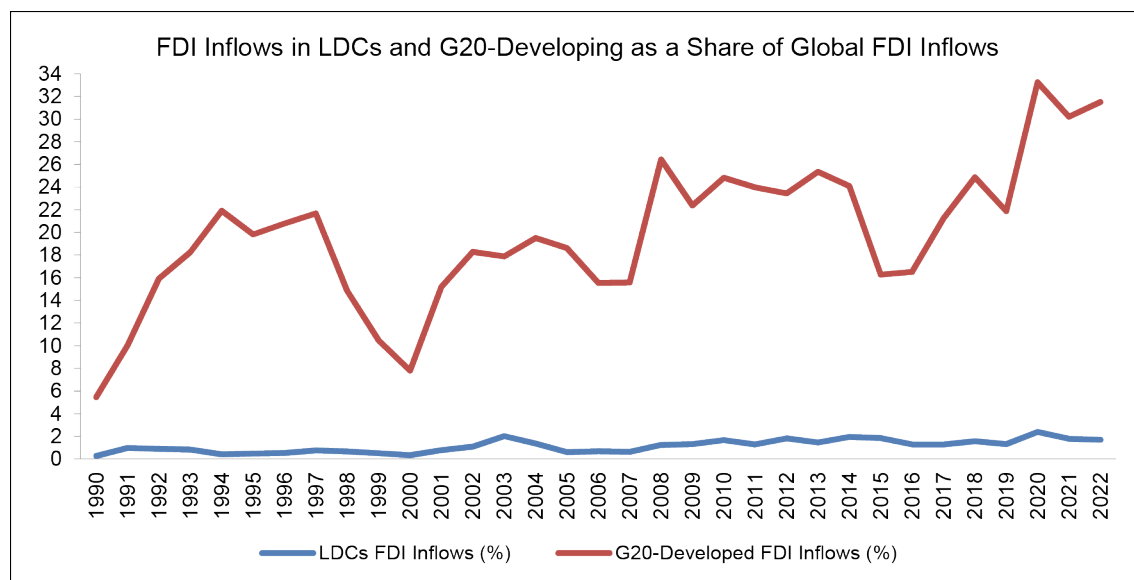
Source: WITS Software, Authors' Calculations.

The overall result is that the G20's commitments to promoting inclusive GVCs have only been modestly fulfilled. This is even more striking in the case of LDCs' lower integration in GVCs and in the SCs of G20 developed countries. Several factors are involved, such as LDCs' low industrial base, lack of infrastructure, political instability, and corruption, and higher levels of poverty and illiteracy, making it hard to develop a skilled workforce. Most of them continue to earn their livelihood by trading in natural resources, thus contributing very low value added.

3.3 Concerns over LDCs' Integration and Relative Measures by G20

LDCs lag far behind largely because of their low capacity to attract production stages. There has been a continuous lack of linkages between foreign multinational enterprises (MNEs) and LDCs' domestic firms/SMEs. Here, the crucial role is played by countries' capacity to prepare a conducive investment climate for attracting foreign MNEs or FDI. Figure 11 clearly shows LDCs' continuing very low FDI inflows. LDCs had shares near those of G20 developing countries in 1990, but the latter's inflows increased and became ten times higher than those of LDCs. This challenge restricts LDCs' GVC linkages. The G20 Presidency 2023 asserted that low-income countries or LDCs can increase their economic growth by moving up GVCs mainly by utilizing sustainable and inclusive investments. This is a potential area of development and policy intervention. The G20 has also been pursuing the agenda of "Aid-for-Trade" to help these countries in easing their "doing business."

Figure 11: FDI Inflows to G20 Developing Countries Are Ten Times that of LDCs



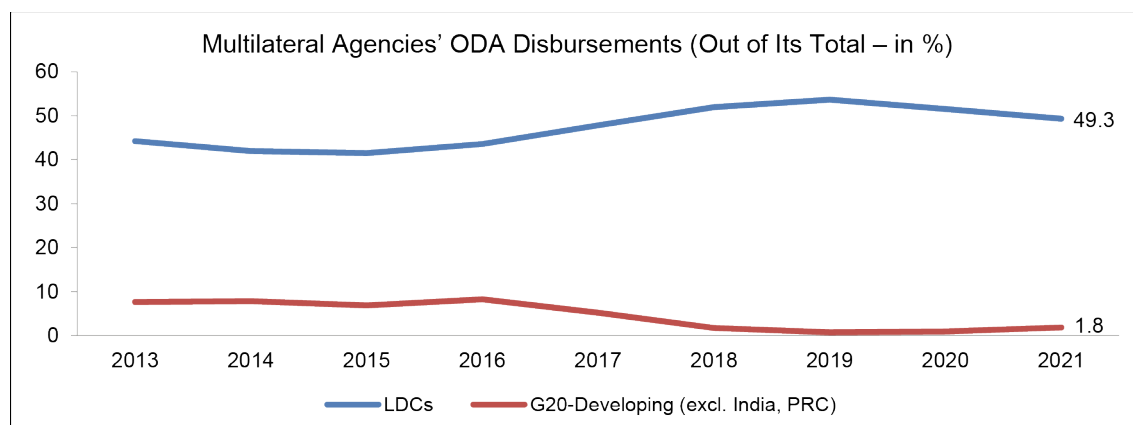
Source: UNCTAD Investment Report, Authors' Calculations.

Ever since the inception of G20 Summits, there have been continuous commitments by the G20 to meet Official Development Assistance (ODA) pledges and to ensure that the IMF, World Bank, etc. have sufficient funding to offer to developing or poorest countries, mainly in Sub-Saharan Africa, since the 2008 crisis. The African Development Fund's replenishment was the main target at that time. Furthermore, it was unequivocally agreed in the 2010 Summit to "make them [LDCs] active participants in and beneficiaries of the global economic system." From 2011, it was

affirmed there would be further collaboration with MDBs to provide them with more infrastructure projects. Notably, over the years, most Aid-for-Trade/ODA has been provided by multilateral agencies in social and economic infrastructure (Appendix Figure A4). Since COVID-19, this trend has been upgraded to supporting capacity building for LDCs to unlock innovative solutions. The Communiqué of 2023 has been more generous and ambitious: “We recognize the importance of WTO’s ‘Aid-For-Trade Initiative’ to enable developing countries, notably LDCs, to effectively participate in global trade, including through enhanced local value creation. We welcome all efforts to mobilize necessary resources in this regard... We will also continue to assist developing countries, notably LDCs, through technical assistance and capacity building to strengthen their ability for establishing and complying with technical requirements.”¹⁶

But Figure 12 shows that although multilateral agencies’ ODA disbursements to LDCs have risen since 2015, they have started to fall since the pandemic, which could be a matter of concern. There has also been a drastic decline in major advanced countries’ ODA disbursements to LDCs, such as in the case of France, Germany, Japan, and the UK (Table 2) – primarily due to more of their aid going towards developing non-G20 countries, including Africa. This is because G20 developing countries now receive lower ODA – owing to their growing integration and higher economic growth.

Figure 12: Multilateral Agencies’ Significant ODA to LDCs Sees Declining Trend



Source: OECD Aid-for-Trade database, Authors’ Calculations.

What is missing in LDCs is their structural transformation. This is absolutely key to attaining sustainable inclusiveness. Accordingly, several new commitments are being made at the global level (not just by the G20, but by multilateral agencies like the UN), viz. the Doha Programme of Action for the Least Developed Countries for the Decade 2031–2022 (DPoA). To provide more support, “the DPoA commits to supporting the LDCs to move away from low value economic activities towards higher value-added sectors; achieve more effective integration into global value chains; build productive capacities; diversify their export matrix; and gain a greater share in the emerging digital economy... supporting LDCs and graduating countries to achieve at least 7 per cent GDP growth per annum, as well as in the implementation of the WTO Agreement on

¹⁶ Refer to para no. 19-vi of G20 New Delhi Leaders’ Declaration. <https://www.mea.gov.in/Images/CPV/G20-New-Delhi-Leaders-Declaration.pdf>; and para no. 5 of the Outcome Document of G20 Trade and Investment Ministerial Meeting of 2023. http://www.g20.utoronto.ca/2023/G20_Trade_and_Investment_Ministers_Meeting.pdf.

Trade Facilitation” (UN 2022).¹⁷ The G20’s efforts need to align better with this SDG as facilitated by the DPoA.

Table 2: Falling ODA Disbursements by G20 Developed Countries

G20 Country	ODA Disbursements by G20 (in \$ million) to LDCs			Share of G20’s ODA to LDCs (out of total ODA to developing countries, %)		
	2013	2017	2021	2013	2017	2021
Australia	943	615	679	24.2	27.2	24.6
Canada	1,194	957	1,217	48.0	42.0	47.2
France	1,696	1,127	1,961	27.4	17.3	19.7
Germany	1,782	2,423	3,586	23.1	13.2	17.5
Italy	157	327	926	18.6	11.2	41.1
Rest EU	4,084	3,241	4,152	29.7	25.5	29.0
Japan	5,449	3,328	4,154	66.9	46.8	37.4
Rep. of Korea	515	587	844	39.9	37.7	38.1
UK	3,547	3,318	1,898	36.3	33.1	21.1
US	8,838	10,005	12,280	34.8	35.5	34.6

Source: OCED Aid-for-Trade database.

Since the 2009–2010 Summits, the G20’s commitment towards the needs and concerns of LDCs has been quite sensitive: The G20 countries have considered the concerns of LDCs for more than 2 decades under various trade negotiations in WTO forums such as under Doha round trade negotiations. The outcomes of UN conferences on LDCs have also been considered by G20 members in their annual meetings. The Communique of 2013 also mentioned the progress made by members in offering duty- or quota-free access to the products provided by LDCs. This is evident in literature (UN 2021) as there has been “progressive improvements soon after the adoption of the Hong Kong, China (2005) and Bali (2013) Ministerial Decisions on providing duty-free and quota-free (DFQF) market access to LDCs.”¹⁸ The major impetus for the G20’s proactive measures for LDCs (mainly Africa) came from 2015–2016:

- Launch of “G20 Initiative on Supporting Industrialization in Africa and LDCs”¹⁹ since 2016; Launch of “G20 African Partnership Initiative” and “G20 Compact with Africa (CWA) Initiative” during the German Presidency 2017. Strenuous country-wise actions have been emphasized to promote developing countries’ and LDCs’ involvement in digital trade. For this, the G20 has agreed to ensure the required infrastructure and digital connections for citizens by 2025.

¹⁷ United Nations. 5th United Nations Conference on the Least Developed Countries (LDC5). DPoA & SDGs. <https://www.un.org/ldc5/dpoa-sdgs>.

¹⁸ It is stated that in recent years, most countries offer nearly full QFDF and excellent coverage, but the impact is still limited as LDCs manufacture a few goods.

¹⁹ “We launch the G20 Initiative on Supporting Industrialization in Africa and LDCs to strengthen their inclusive growth and development potential through voluntary policy options including: promoting inclusive and sustainable structural transformation; supporting sustainable agriculture, agri-business and agro-industry development; deepening, broadening and updating the local knowledge and production base; promoting investment in sustainable and secure energy, including renewables and energy efficiency; exploring ways to develop cooperation on industrial production and vocational training and sustainable and resilient infrastructure and industries; supporting industrialization through trade in accordance with WTO rules; and leveraging domestic and external finance and supporting equitable access to finance with a focus on women and youth; and promoting science, technology and innovation as critical means for industrialization.” (2016 Communique)

- Two road maps were devised in 2022: i) “G20 Roadmap for Stronger Recovery and Resilience in Developing Countries, including Least Developed Countries and Small Island Developing States” to provide ways to achieve inclusive recovery with a focus on MSMEs, social protection, and the environment; ii) “G20 Principles to Scale up Blended Finance in Developing Countries, including Least Developed Countries and Small Island Developing States (SIDS)” talks about using new innovative sources of blended finance to meet SDGs.
- The focus in 2023 was more on LDCs and even SIDS to provide them with funds and aid for infrastructure, economic growth, GVCs, and sustainable development.

Drawbacks in G20 commitments to LDCs continue, particularly in the context of promoting inclusive GVCs: Adding the African Union (AU) to the G20 is the most significant step toward inclusiveness. But the past trends imply apprehensions about the limited tendency to reap its benefits given the existing structure. A more pragmatic approach and cooperation would be required from both the G20 and Africa on the key themes to make it influential. This is because success remained lower even in the case of the well-known African Standing Group (ASG), which started in 2017 as a part of T20 to bring all think tanks of both sides together to work on G20 priorities. Although the ASG brought out several policy briefs on different matters relating to debt, trade, infrastructure, etc. and the Presidencies since 2018 have included them in deliberations, the literature has indicated the ASG’s little influence and low decisive power in G20 policy matters (UNCTAD 2022c; Sidiropoulos 2021; Hackenesch et al. 2018). A proper structure for communication, success parameters, monitoring, and implementation mechanisms for recommendations have been largely missing. The ASG’s potential could not be properly utilized to deliver the desired results, viz. there is still lower LDC integration into GVCs, along with deteriorating socioeconomic performance since COVID (despite the growing lobby by African countries since then on the issue of debt and vaccines). Such experiences continue to trigger concerns about representing the AU’s/LDCs’ priorities on a par with the original G20.

That said, greater understanding is required: The G20 has been developing strategies for Africa and LDCs, but from 2023 onwards, the G20 will need to work with them in creating strategies.

This has become absolutely essential, as despite numerous G20 commitments, there is still dissonance or a mismatch in commitments and in meeting the developmental needs or level of participation of LDCs. For instance, leaders in 2023 again recognized the importance of “Aid-for-Trade” for LDCs for their effective trade participation with high local value addition. But there is no reference to the falling ODA disbursements since the pandemic to these economies by G20 developed countries and multilateral agencies. There is no mention of the reasons or challenges involved in this case. But this affects LDCs, as they mainly depend on aid to fulfill their financial requirements. In fact, even in 2016, when leaders agreed to support LDCs in gaining market access for agricultural exports, the G20’s own domestic subsidies acting as the barrier were not mentioned.

In other words, the priorities of the G20, mainly in the north, failed to match not only those of the Developing South but also the LDCs. One example is that after the pandemic, the G6 and the US made a strong case for green recovery from the pandemic. But the south had other urgencies regarding poverty alleviation, debt recovery, access to vaccines, creating social safety nets, etc. Less developed countries also lack climate finance and the institutional mechanisms to adopt green recovery. In other words, the G20 developed countries are advancing in terms of rules and

regulations in industrial development and digital trade, using AI, and employing high-tech innovative finance tools to achieve socioeconomic and environmental sustainability. But for developing countries and LDCs, being able to carry out minimal domestic reforms and recovery is a priority. They thus need to travel a long way to meet SDGs. So, the big question arises: How would these groups' needs, interests, and preferences be able to match and support each other as a unique approach in the G20 deliberations?

The UNCTAD LDC Report 2021 (UNCTAD 2022d) focused on creating resilience with an emphasis on export diversification and reducing dependence on primary commodities. But this would mean substantial structural transformations and sustainable integration for LDCs. These are being pushed by the G20 and UNCTAD (UNCTAD 2023), but they still seem to be a far-fetched goal, given the low levels of preparedness of LDCs and their lower regional integration. The same logic applies to the case of the proposed framework of the G20's mapping of GVCs. This will be a long-term and tedious task in terms of high-level planning and implementation, investments, on-time high-quality data reporting sector-wise, and the use of advanced technological tools to analyze the patterns. The preparedness of countries is not mentioned in this guiding framework, especially for developing countries, including the African Union (covering LDCs). The latter would have to completely reorient their economic structure and need funds for creating databases. They need functional statistical offices to provide useful data for sectors or even firms to track risks. On the other hand, the urgency of such countries, mainly LDCs in the AU, is also to be able to continue exporting commodities and fuels and not lose their consumers. Unlike the G20, their policies are more targeted towards bringing back the livelihoods of the people engaged in mineral extractions, mining, manufacturing, or even trading.

Furthermore, there is no mention of the schedule for reporting the data, monitoring authority, data collection authority, etc. The structure of the framework still needs to be clarified in terms of how to map the inclusiveness and expansion of suppliers. Proper mapping is incomplete without extending it to non-G20 countries that have major SC linkages with the G20. The provision for the same is missing in the deliberations and the G20 Outcome Document of Trade and Investment Ministerial Meeting 2023. Overall, broad rules mentioned for identifying risks or vulnerabilities have to be specified as per different sectors.

Notably, LDCs' urgent debt matters and low fiscal space issues are still primarily managed on a case-to-case basis. In fact, the G20 documents do not mention the challenges or problems of the LDCs and how cooperation between the G20 and LDCs would overcome them.

In 2023, G20 members also committed to cooperating sincerely to ensure the transparency of SPS and TBT measures as per the WTO's agreement to support LDCs. However, it is not specified that LDCs lack technical knowledge about standards and markets. So, how LDCs would obtain knowledge or awareness or how they would comply with standards and in what time frame is not explicitly mentioned. It is not clear what kind of technical assistance would be provided to them. There is also no mention of LDCs' concerns about transparency in the implementation of both preferential and nonpreferential rules of origin (RoO). The latter is necessary to facilitate FTA negotiations while applying tariffs or standards, mainly in order to provide better access to LDCs' exports.

Nevertheless, If LDCs' global exports are more than any G20 country's imports from the world, then there is the potential for LDCs to export to that country. Australia and G20 developing countries, except for the PRC, India, and Mexico, are found to meet this criterion in this paper (Appendix Figure A5).

4. GROWING ROLE OF G20 IN CREATING RESILIENT GVCs: WHERE DO LDCs STAND?

4.1 Few Reshoring Trends: Supply Chain Diversification as a More Viable Option

Governments and international organizations have undertaken a number of serious policy measures since 2020 in order to achieve supply chain resilience (SCR). Trends have also demonstrated many G20 countries' ability to adapt fast to bounce back in intermediate trade. Yet, there is no silver bullet for improving SCR. The best approach will vary depending on the specific country or industry and the specific risk that it faces. Interestingly, the G20's active participation in creating resilient GVCs, including GVCs' Mapping Framework of 2023, is an attempt to zero down to a more suitable approach. Involving few G20 members, Quadrilateral Security Dialogue (QUAD) is at the forefront with the priority of derisking supply chains. Japan, Australia, and India launched the "Supply Chain Resilience Initiative (SCRI)" in 2021 to build resilience in the Indo-Pacific region. This was followed by the "Indo-Pacific Economic Framework (IPEF)" in 2022, which involves almost 40% of G20 countries along with ASEAN. Members have consented since mid-2023 to engage in the IPEF's main "Supply Chain Pillar" on a priority basis (Saha 2022; US Department of Commerce 2023; DFAT, Australian Government 2023; etc.). The EU government gives huge importance to "resilience in GVCs" and has chosen economies in the region for investments, such as Taipei, China (Ferenczy 2022). The majority of such regional or plurilateral initiatives by the G20 aim to diversify trade and investments, promote cooperation, and reduce dependence on the PRC.

Further, many global firms are practising "just-in-case" in place of "just-in-time." They build up inventories for emergency purposes, as these are found to absorb shocks. They focus on using local supply chains. The idea is moving beyond efficiency to mitigating risks by involving more suppliers in SCs (IMF 2022; MGI 2020; Masters and Edgecliffe-Johnston 2021; Escaith 2022; etc.). Firms with lower stocks witnessed more negative effects on trade during the pandemic. That said, to date, there has been no involuntary or rules-based comprehensive joint action plan on SCR committed to unanimously by all G20 members. Nevertheless, regional and/or domestic efforts by member countries to resolve SC distortions and prompt resilience include "reshoring" and "diversification" practices. The WEF Survey found that more than 60% of MNCs agree to adopt strategies for diversification, localization, or both in the next three years (WEF 2023). This section briefly explains the G20's role therein and indirectly assesses the scope for LDCs, if any.

Reshoring and near-shoring are meant to shorten the supply chains. They are perceived as reduced offshoring. Measurement tools have been devised.²⁰ By bringing production closer to home or nearby regions, firms can reduce their reliance on long and complex supply chains that are more susceptible to disruptions. Protectionism drives this.²¹ Higher levels of automation and AI use, mainly by G20 developed countries, make reshoring more attractive.²² However, investments in digital technologies to spur growth in GVCs are happening rapidly even across developing countries.

It is found, based on content analysis, that overall reshoring is still limited to a few industries, such as semiconductors, EVs, pharma, textiles, critical minerals, or sectors that are important for national security reasons, and to a few G20 countries.²³ Illustratively, the US launched “100 ways to achieve SCR” in 2021 and conducted meetings to seek international cooperation. It has taken steps to streamline stockpiling in the US defense industry. It announced funding to help its partners, such as technical assistance for Mexico and Central American economies, as well as to link the US’s and ASEAN’s single window systems for timely and effortless customs clearances. It started “friend-shoring” in April 2022, where countries strengthen economic ties based on common geopolitical interests. During 2021–2022, programs were launched to increase localization by manufacturing semiconductors, pharma products, and large-capacity batteries. US laws provide incentives: The Inflation Reduction Act (IRA) has clean energy provisions to increase local production and impart reshoring in its EVs and their batteries (mainly imported ones) and offers a tax credit with a content requirement of 60% to reduce the cost of made-in-the-US EVs by 30%; and the CHIPS and Science Act 2022 boosts investments and production of semiconductors in the US, etc. Further, the Japanese government’s New Trade Strategy Framework since 2020 has a main pillar of Supply Chain Resilience with two projects: the Domestic Investment Promotion Project, covering subsidization support for reshoring/near-shoring from the PRC for key industries such as semiconductors, electronic and ICT devices, rare earth elements, etc., and the Overseas Supply Chain Diversification Support Project. In 2021, it unveiled the National Semiconductor Strategy, where the government attracted foreign high-tech semiconductor manufacturers in Japan (and even ASEAN). It accordingly enacted the support law to provide subsidies to them (provided they manufacture products that are treated as essential by the government).

²⁰ Illustratively, Krenz and Strulik (2021) used input-output tables and trade data to calculate the domestic-foreign input ratio, and Kearney (2023) used the ratio of imports of manufactured goods to manufacturing output. However, intuitively, a reduction in the share of imports (both finished and intermediate goods) over manufacturing output or the rising domestic-to-foreign input ratio is compatible with reshoring but does not represent evidence of it per se. Indeed, these ratios can also decrease for other reasons, such as increasing internal production in sectors not involved with offshoring activities (change in composition of production or scale). Nevertheless, these are the good indicators of reshoring so far.

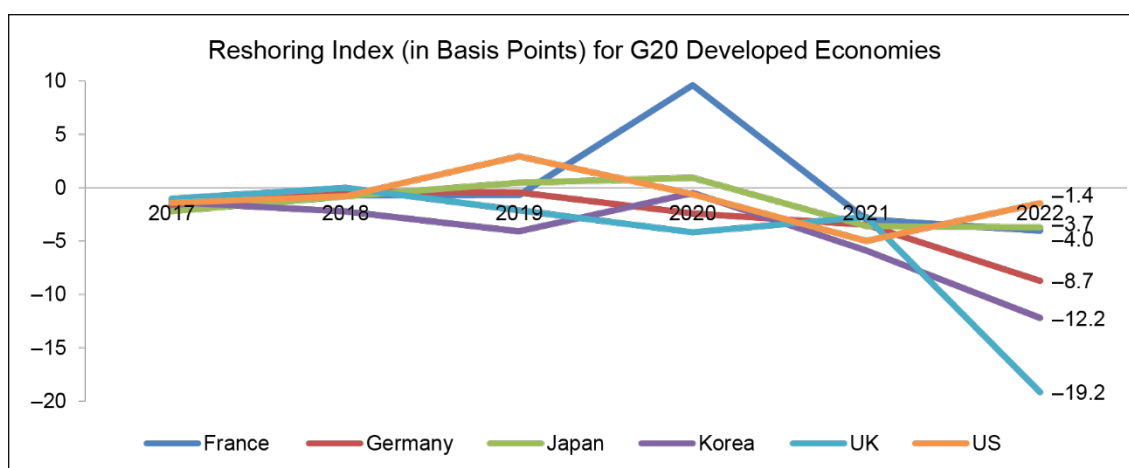
²¹ Although studies like Furusawa and Ing (2022) discussed resilient supply chains as a priority area of today’s times, they cautioned that it should be done without much resorting to protectionism policies. It is argued that only reshoring or localization, or only regionalization, may not work in the longer run.

²² Krenz and Strulik (2021) found that offshoring is still there; however, a rise in reshoring is closely linked to rising automation, and this trend is found to be stronger for developing or emerging economies.

²³ Mainly the US, Japan, the EU, etc. See White House (2021); Escaith (2022); European Parliament (2022) (viz. EU expanded to comprehensive Open Strategic Autonomy (OSA) in 2021 in all policy areas, mainly in energy security and digital technologies, to deal with COVID vulnerabilities and emerge as self-sufficient leader); Kim (2023); Kearney (2023); S&D Group (2023).

This paper thus calculates the Reshoring Index for G20 developed countries (Figure 13). The method used involves: (i) Calculation of the value of X in each year: G20 countries' imports of manufactured goods from middle-income countries²⁴ divided by G20 countries' manufacturing output/value added; (ii) the Reshoring Index is in basis points, equal to $(X_t - X_{t+1}) \times 100$.

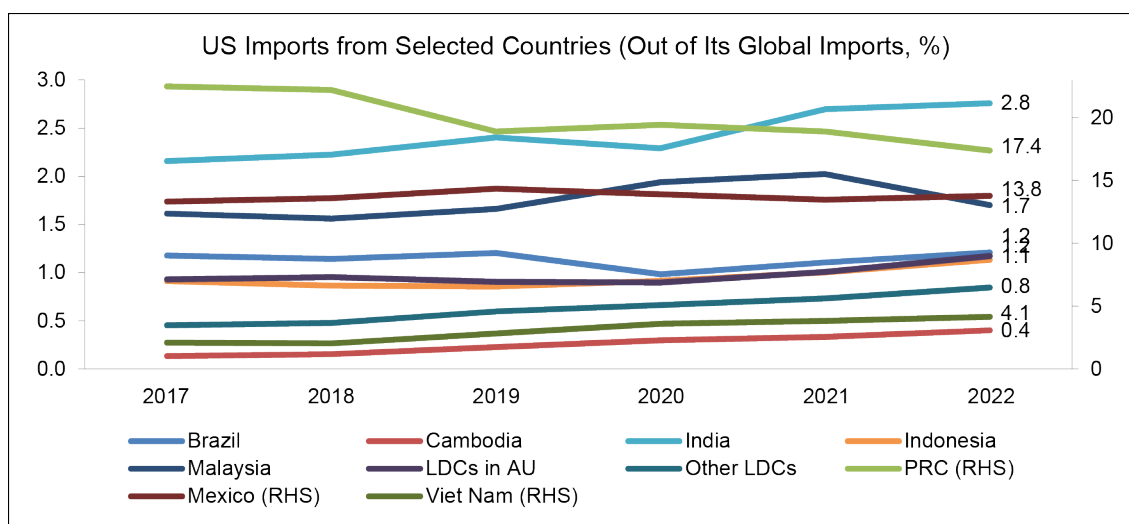
Figure 13: Relatively High Trend of Reshoring Visible Mainly in the Case of the US



Note: Following the approach of Kearney 2023.

Source: WITS, World Bank, and Authors' Calculations.

Figure 14: US Diversification from the PRC is Led by Rising Imports from Viet Nam, India, Mexico, and ASEAN



AU = African Union; PRC = People's Republic of China; RHS = right hand side.

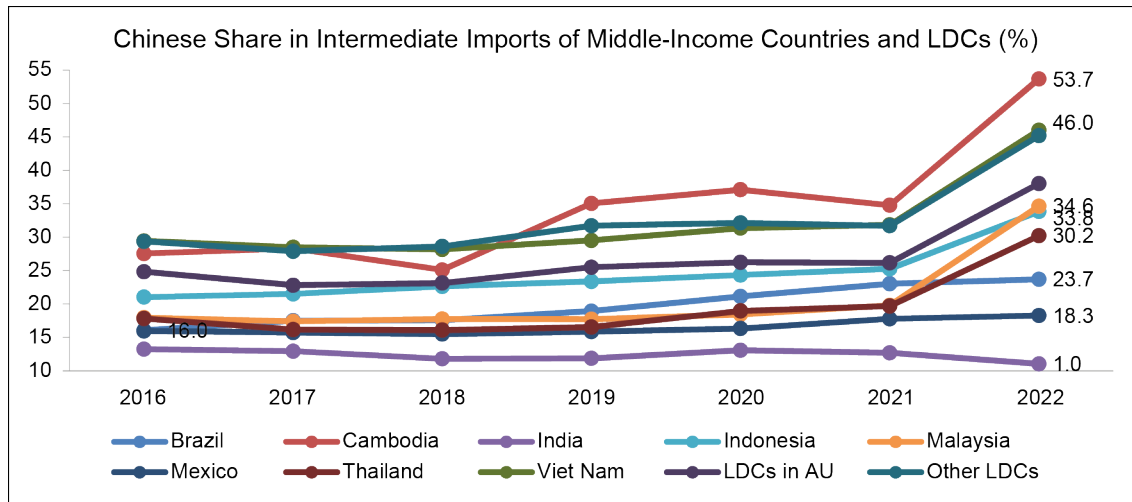
Source: WITS, Authors' Calculations.

The results also show that the US reshored highest during 2017–2019 and post-2021, followed closely by Japan during the pandemic. There has not only been the administration push, but a recent survey shows that US consumers are willing to pay a

²⁴ Upper- and lower-middle-income countries from Asia, as listed in the World Bank and WITS database.

10%–20% premium for products made in America. Around 96% of US companies' CEOs (up by 18 percentage points from the previous survey) are considering reshoring, have decided to reshore, or have already started it.

Figure 15: Dependence on the PRC for Inputs Continues for Beneficiaries of SC Diversification



Source: WITS Software, Authors' Calculations.

In contrast, supply chain diversification (SCD) is found to be progressive in terms of promoting resilience. One of the best ways is the PRC+1 strategy, even if achieving total decoupling from the PRC is not feasible (Salama 2023; Page 2023; Zhang 2021). Countries that rely heavily on a single or few suppliers, especially for critical components, are more vulnerable to disruptions than those working with multiple suppliers – the jolt to GVCs during the pandemic has proven this argument. Asian alternatives to the PRC are being looked for, with Viet Nam, India, Indonesia, etc. said to be the beneficiaries. Viet Nam has greater locational and FTA advantages. However, India is suggested to improve the business environment (Pandey 2023). A famous illustration is that Apple Inc. Ltd. is shifting its iPhone manufacturing base away from the PRC to India and Viet Nam rather than reshoring its production. Existing literature confirms that diversification is likely to remain and grow. Using the case of the US, the paper measures diversification trends. A logical methodology is used: (i) Calculation of share of SCD as the US's imports from selected countries divided by the US's global imports, where selected countries include the PRC and other beneficiaries of the PRC+1 strategy. All the manufactured imports are considered. (ii) The next step is the assessment of whether beneficiaries' intermediate imports have a rising share of the PRC, by using the formula: Beneficiary's Intermediate imports from the PRC divided by Beneficiary's intermediate imports. Important findings are as follows:

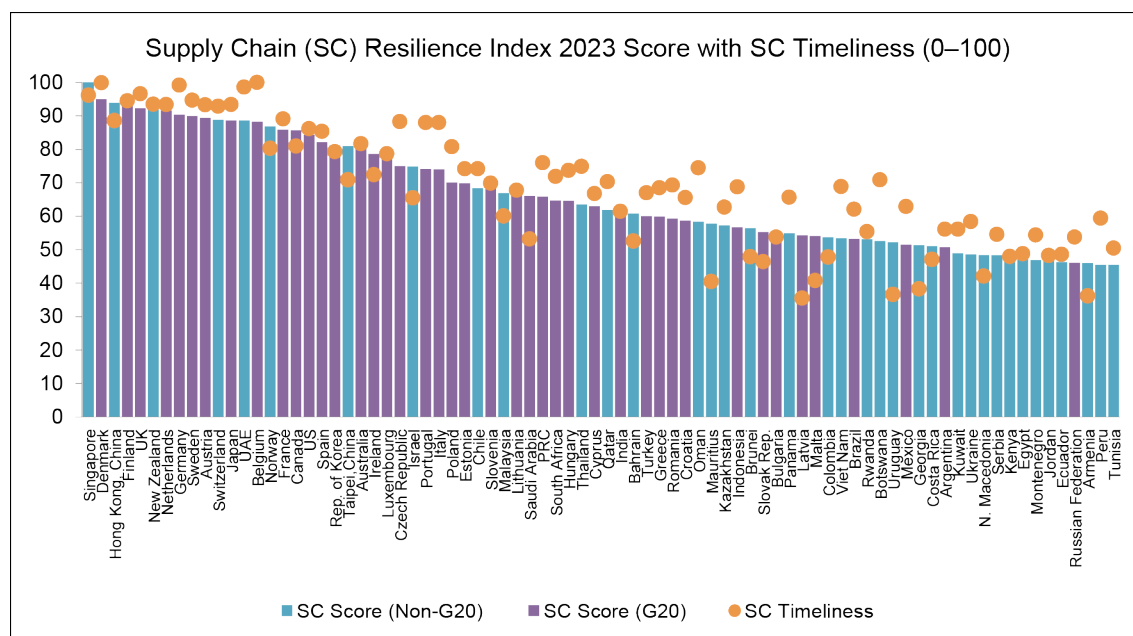
- 1) Our analysis shows strong diversification from the PRC by the US post-2017, as indicated by rapidly falling shares of manufactured imports of US from the PRC (Figure 14). Rather, US imports have increased fast with Viet Nam, India, Indonesia, Cambodia, Mexico, and LDCs (mainly from the AU).
- 2) Although from finding (1) it may appear that the US has been directly decoupling from the PRC, this is not completely true. Many beneficiaries (except India), including Mexico, Viet Nam, LDCs, etc., have also been

importing certain intermediate inputs from the PRC (Figure 15). This is because the PRC is still their major supplier. This implies that the PRC may indirectly continue supplying to the US. Existing literature²⁵ also mentions this trend (Kearney 2023). For instance, Chinese suppliers are found to be relocating a part of their supply chains to Mexico to meet existing US OEM customers. They are setting up industrial parks in Mexican cities mainly close to borders, such as at Monterrey, to support manufacturing of finished goods for the US. Nevertheless, this activity is limited as Chinese investments in Mexico have risen only to \$225 million. This is because most Mexican exports to the US are still from American or European companies adding to Mexican manufacturing (including Tupperware, Tesla, etc.).

4.2 Measurement of SC Resilience Index: G20 Developed Countries as More Resilient, LDCs as Least

Several private firms have been developing SCR measurement tools. These are meant to rank countries according to vulnerabilities and their ability to withstand them. Apart from the WEF's in-progress Global Supply Chain Resilience Index, there are the FM Global Group's Resilience Index; the Global Freight Resilience Index by WhiteShield, UK; and the Achilles' Supply Chain Resilience Index.

Figure 16: G20 Advanced Economies Are Still More Resilient with More Timely SC Delivery Rates



Note: SC Timeliness is defined as "the frequency with which shipments reach consignees within scheduled or expected delivery times."

Source: FM Global Resilience Index of Top 80.

²⁵ This has been happening over the years, particularly in the electronic machinery industry. Even just prior to the pandemic, the PRC's exports of inputs to Mexico had increased, albeit at a lower rate, by just 2 percentage points from 2018 to 2019. Viet Nam's exports in this industry to the US increased by more than 65%, while those of the PRC to the US declined to below 25%; but Chinese inputs to Viet Nam increased by 18% during this period (Zhang 2021).

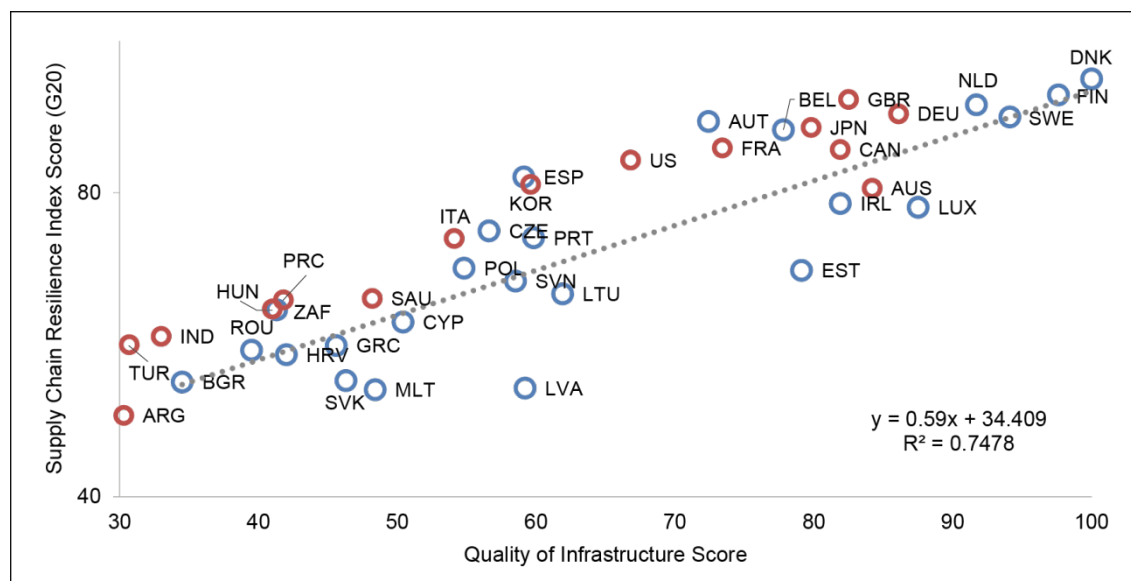
This paper uses the FM Global Index,²⁶ which provides more updated data on SCR. The results of the top 80 economies show that the G20's developed ones are more resilient, mainly the EU, the US, Japan, the Republic of Korea, etc. Their resilience while trading intermediate goods, as assessed in the previous sections, also supports this finding. Many ASEAN and Eastern countries also have higher SCR scores. On the other hand, the PRC and India are at the middle level on this index (Figure 16).

The score is higher for G20 developed countries owing to their long-standing higher-quality infrastructure, better supply chain timeliness or delivery times of shipments, and greater visibility in tracking the consignments. This has become possible due to advancement in IT technologies, AI, and innovation. Developing countries, including India, are located more towards the lower southwest quadrant (Figure 17a) in terms of quality of infrastructure. The aim is to move towards the northwest in a short time, as it is a long-term process to build solid infrastructure (i.e., to move towards the northeast).

The ability to track consignments across supply chains is relatively higher for the US and the EU, as well as East Asian economies like Japan, the Republic of Korea, and even the PRC, and so is their SCR Index. Developing countries' SC visibility is between scores of 40 and 65, which needs to improve further. Overall, it is a decisive factor and depends a lot on the digitalization and AI growth in a country.

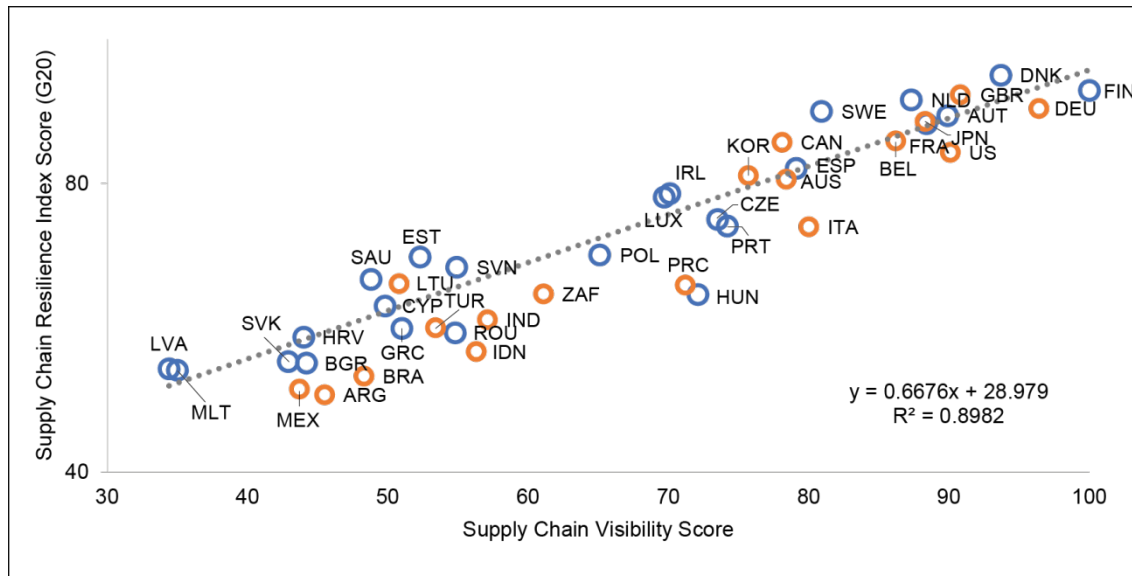
In contrast, supply chains of 18 LDCs (as available on this database) are found to be the least resilient. Out of a total of 130 countries ranked in the FM Global Index, LDCs are mostly ranked above 115th or closer to the highest rank. Rwanda is the exception, which has shown improved SCR ranking. It has the highest score in terms of quality of infrastructure among LDCs. It is followed by Tanzania, which has the highest SC timeliness score and even higher SC visibility and good infrastructure. Nepal and Benin, too, have higher infrastructure quality and higher resilience scores (above average). Bangladesh and Cambodia also have higher SC visibility.

Figure 17a: Existence of High-Quality Infrastructure in G20 Ensures Better SCR



²⁶ The index can be accessed at <https://www.fmglobal.com/research-and-resources/tools-and-resources/resilienceindex>.

Figure 17b: Supply Chains' Visibility is Decisive for Both Developed and Developing Countries



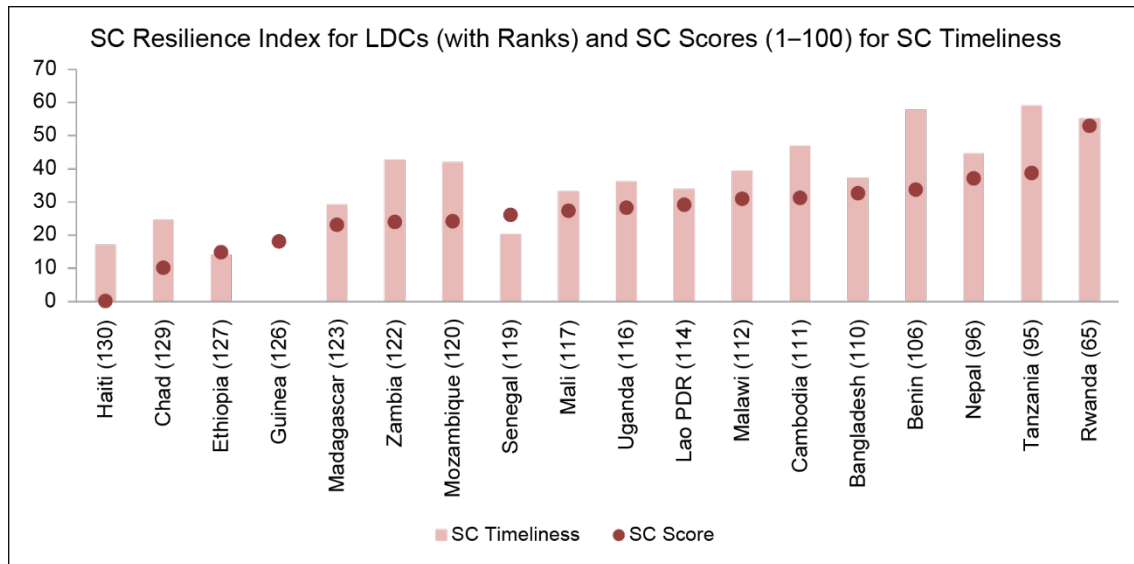
Note: SC Visibility is "the ability to track and trace consignments across a country's SC".

Source: FM Global Resilience Index of G20.

All this also brings to the forefront the immense transformation work that has been conducted in many of these LDCs in the last 10–12 years. They have been on the path towards becoming an industrial and service-based economy. Several domestic reforms are ongoing to enhance private investments, boost infrastructure, adopt digitalization, etc. Support from developed countries and multilateral agencies has made this more feasible, viz. Rwanda's propelled economic growth due to effectively using the aid from the IMF and the World Bank. Rwanda has been the fastest-growing LDC, followed by Tanzania. They are part of the thriving East African Community (EAC), along with Uganda, Burundi, etc., which has rising trade with developed countries like the US.²⁷ Illustratively, during the 2012–2022 period, EAC exports to the US increased by 121% (USTR 2023). The EAC has developed a free trade zone and customs union among them that has boosted their infrastructure, trade, and supply chain linkages. Rwanda has launched Vision 2020, sectoral strategies, and a series of National Strategies for Transformation (NTS) (World Bank 2023a). The NTS's first two phases focused on poverty reduction and economic development. Rwanda has achieved Health MDGs and was able to come out resiliently during the pandemic, despite a number of challenges, including higher public debts. Tanzania's private sector-led development and strong domestic structural reforms helped during the pandemic. There has been a positive economic outlook owing to relatively lower inflation and stable agricultural exports. Greater investments in Benin's economy in the areas of the electricity grid and freight transport mainly kept it strong (Lloyds Bank 2023; World Bank 2023b; etc.). Asian LDCs' success story has been more pronounced due to their geographical and trade linkages with East Asia and ASEAN and/or due to the growth in certain manufacturing segments. For instance, the Bangladeshi economic development can be attributed to its buoyant ready-made garments industry, and Nepal's to the energy sector. Cambodia's early removal of restrictions and higher vaccination rates helped it to focus on domestic reforms and use aid wisely.

²⁷ See East African Community. <https://www.eac.int/>.

Figure 18: LDCs Have Least Supply Chain Resilience with Scores up to 40, Except for Rwanda



Source: FM Global Resilience Index.

Considering the horizontal and vertical axes of the scatter plots for the G20 and LDCs in Figures 17a and b and Figures 19a and b, the range of SCR Index scores for the former is 45 and above (most EU countries scored nearly 100 for infrastructure quality – northeast quadrant). The LDCs' SCR score is between 0 and 55 (highest for Rwanda) towards the southwest (when graphs of both the groups are combined). The same observation is accurate in the case of SC visibility. LDCs are thus way behind in resilience and these parameters. This might be the reason for many LDCs' low participation in GVCs.

Figure 19a: LDCs' Infrastructure Quality is Much Lower, Indicating Their Lower SCR Score

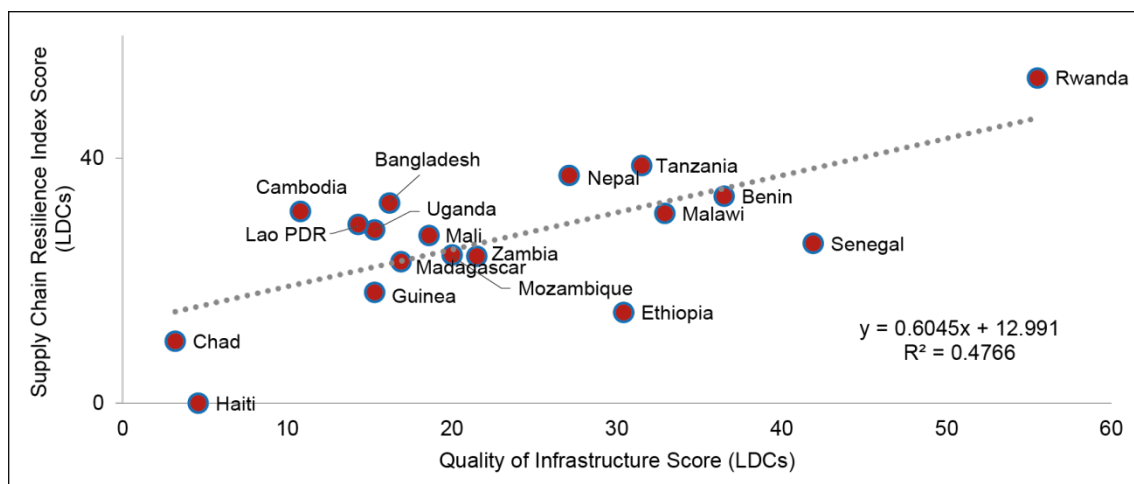
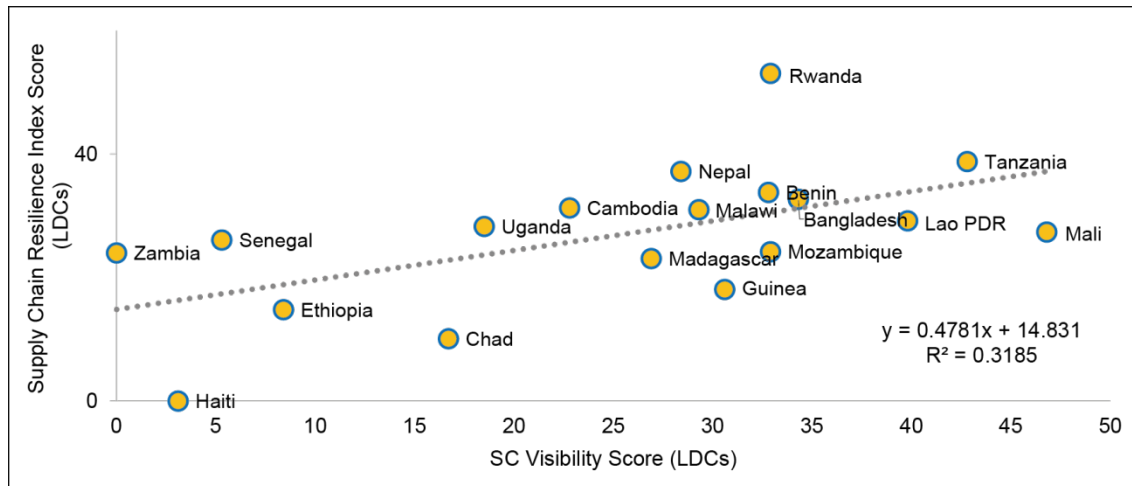


Figure 19b: Many LDCs Have Improved Supply Chain Visibility but Still Score Less on SCR



Source: FM Global Resilience Index for LDCs.

Furthermore, although few LDCs have been outliers in terms of higher infrastructure and SC visibility despite low SCR rankings, the positive relationship between the dependent (latter) and independent variables is weaker, unlike the G20. So, the data says it all! LDCs need to work on infrastructure and SC timeliness, along with improvement in the level of corruption and ease of doing business to increase SC resilience. This will further help to increase their chances of connecting with other value chains.

5. CONCLUSION AND POLICY RECOMMENDATIONS

The paper concludes that the G20's intermediate trade, especially the imports, recovered during and immediately post-pandemic, exhibiting many members' inherent capacity to adjust to shocks. G20 developed countries, mainly G7 and other EU countries, are found to have higher supply chain resilience (SCR) scores. However, a wide gap remains between G20 developed countries' demand for inputs and G20 developing countries' supply of inputs, despite rising exports for many developing countries. This implicitly points to lower south-south cooperation, i.e., the limited intermediate trade among G20 developing countries and of this subgroup with LDCs. The paper finds continuously low involvement of LDCs in intermediate trade, leading to almost 1% in GVCs, as a matter of great concern. In other words, G20 developing countries' imports from LDCs are just marginally growing with shares in the range of 2%–3%, while shares are below 1% in the case of linkages with the supply chains of G20 developed countries. This implies limited fulfillment of the G20's long-standing commitment to creating inclusive GVCs. Dissonance continues between the G20's high growth and innovation commitments and the LDCs' priority to improve domestic conditions.

GVCs thus need to be more inclusive to prevent the concentration of wealth and power in a few countries. The G20 countries are responsible for working together to address this challenge and strengthen GVCs to benefit everyone. When GVCs function well, they can create jobs and opportunities for people in developing countries and LDCs. Lead firms and ancillaries of the G20 can help firms in LDCs to participate more fully in their supply chains. The paper reaffirms the statement that the G20 needs to work with

LDCs rather than only for LDCs. It is found that LDCs' infrastructure quality and FDI inflows have been poorer, marking many of them as least resilient in supply chains.

Short-to-Medium-Run Solutions for Promoting Inclusive GVCs with LDCs:

- **G20 members must provide a greater level of dedicated Aid-for-Trade or ODA for exports and GVC expansion to LDCs and SIDS.** The G20 developed countries have been providing ODA to help these countries develop the necessary physical infrastructure and logistics system. The paper suggests upgrading ODA for LDCs to build the required skills in their workforce, support their SMEs or local firms, promote regional connectivity, expand their production base and export flows, and build the required digital infrastructure to participate effectively in GVCs. The reasons for declining ODA to LDCs must also be brainstormed to find sustainable solutions. Aid is now required to shape the necessary regulatory frameworks.
- **Multilateral development banks (MDBs) can specifically fund GVC activities to facilitate LDCs' higher integration.** The G20 can incentivize higher collaboration among MDBs to provide accessible financing options for businesses in LDCs, helping them invest in the technology, innovation, and infrastructure necessary for GVC participation. It is the need of the hour for MDBs to mobilize greater private funds dedicated to stimulating sustainable investments across entire supply chains where LDCs are linked. The deliberations and proceedings of the "G20 Expert Group on Strengthening Multilateral Development Bank," as constituted under India's Presidency in 2023, must be regularly followed up for this purpose.
- **Broadening G20 membership to the African Union (AU) is an appreciable and beneficial step for LDCs, but it needs a cautious and planned approach to reap its value.** Note that there has been a wide gap between the development aspirations and priorities of existing G20 developed and G20 developing subgroups, which makes it difficult to reach a consensus even on existing matters. Adding the AU, which houses 60% of LDCs, may bring further complication if a strategic and pragmatic approach is not followed in deliberations. More regular meetings, including virtual ones, every two months among G20 leaders to formally share their views and ideas could help to resolve this gap, which is essential for inclusiveness. One-on-one meetings with AU countries could further aid in fulfilling mutual interests, if any.
- **High-level communication, collaboration, and cooperation between the G20 and LDCs can happen in several ways:**
 - *It is essential to engage more in regular policy dialogues with LDCs to understand their specific challenges and needs.* The G20 can serve as an active platform for these discussions and mainstream LDCs' voices in both Sherpa and Finance Tracks.
 - *The scope lies in facilitating frequent exchange of information and best practices among G20 nations and LDCs.* This can help the latter learn from the experiences of successful G20 countries.
 - *As the G20 engages in multi-stakeholder dialogues via its various Working or Engagement Groups, including T20, B20, L20, etc., it can also encourage regional economic integration among LDCs.* The greater inclusion of LDCs in creating solutions for global challenges can boost regional cooperation for them. This advantage often strengthens countries' bargaining power in international trade and enhances their attractiveness to GVC participants.

- **A pragmatic approach towards trade liberalization and greater cooperation on trade and investment rules are required to achieve inclusiveness.** Developed countries, along with the WTO, can come forward to unite nations. Practices that affect this goal must be avoided. For instance, developed countries should not resort to heavy protectionism. Trade rules must be transparent enough to break the existing trade barriers for LDCs' goods and services. Instead, there can be more incentives to support higher value-added content contributed in GVCs by LDCs. More liberal policy reforms for GVC integration can also help to scale up production capacities and gain positive spillovers from FDI.
- **Greater spread of digitalization and e-commerce can be a game changer for LDCs.** Digital trade is increasingly linking supply chain activities. Many products are being sold online. This is most feasible to connect suppliers in LDCs with consumers worldwide. However, this requires proper development of digital infrastructure to support e-commerce²⁸ activities.

Medium-to-Long-Run Solutions for Promoting Inclusive GVCs with LDCs:

- **Vigilant identification of nontariff barriers to LDCs' trade and integration and providing them with consistent and result-oriented capacity building and training to overcome barriers.** LDCs need quality output and reliable knowledge of the markets' rules and regulations to better integrate into GVCs. While accessing the developed countries' markets, there are several barriers, including strict regulations and international standards on labor, IPR, environment, etc., covering SPS and TBT. It is a long-term dedicated task for LDCs. They need immense networking and upgradation in domestic rules and regulations to understand and meet these standards. However, this is a prerequisite for upgrading in GVCs, especially to link with the lead firms mostly located in the developed countries. To help LDCs overcome such barriers, the G20 can provide them with more result-oriented capacity-building programs and training. Based on specific standards, this has to be undertaken at a scale in close collaboration with multilateral agencies like the ILO, UNCTAD, UNDP, OECD, WTO, WIPO, etc. For instance, the G20 can be a vital part of UNCTAD works on GVCs and LDCs, mainly the Doha Programme of Action for the Least Developed Countries for the Decade 2031–2022; of the WTO's effort to bring transparency in preferential Rules of Origin (RoO); of the ILO's Decent Work Country Programmes (DWCPs); etc. The group and its lead firms can provide technical assistance and training to LDCs to facilitate the fulfillment of policy recommendations or measures as mandated by these agencies.
- **Need to enhance lower south-south trade (SST)²⁹ by dedicated measures of G20 members and to create a level playing field for LDCs to further stimulate SST.** First, greater collaboration and more policy dialogues are needed among economies in the south to explore their mutual interests, such as among economies belonging to SAARC and Africa, which are said to be the least integrated regions. Second, G20 developing members can come forward for the highest possible level of south-south cooperation in the

²⁸ E-commerce is now included in regional trade agreements that also cover LDCs, such as the ASEAN Agreement on Electronic Commerce. But the developing world, overall, has an aversion to inclusion of this topic under WTO negotiations (UNCTAD 2022d).

²⁹ Although SST increased from 17% in 2005 to 28% in 2021, this is still very low and is predicted to be even lower post-pandemic given the trade downfall in the case of many developing countries and LDCs (UN 2022).

areas of connectivity, business-to-business talks, sharing of information about socioeconomic aspects, trade agreements, etc. – a much-needed one in today's crisis. They can form a coalition with LDCs and other developing countries of Asia; linking it with ASEAN economies to create more inclusive GVCs. Third, stepping up the commitments of BRICS (given the back-to-back Presidencies of India, Brazil, and South Africa) can be the game-changer to raise the share of developing countries (and subsequently LDCs) in intermediate trade and GVCs. This is because BRICS contribute about a third to the exports of developing countries.

To bring everyone to a level, the G20 could also set up a fund to help developing countries develop their own GVCs and incorporate LDCs into their chains. It could also promote standards and regulations that are fair to all countries, regardless of their size or development level.

- **Reindustrialization can be the solution to reorient growth in LDCs.** This is needed to achieve sustainable growth trends, leading to greater economic convergence and reducing the productivity and income gaps between advanced and poorer countries. East Asia's and Southeast Asia's success in GVCs and the spread of the flying-geese model to other Asian countries emanate from a growing share of the manufacturing sector. However, the pattern of premature deindustrialization and moving labor from agriculture to the services sector without developing proper manufacturing has led to unsustainable growth and participation in GVCs for many less developed countries. This aspect has come more into the limelight since the pandemic. One way to overcome this is to promote industrialization. However, this is not equal to promoting hyperglobalization or neoliberalism but to using manufacturing as a means of innovation and growth in the country, which is holistically beneficial on economic, social, and environmental platforms. This will have positive spillovers for other low-income countries/LDCs.
- **Strong domestic reforms must be a medium in G20 developing countries and LDCs/African Union for utilizing opportunities strategically.** Subsidies for reshoring or diversification may not be very productive in the longer run unless they can maximize domestic growth or stimulate local supply chains. For this, new trade and industrial policies must align with all other investments and innovation policies, technological, social, political, or economic strategies for infrastructure and competition, regional policies, and AI/digital rules. All this requires more government intervention. This is true for almost all economies. However, national policy changes to bring out extensive domestic reforms are crucial for developing countries like India and mainly the LDCs. This is because moving from assembling to higher value added is always time-consuming, as evidenced by the experience of the PRC and ASEAN. This requires building a strong domestic ecosystem and capacities over time.

Having more binding commitments is suggested to back the domestic reforms in the case of improved trade facilitation, ease of doing business, and greater investments in infrastructure. Domestic reforms in the G20's developing countries will play an influential role. These reforms can encourage LDCs to learn and adopt best practices and encash opportunities to trade. Lead firms can help in providing funds and/or creating a conducive environment.

- **Greater support must be accorded to the LDCs' MSMEs. G20 governments and their private sector can develop their own strong MSME networks, which can link with MSMEs from low-income countries.** Greater

linkages of small local firms in LDCs with lead firms can transform the trade landscape for the former. Some members of the G20 can invest more in small businesses of LDCs, mainly in the areas of connectivity, modernization, digital space, and disseminating information. They can support entrepreneurship and SMEs in LDCs by providing them with access to finance and sharing best practices and training programs from time to time. This way, the G20 can empower these businesses to become part of GVCs.

- **Promoting skills development and female labor force participation is required. Investing in education and skills development in the LDCs is essential for integrating their workforce into GVCs.** The G20 can call for educational and skills-based programs in LDCs that align with the needs of the global job market. However, programs must be designed according to the needs of different sectors, especially in labor-intensive and services sectors that are more suitable for LDCs. Female labor force participation can be promoted for greater GVC participation. The case of a large female labor force in the Bangladeshi garment industry brought massive success in raising their economic development. Concurrently, labor rights and decent workplace standards must be accorded, where G20 members can act as a watchdog.

Data analysis provides additional critical policy implications in the case of supply chain resilience (SCR). First, reshoring will likely be slow and only be undertaken by a few economies in strategic sectors such as semiconductors, EVs, etc. Second, complete decoupling from the PRC is neither possible in the short to medium run nor feasible. Indeed, the dependency on the PRC can be reduced, but the reduction will also take considerable time. Two factors will be decisive: (i) the natural evolution of market forces leading to higher production costs in the PRC, thereby making diversification more relevant; and (ii) the future of the US-PRC conflict and the rate of dependency on each other. Third, more resilience-related programs show that countries are willing to cooperate on this issue of common interest. But there is a need to find a long-term, consistent solution to build resilient GVCs. It is a far-reaching commitment, not just localization, regionalization, or diversification decisions. SCR is a complex issue even for the G20 with no single, undisputed solution. The G20's 2023 Summit postulates that more inclusiveness can also help to bring greater resilience in GVCs. The paper therefore provides the following specific recommendations to achieve both, mainly SCR:

- a) *"Mapping of GVCs" would require firm pledges and immense coordination among G20 members.* It's time for G20 developing economies and the African Union to upgrade their SC database. The G20's developed countries and the PRC can play the roles of facilitator and trainer.
- b) *Faster development or consolidation of regional supply chains (RSCs) in specific sectors is the need of the hour to create several alternative supply chains and more diversification.* For instance, it will be advantageous for Asian G20 developing countries, mainly India, and LDCs to link better with East Asian and Southeast Asian countries as they are geographically closer and have socioeconomic associations. Growing interconnectedness within the region and between the regions can lead to developing stronger RSCs, thereby promoting better resiliency from shocks. This can also further help to increase countries' share in global intermediate trade.
- c) *A new agreement or a treaty on SCR can be signed among G20 developing members.* Efforts must be strategic regarding what level of commitment is required.

- d) *Building more robust and consistent emergency plans or resiliency programs is essential to withstand any disruption.* The G20 can develop its own SCR initiative to identify and mitigate potential shocks to GVCs. Alternatively, there can be two separate initiatives, by G20 developed and G20 developing countries. Further, the G20 can create a global early warning system. The system must be designed carefully to generate positive spillover for low-income countries.
- e) *Change in the supply chains must be addressed based on transparency, flexibility, and less complexity.* In today's uncertain times, flexible and visible supply chains are required to meet sudden changes in demand, costs, and regulations. This also requires better management of the stockpiling of critical supplies (just-in-case). Greater transparency and accountability in GVCs can also help to prevent corruption and make optimal use of available resources. Firms can specifically mitigate risks by investing in R&D and technologies that can help them monitor their SCs. *Digital tracing of companies' information and goods can strengthen networks.* The G20 can support this by developing international standards in these areas, especially by working closely with businesses.

To conclude, the G20 is uniquely placed post-pandemic to work in unison to lead and make a positive difference in global trade. It can act as an active economic discussion forum, creating momentum and generating fruitful knowledge databases. Governmental, private, and multilateral agencies can use the latter for better-informed holistic GVC negotiations – where benefits for low-income countries are not left behind. G20 members can host high-level meetings solely on inclusive and resilient GVCs, perhaps quarterly, with rotating representations from G20 developed and G20 developing countries, and the African Union. This is to frequently bring together the leaders and trade ministers to discuss common challenges and develop joint solutions.

REFERENCES

- Ando, M., and F. Kimura. 2009. *Fragmentation in East Asia: Further Evidence*. Discussion Paper ERIA-DP-2009-20. Jakarta, Indonesia: Economic Research Institute for ASEAN and East Asia.
- Baldwin, R., and J. Lopez-Gonzalez. 2015. Supply-chain Trade: A Portrait of Global Patterns and Several Testable Hypotheses. *The World Economy* 38(11): 1682–1721.
- Banga, R. 2014. Linking into Global Value Chains Is Not Sufficient: Do You Export Domestic Value Added Contents? *Journal of Economic Integration* 29(2): 267–297.
- Chang, D. 2011. *Opportunities for LDCs in Integrating East Asia: From New Regional Division of Labour to Inclusive Regional Development Network*. Background Paper for The Least Developed Countries Report 2011: The Potential Role of South-South Cooperation for Inclusive and Sustainable Development. UNCTAD.
- DFAT, Australian Government. 2023. *Joint Statement on the Supply Chain Resilience Initiative by Australian, Indian and Japanese Trade Ministers*. Media Release. Department of Foreign Affairs and Trade, Australian Government.
- Escaith, H. 2022. *From Hyper-globalization to Global Value Chains Decoupling: Withering Global Trade Governance?* MPRA Paper No.115267. Munich Personal RePEc Archive.
- European Parliament. 2022. *EU Strategic Autonomy 2013–2023 From Concept to Capacity*. Briefing, EU Strategic Autonomy Monitor.
- Ferenczy, Z. A. 2022. *EU–[Taipei,China] Ties: Towards Resilient Global Value Chains*. China Observers.
- Furusawa, T., and L. Y. Ing. 2022. *G20's Roles in Improving the Resilience of Supply Chains*. In *New Normal, New Technology, New Financing.*, edited by L.Y. Ing, and D. Rodrik. Jakarta: ERIA and IEA, pp. 51–63.
- Goldar, B., D. K. Das, S. Sengupta, and P. C. Das. 2017. Domestic Value Addition and Foreign Content: An Analysis of India's Exports from 1995 to 2011. Working Paper No. 332. New Delhi: Indian Council for Research on International Economic Relations.
- Gupta, N. 2016. Domestic Value-added Growth Is Vital: Are Indian Industries Gaining by Linking into Value Chains? *South Asia Economic Journal* 17(2): 271–294.
- G20 2023 India. 2023. Trade and Investment Ministerial Meeting: Outcome Document & Chair's Summary. Jaipur, Rajasthan. http://www.g20.utoronto.ca/2023/G20_Trade_and_Investment_Ministers_Meeting.pdf.
- Hackenesch, C., B. Begahshaw, M. Hui, M. Chakrabarti, and G. Onubedo. 2018. *T20 Africa, G20 and Africa: Assessing our Impact and Influence*. T20 Argentina. CARI and CIPPEC.
- Hollweg, C. H. 2019. *Global Value Chains and Employment in Developing Economies*. In *Global Value Chain Development Report*. World Trade Organisation.
- Hummels, D., J. Ishii, and K.-M. Yi. 2001. The Nature and Growth of Vertical Specialization in World Trade. *Journal of International Economics* 54(1): 75–96.

- Humphrey, J., and H. Schmitz. 2001. Governance in Global Value Chains. *IDS Bulletin* 32(3), 19–29.
- IMF. 2022. Global Trade and Value Chains during the Pandemic. In *World Economic Outlook: War Sets Back the Global Recovery*. USA: International Monetary Fund, 87–107.
- Johnson, R., and G. Noguera. 2012. Accounting for Intermediates: Production Sharing and Trade in Value Added. *Journal of International Economics* 86(2): 224–236.
- Kapustina, L., L. Lipková, Y. Silin, and A. Drevaev. 2020. US–China Trade War: Causes and Outcomes. *SHS Web of Conferences* 73(01012).
- Kearney. 2023. *America is Ready for Reshoring. Are You? Tenth Anniversary of Kearney's Annual Reshoring Index*. Chicago, Illinois: A.T. Kearney, Inc.
- Kim, G. 2023. Japan's New Trade Strategy Focuses on Supply Chain Resilience and Trade Liberalization. *World Economy Brief*, 1323.
- KPMG. 2021. *Supply chain disruption in Asia Pacific: Managing the trade and customs function*. Insights. KPMG.
- Krenz, A., and H. Strulik. 2021. Quantifying Reshoring at the Macro Level – Measurement and Applications. *Growth and Change* 52: 1200–1229.
- Kwan, C. H. 2019. The China–US Trade War: Deep-Rooted Causes, Shifting Focus and Uncertain Prospects. *Asian Economic Policy Review* 15(1): 55–72.
- Lloyds Bank. 2023. The Economic Context of Benin. <https://www.lloydsbanktrade.com/en/market-potential/benin/economical-context>.
- Masters, B., and A. Edgecliffe-Johnston. 2021. Supply Chains: Companies Shift From “Just in Time” To “Just in Case”. 20 December. *Financial Times*.
- MGI. 2020. *Risk, Resilience, and Rebalancing in Global Value Chains*. McKinsey Global Institute.
- Nathan, D. 2010. Trade (in Tasks) and Development. *Frontiers of Commodity Chain Research*. (J. Bair, Ed.) *Economic and Political Weekly* XLV(31): 27–31.
- Obashi, A., and F. Kimura. 2016. *Deepening and Widening of Production Networks in ASEAN*. Discussion Paper ERIA-DP–2016-09. Jakarta, Indonesia: Economic Research Institute for ASEAN and East Asia.
- OECD, and World Bank. 2015. *Inclusive Global Value Chains: Policy Options in Trade and Complementary Areas for GVC Integration by Small and Medium Enterprises and Low-income Developing Countries*. Joint Report by the OECD and World Bank Group prepared for submission to the G20 Trade Ministers Meeting, Istanbul, Turkey.
- OECD, World Bank, and ITC. 2016. *Towards a G20 Strategy for Promoting Inclusive Global Value Chains*. Joint Report by the OECD, World Bank Group, and ITC prepared for submission to the G20 Trade Ministers Meeting, Shanghai, China.
- OECD, WTO, and UNCTAD. 2013. *Implications of Global value Chains for Trade, Investment, Development and Jobs*. Joint Report by the OECD, WTO and UNCTAD to the G20 Leaders Summit, Saint Petersburg, Russian Federation.
- OECD, WTO, and World Bank. 2014. *Global Value Chains: Challenges, Opportunities, and Implications for Policy*. Joint Report by the OECD, WTO and World Bank Group prepared for submission to the G20 Trade Ministers Meeting, Sydney, Australia.

- Page, P. 2023. Here's How Supply Chains Are Being Reshaped for a New Era of Global Trade. 24 April. *Wall Street Journal*.
- Pandey, A. 2023. *Global supply chain relocation: China's loss is India, Vietnam's gain*. Economic Times.
- Pohit, S., R. Chadha, and D. Pratap. 2019. *The US–China Trade War: Impact on India and its Policy Choices*. New Delhi: NCAER.
- Rodrik, D. 2022. *He Predicted Globalization's Failure, Now He's Planning What's Next*. Policy Cast by Ralph Ranalli. Harvard Kennedy School.
- S&D Group. 2023. *Open Strategic Autonomy – Making Europe a Stronger Global Player*. Europe: Socialists & Democrats.
- Saha, P. 2022. *The Indo–Pacific Economic Framework (IPEF): An ASEAN Perspective*. ORF Research and Analyses.
- Salama, V. 2023. U.S. Pursues India as a Supply-Chain Alternative to China. 31 January. *Wall Street Journal*.
- Sidiropoulos, E. 2021. *Boosting Africa's and LDCs' Agency in the G20*. IAI papers 21/48. <https://saiia.org.za/research/boosting-africas-and-ldcs-agency-in-the-g20/>.
- Tripathi, J. 2022. *India's G20 Agenda: Integrating Digital Economy and Value Chains*. Observer Research Foundation.
- US Department of Commerce. 2023. *Indo-Pacific Economic Framework*.
- UN. 2021. *Enhancing International Trade of LDCs and Regional Integration*. Issues Note for Theme 4. United Nations.
- . 2022. *DPoA and SDGs*. United Nations. <https://www.un.org/ldc5/dpoa-sdgs>.
- UNCTAD. 2020. *Trade and Development Report 2020: From Global Pandemic to Prosperity for All: Avoiding Another Lost Decade*. Geneva, Switzerland: UNCTAD.
- . 2022a. *Key Statistics and Trends in International Trade 2022: The Remarkable Trade Rebound of 2021 and 2022*. Geneva, Switzerland: UNCTAD.
- . 2022b. *Bringing the Voice of the Least Developed Countries into the G20 Policy Agenda*. Geneva, Switzerland: UNCTAD.
- . 2022c. *The Least Developed Countries Report 2022: The Low-carbon Transition and its Daunting Implications for Structural Transformation*. Geneva, Switzerland: UNCTAD.
- . 2022d. *E-Commerce and the Digital Economy in LDCs: At Breaking Point in COVID-19 Times*. Geneva, Switzerland: UNCTAD.
- . 2023. *The Least Developed Countries Report 2023*. Forthcoming. Geneva, Switzerland: UNCTAD.
- USTR. 2023. *East African Community*. <https://ustr.gov/countries-regions/africa/regional-economic-communities-rec/east-african-community#:~:text=U.S.%20goods%20imports%20from%20East,of%20%24135%20million%20in%202022>.
- WEF. 2023. *Chief Economists Outlook May 2023*. Report. Geneva, Switzerland: World Economic Forum.
- White House. 2021. *Summit on Global Supply Chain Resilience to Address Near-Term Bottlenecks and Tackle Long-Term Challenges*. The White House.

- World Bank. 2023a. *The World Bank in Rwanda: Overview*. World Bank.
- . 2023b. *The World Bank in Tanzania: Overview*. World Bank.
- WTO. 2023. *Information Notes on Trade in Intermediate Goods*. World Trade Organisation.
- Zhang, G. 2021. *Supply Chain Diversification: China Retains a Strategic Role*. Levallois-Perret, France: Upplify.

APPENDIX

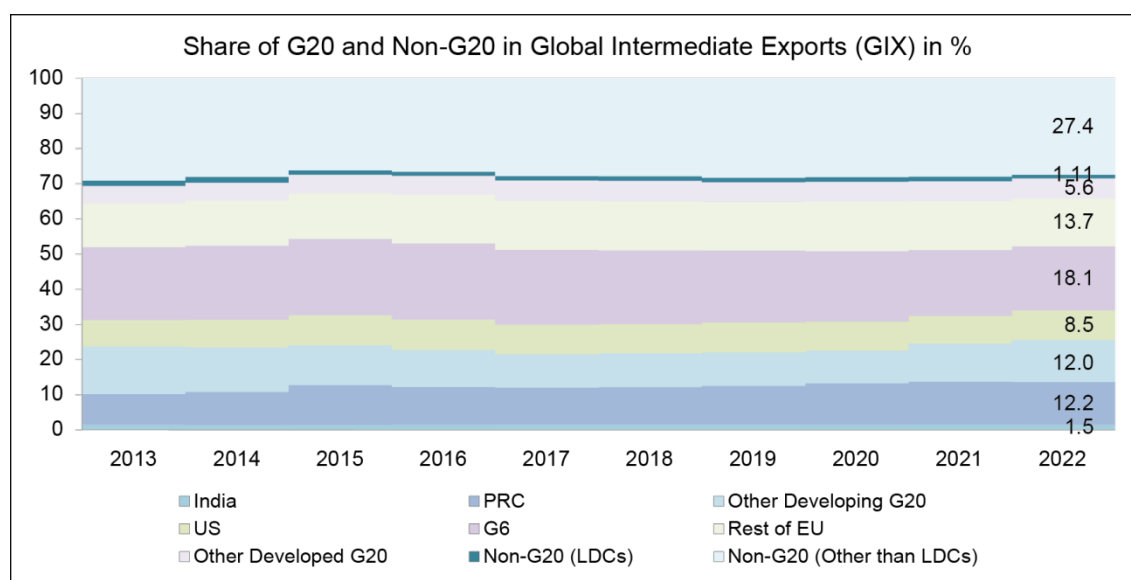
Box A: List of Countries

10 G20 Developing Countries: Argentina ARG), Brazil BRA), the PRC PRC), India IND), Indonesia IDN), Mexico MEX), the Russian Federation RUS/Russia), Saudi Arabia SAU), South Africa ZAF), Türkiye TUR)

10 G20 Developed Countries/Regions: Australia AUS), Austria AUT), Canada* CAN), France* FRA), Germany* DEU), Italy* ITA), EU27 [Rest 24 ones include: Belgium BEL), Bulgaria BGR), Croatia HRV), Cyprus CYP), Czech Republic CZE), Denmark DNK), Estonia EST), Finland FIN), Greece GRC), Hungary HUN), Ireland IRL), Latvia LVA), Lithuania LTU), Luxembourg LUX), Malta MLT), the Netherlands NLD), Poland POL), Portugal PRT), Romania ROU), Slovak Republic SVK), Slovenia SVN), Spain ESP), Sweden SWE)], Japan* JPN), Korea, Rep. KOR), United Kingdom* GBR/UK), United States* US) {G7 marked with *}

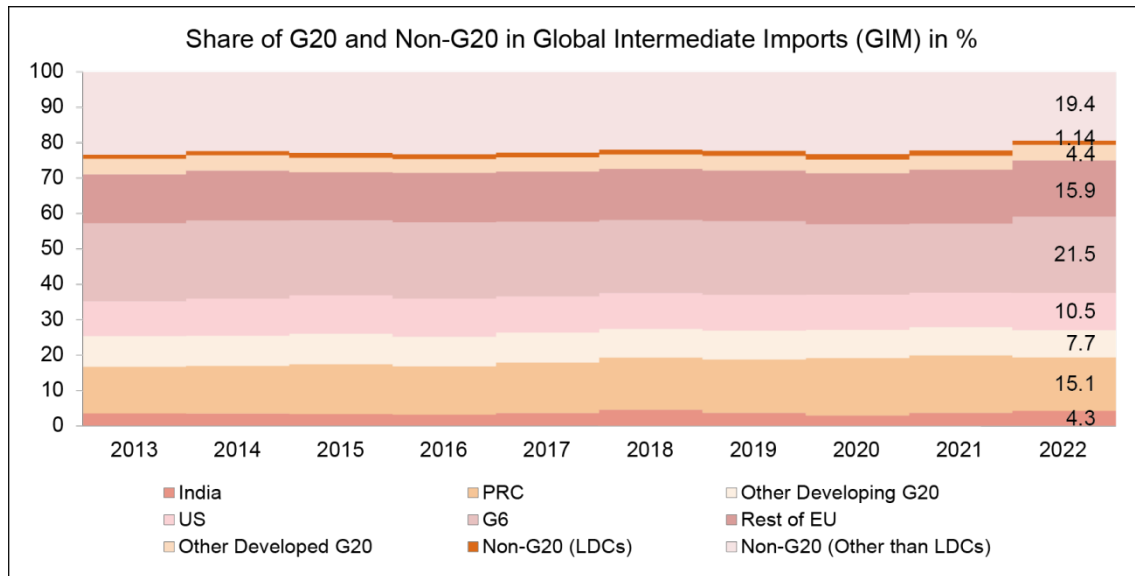
46 LDCs: Angola, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Somalia, South Sudan, Sudan, Togo, Uganda, United Republic of Tanzania, Zambia, Afghanistan, Bangladesh, Bhutan, Cambodia, Lao People's Democratic Republic, Myanmar, Nepal, Timor-Leste, Yemen, Haiti, Kiribati, Solomon Islands, and Tuvalu

Figure A1: Global Intermediate Exports Increased Sparingly, but G20 Developing Countries Contributed



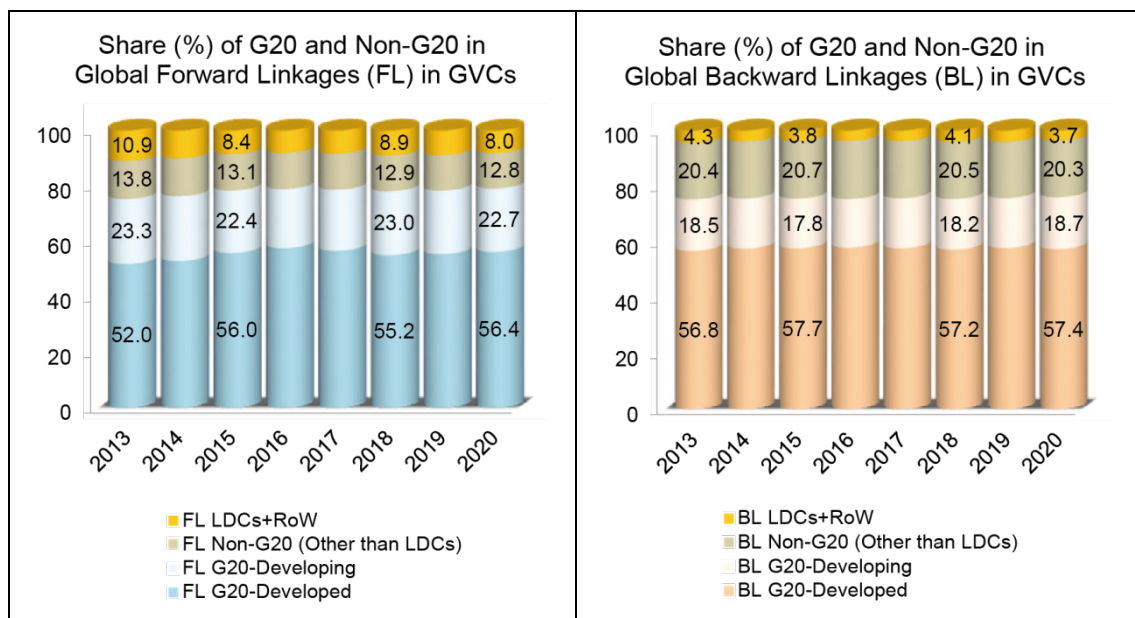
Source: WITS Software, Authors' Calculations.

Figure A2: Rising Global Intermediate Imports Pertain to the Success in the Case of G20 Developed Countries

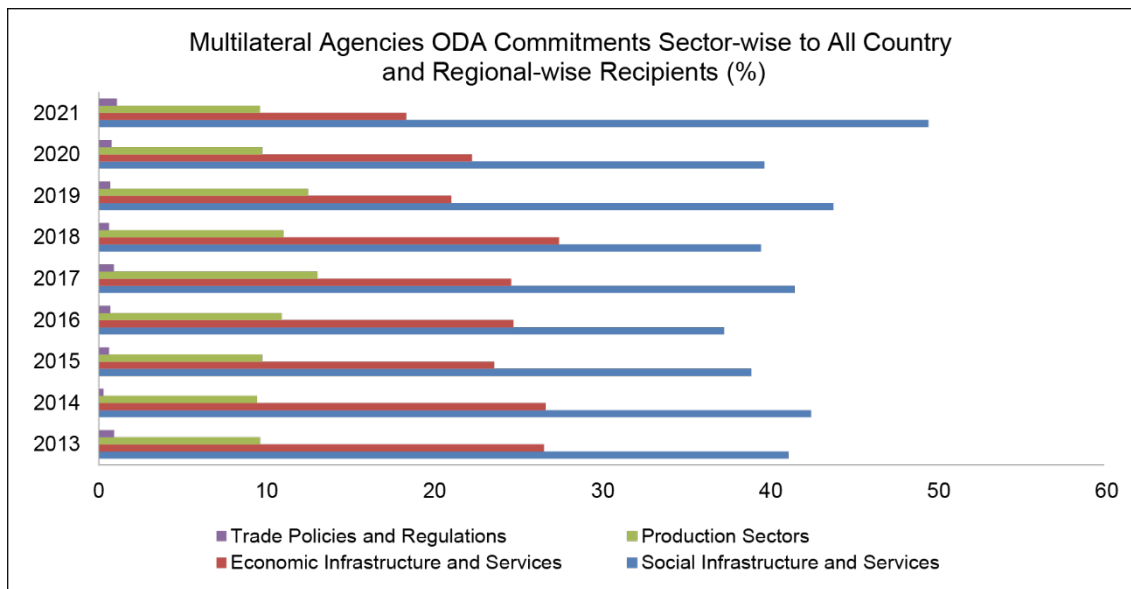


Source: WITS Software, Authors' Calculations.

Figure A3: Developed Countries Have Both Much Higher Forward and Backward GVC Participation; LDCs Supply More Intermediate Goods, Perhaps Mostly from Natural Resources, Fuels, Etc.

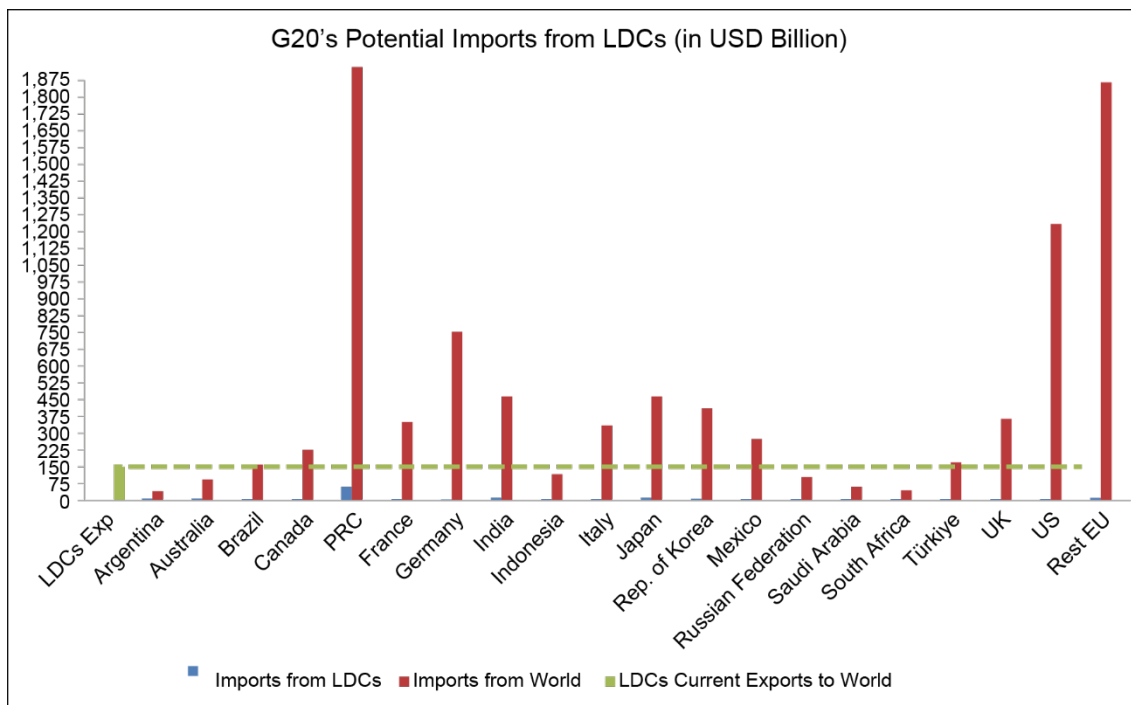


Source: WITS Software, Authors' Calculations.

Figure A4: Multilateral Agencies Give More Aid in the Area of Infrastructure

PRC = People's Republic of China.

Source: OECD Aid-for-Trade Database.

Figure A5: Some G20 Developing Countries Can Potentially Import from LDCs

Source: WITS Software, Authors' Calculations.