



Economic Brief

COVID-19 and Acceleration of Some Megatrends

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This economic brief focusses on some megatrends that are accelerated by the COVID-19 pandemic. It discusses briefly what new technologies have emerged globally, how these change the organization of supply chains and globalization, and how COVID-19 impacts these developments. It then looks at some indicators reflecting where the CAREC countries stand in the emerging new environment and what are the challenges and policy implications for the CAREC countries.

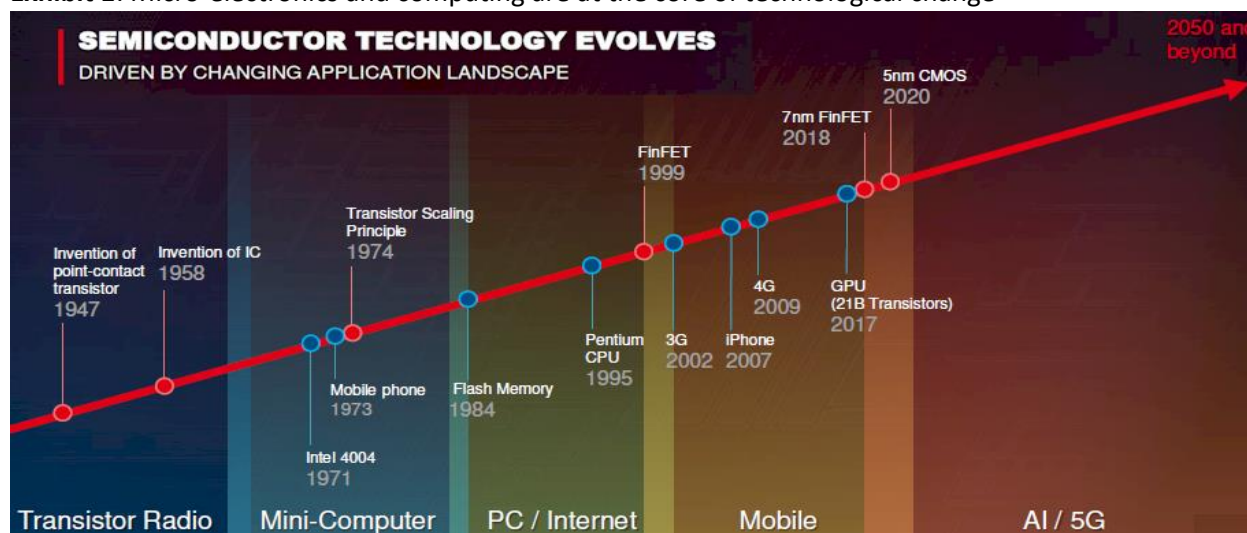
The COVID-19 pandemic has far reaching economic and social consequences, both short and long-term. The pandemic slows some global megatrends. It hampers or reverses social progress in such areas as reducing poverty and unemployment, gender inequality, technological divide, and educational inequality. Other megatrends are accelerated by the pandemic, most prominently digitalization, and – at least in Europe, an important market for CAREC hydrocarbon exports¹ - decarbonization. The COVID-19 pandemic also impacts the organization of global value chains and accelerates changes in the way globalization works. Some Asian countries, especially the PRC, is recovering faster than Europe or America from the economic downturn caused by the pandemic, which will expedite the shift of global economic power towards Asia.

For CAREC countries these changes mean that - beside dealing with immediate health threats and economic and social hardship brought about by the pandemic - they must accelerate, modify, or develop programs aimed at preparing for a future that has become closer due to the pandemic.

Technological change

Technological change has become more and more disruptive and is fundamentally changing the post-WWII world now. It is driven by genetics, space-technology, new materials, new methods of energy generation and others. After a decades-long history (Exhibit 1), especially micro-electronics and computing are at its core.

Exhibit 1: Micro-electronics and computing are at the core of technological change



Source: <https://www.nextplatform.com/2019/09/13/tsmc-thinks-it-can-uphold-moores-law-for-decades/>

¹ The European Union agreed to target 30% of the “Next Generation Recovery Fund” to climate-change-related spending.

The 5G technology is going to provide another boost to the change (Exhibit 2). New 5G based networks will be up to 100x faster than their predecessors. For industrial, agricultural, and commercial use the biggest benefits of 5G are its high capacity and minimal lag. With up to 5 times the bandwidth available with 4G, 5G will give rise to new methods of production and distribution.

Exhibit 2: Miners in the PRC work from home using 5G-enabled machinery to do heavy lifting.



Source: CCTV

Table 1 gives an indication of the rapid pace of development of modern technologies such as digitalization, robotics and 3D printing captured in terms of market size.

Table 1: Fast implementation of modern technology

Technology	Growth
Digitalization: <ul style="list-style-type: none"> • Internet of things (IoT) • Cloud computing • Artificial reality and virtual reality • Platforms (blockchain, e-commerce, fintech) • Big Data analytics 	The combined market volume of the IoT (IoT and analytics revenues) more than doubling in five years, from \$240 billion in 2017 to \$520 billion in 2021.
Automation: <ul style="list-style-type: none"> • Advanced industrial robotics • AI-enabled robotics 	Stock of industrial robots tripling in 10 years, from 1.3 million in 2013 to 4.0 million in 2022. Stock of professional service robots nearly quadrupling in four years, from 270,000 units in 2018 to 1 million units in 2022 (mainly logistical and medical robots).
3D printing	The market size of additive manufacturing growing 10 times in 10 years from \$5 billion in 2015 to \$50 billion in 2025, up to over \$350 billion in 2035 (CAGR 2015-2035: > 20%).

Source: Figures on IoT from Bain & Company (2018); on industrial and service robots from the International Federation of Robotics (2019a; b); on additive manufacturing from The Boston Consulting Group (2017), quoted from UNCTAD's World Investment Report 2020, rearranged by the author

Reorganizing supply chains

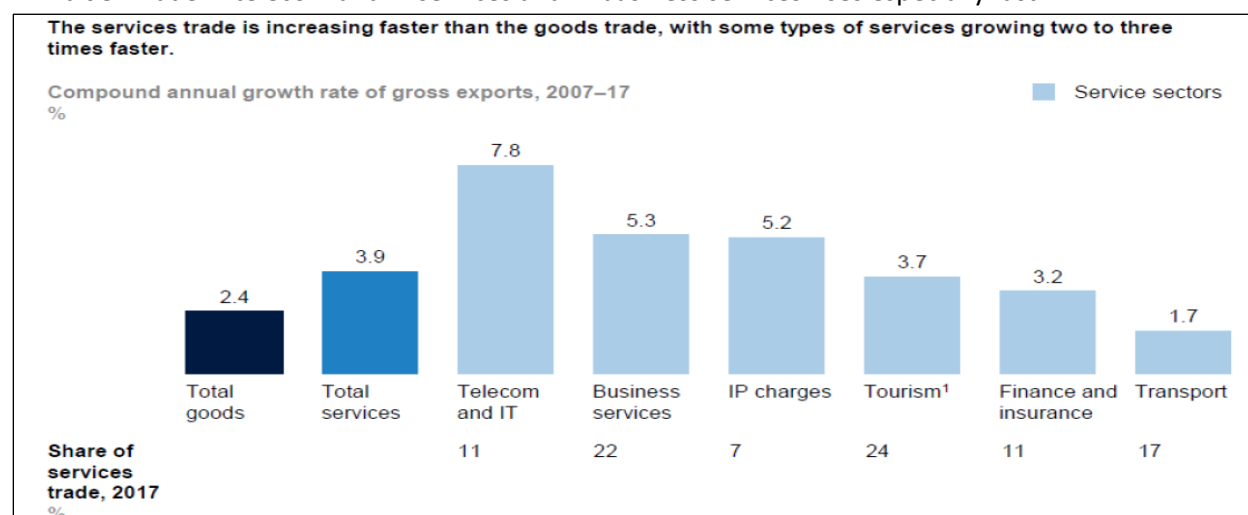
The technological change under way modifies how global value chains can be organized. Table 2 lists examples of how digitalization, robotics and 3D printing lead to revised production schemes. Some of the revisions might be in opposite directions such as insourcing and outsourcing or re-shoring and offshoring, based on technological disruptions involved in the industrial process. However, whatever the reorganizing of global value chains looks like exactly, the net result is likely to be even faster growth of trade in services than in goods than is already the case. Trade in telecom and IT services and in business services is rising especially fast (Exhibit 3).

Table 2: Emerging Possibilities of reorganization of global value chains

Technology	Impact
Digital technologies favor servicification and introduce new mechanisms for coordination and control in fragmented supply chains	UNBUNDLING
Advanced industrial robots can perform complex integrated sequential tasks, generally leading to a rebundling of previously separated steps.	REBUNDLING
Robots reduce the need for MNEs to exploit arbitrage opportunities based on labor costs, leading to reshoring of manufacturing operations from developing to developed and higher-income emerging economies	RE/NEAR-SHORING
New digital technologies favor faster, more effective and safer (e.g. through blockchain) remote communication, coordination and control. 3D printers enable distributed manufacturing with significantly increased geographic dispersion of activities (but not necessarily value added)	OFFSHORING
High capital investment requirements and reshoring are likely to reduce the role of smaller third-party suppliers in favor of more direct governance by MNEs	INSOURCING
Services increasingly outsourced to NEMs and third-party providers; role of third parties in production also increases due to servicification. 3D printing allows operations of distributed manufacturing sites and supporting services to be outsourced.	OUTSOURCING

Source: UNCTAD, World Investment Report 2020, rearranged by the author

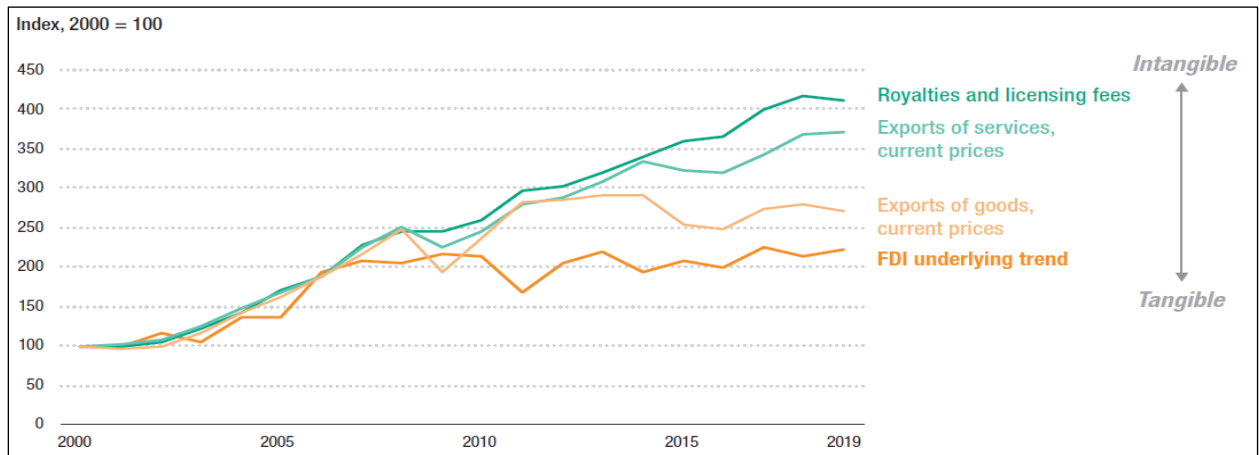
Exhibit 3: Trade in telecom and IT services and in business services rises especially fast.



Source: McKinsey: Globalization in transition: The future of trade and value chains

A trend towards growing trade in services as against stagnating trade in goods and foreign direct investment flows, was already visible in the past decade (Exhibit 4). This will become even more pronounced now. COVID-19 moves the world additionally towards intangibles.

Exhibit 4: Tangible is stagnating, intangible is growing.

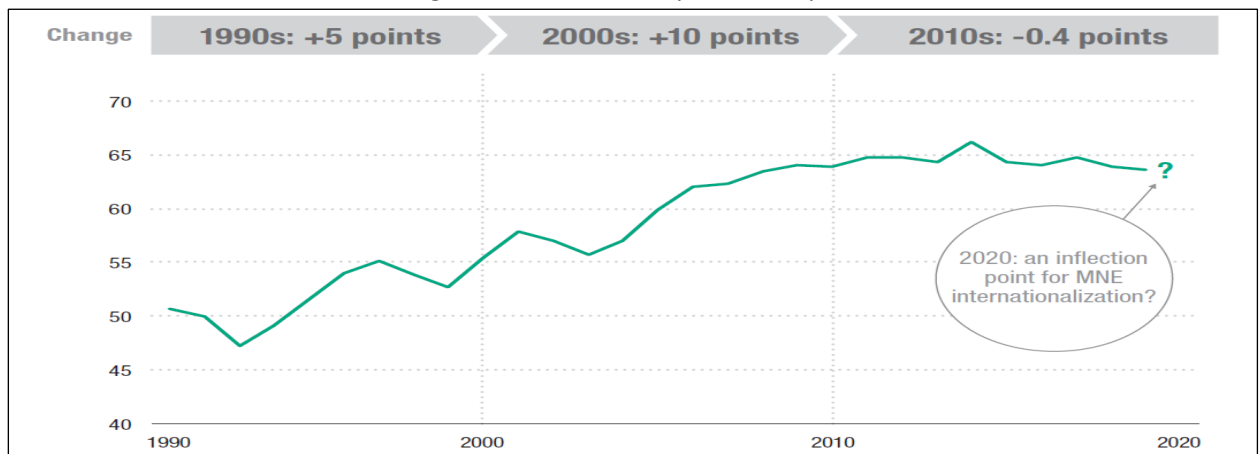


Source: UNCTAD, World Investment Report 2020

New forms of international governance

Between 1990 and 2010 multinational enterprises gained 15 percentage points in UNCTAD's Transnationality Index (Exhibit 5). The shares of overseas assets, sales, and employees in the activities of MNEs all increased. However, the internationalization of large international companies seems to have plateaued in the early 2010ies.

Exhibit 5: Internationalization of large international companies has plateaued in the 2010ies



Source: UNCTAD, World Investment Report 2020

The picture of stagnation at the aggregate level hides three important trends: the rise of global tech firms, the rise of Chinese and Korean MNEs, and the still moderate, but growing role of asset-light forms of international investment and non-equity modes of international governance.

The share of tech and digital MNEs in the total foreign sales of the top 100 UNCTAD multinational enterprises reached more than 18% in 2019, with their share in foreign assets at 11%. Among the tech and digital firms in the 100 UNCTAD MNEs, there are five from China and Korea now: Hon Hai (Taiwan

Province of China), Samsung (Republic of Korea), Tencent (PRC), Huawei (PRC) and Legend Holding (PRC). They were among the fastest to internationalize their operations.

Non-equity, asset-light forms of international investment are increasingly important modes of international governance. Table 3 lists some of the methods.

Table 3: Non-equity modes of international governance

Contract manufacturing, Services outsourcing	Contractual relationships whereby an international firm contracts out to a host-country firm production, service or processing elements of its GVC (extending even to aspects of product development). All go under the general rubric of "outsourcing". Services outsourcing commonly entails the externalization of support processes including IT, business and knowledge functions.
Contract farming	Contractual relationship between an international buyer and (associations of) host-country farmers (including through intermediaries), which establishes conditions for the farming and marketing of agricultural products.
Licensing	Contractual relationship in which an international firm (licensor) grants to a host country firm (licensee) the right to use an intellectual property (e.g. copyrights, trademarks, patents, industrial design rights, trade secrets) in exchange for payment (a royalty). Licensing can take various forms, including brand licensing, product licensing and process licensing. In-licensing refers to a company acquiring a licence from another firm; out-licensing entails sale of intellectual property to other firms.
Franchising	Contractual relationship in which an international firm (franchisor) permits a host country firm (franchisee) to run a business modelled on the system developed by the franchisor in exchange for a fee or a mark-up on goods or services supplied by the franchisor. Franchising includes international master franchising, with a single equity owner of all outlets in a market, and unit franchising, with individual entrepreneurs owning one or more outlets.
Management contracts	Contractual relationship under which operational control of an asset in a host country is vested to an international firm, the contractor, which manages the asset in return for a fee.
Concessions	Contractual relationship under which operational control of an asset in a host country is vested to an international firm, the concessionaire. The firm manages the asset in return for an entitlement to (part of) the proceeds generated by the asset. Concessions are normally complex agreements, such as build-own-transfer (BOT) arrangements, which might include elements of investment by the TNC or ownership of the asset for a period. Legally they can be structured in many ways, including as public-private partnerships (PPPs).
Strategic alliances, Contractual joint ventures	Contractual relationship between two or more firms to pursue a joint business objective. Partners may provide the alliance with products, distribution channels, manufacturing capability, capital equipment, knowledge, expertise, or intellectual property. Strategic alliances involve intellectual property transfer, specialization, shared expenses and risk. Contracts set forth terms, obligations, and liabilities of the parties but do not entail the creation of a new legal entity.

Source: UNCTAD, World Investment Report 2011

The full-scale digital transformation of supply chains of non-tech firms has only begun. The adoption of asset-light forms of international cooperation is much more advanced in tech firms. Table 4 sorts industries by the ratio between the share of foreign sales in total firm sales and the share of foreign assets in total firm assets, a measure of the role overseas assets play in overseas sales. Tech firms are clearly the asset-lightest, and they are becoming even lighter over time (green in the table means the industry is becoming “asset-lighter”, red “asset-heavier”, black means unchanged). Utilities and Petroleum Refining are still asset-heavy and even increasingly so. On industry-average there was little change in the role of assets between 2010 and 2019. However, the advancing of new technologies and the increasing weight of tech firms in the international economy is going to shift the balance more strongly towards asset-light investment and non-equity modes of international governance in future.

Table 4: Foreign sales versus foreign assets*

	2010			2015		
	Share of foreign assets	Share of foreign sales	Ratio, share of foreign sales/share of foreign assets	Share of foreign assets	Share of foreign sales	Ratio, share of foreign sales/share of foreign assets
<i>Tech</i>	51%	71%	1.39	41%	73%	1.78
Automotive and aircraft	53%	68%	1.28	53%	71%	1.34
Other manufacturing	67%	75%	1.12	62%	71%	1.15
Chemicals and pharmaceuticals	59%	69%	1.17	64%	68%	1.06
Total**	62%	64%	1.03	62%	64%	1.03
Food, beverages and tobacco	81%	82%	1.01	90%	87%	0.97
Primary	68%	68%	1.00	76%	68%	0.89
Telecom	76%	65%	0.86	66%	57%	0.86
Utilities	61%	55%	0.90	55%	47%	0.85
Petroleum refining and related industries	69%	63%	0.91	73%	60%	0.82
Others	47%	43%	0.91	64%	38%	0.59

* Figures are based on the 100 largest multinational enterprises (MNE) on UNCTAD’s list.

** The share of foreign assets was 58% in 2017-2019, and the share of foreign sales 60%, according to the WIR 2020. The ratio of the share of foreign sales to the share of foreign assets has remained unchanged at 1.03.

Source: UNCTAD, World Investment Report 2017, rearranged by the author

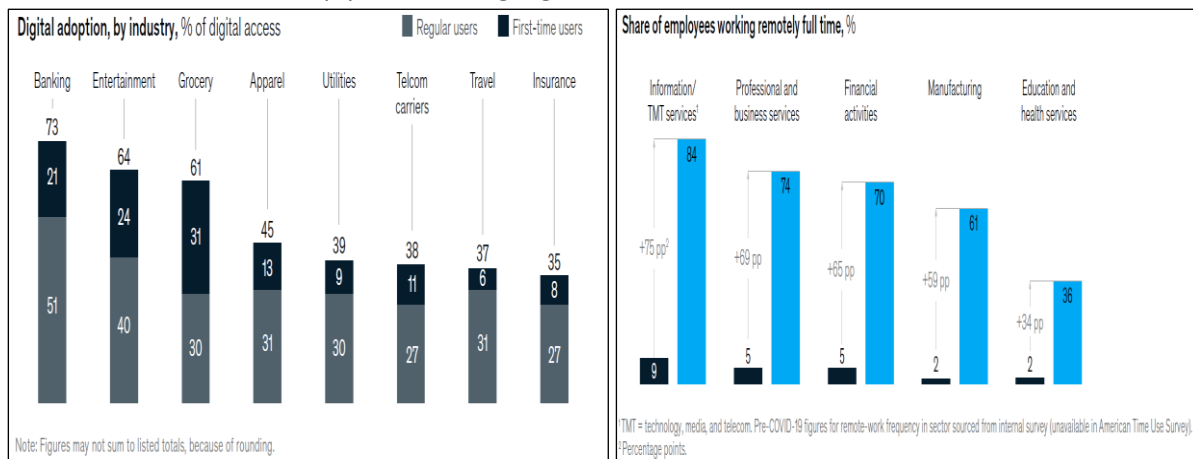
The COVID-19 acceleration

Behaviors of people and businesses have changed significantly during the COVID-19 pandemic. The surge in digital interactions is here to remain, at least partially. According to the McKinsey COVID-19 US Digital Sentiment Survey, 75% of people that use digital channels for the first time indicate that they will continue to do so when things return to “normal” (Exhibit 6).

COVID-19 has strongly advanced the usage of remote working models. In the US IT sector, as many as 84% of the work force worked remotely in the early stages of the pandemic, 75 percentage points more than before COVID-19 (Exhibit 6). Even in manufacturing the percentage reached 61%. While

there are many disadvantages of working remotely such as losing spontaneous contacts with co-workers, remote working and virtual interacting in general has also advantages. It can save costs, reduce travel time, speed-up meetings, r, open access to a broader circle of people, and provide other benefits. There will be some reversal, but intense virtual interaction is there to stay as well.

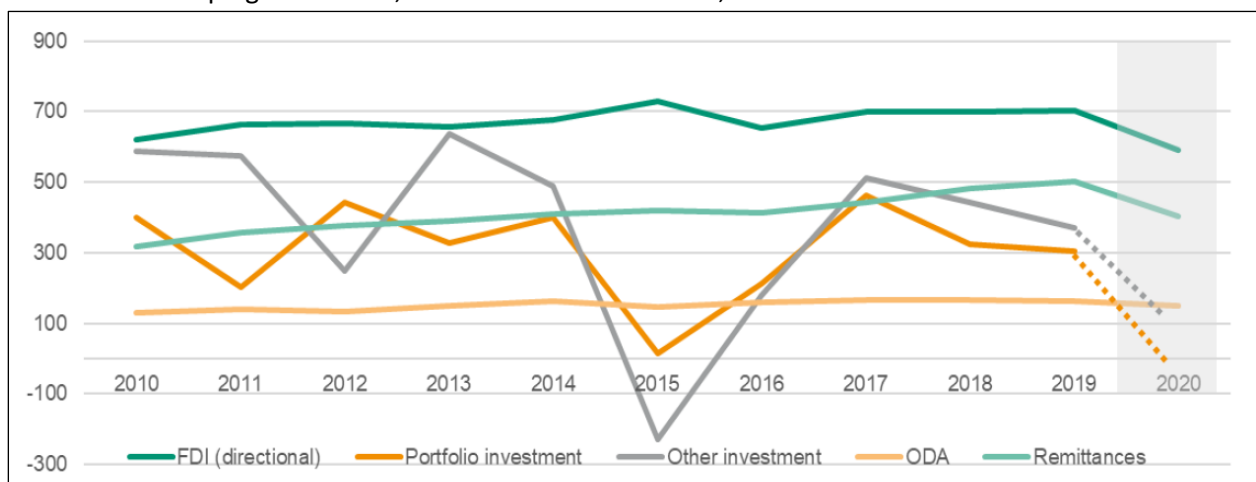
Exhibit 6: COVID-19 is sharply accelerating digitalization.



Source: McKinsey COVID-19 US Digital Sentiment Survey, April 2020

The popularization of digital life will further speed up the adoption of digital technologies in all spheres of life, and thus boost also related technologies. While the COVID-19 pandemic might slow the adoption of some new technologies because of weaker investment due to worsened finances and sentiment, it will speed up adoption in the mid to long run. One reason for this is also that companies less adaptable to the new environment will go out of business or at least significantly lose in importance.

Exhibit 7: Developing economies, source of external finance, USD billion*.



* 2020 data are estimates.

Source: UNCTAD, Investment Trend Monitor, October 2020

Global foreign direct investment (FDI) is the main source of external financing for developing economies (Exhibit 7). FDI flows to developing economies were down 49% yoy in the first half of 2020, according to the UNCTAD “Investment Trend Monitor”, published in October 2020. They are projected to remain substantially below 2019 levels in 2020 as whole. The pandemic is accelerating the reorganization of global value chains discussed above, in part to make the GVCs more resilient against

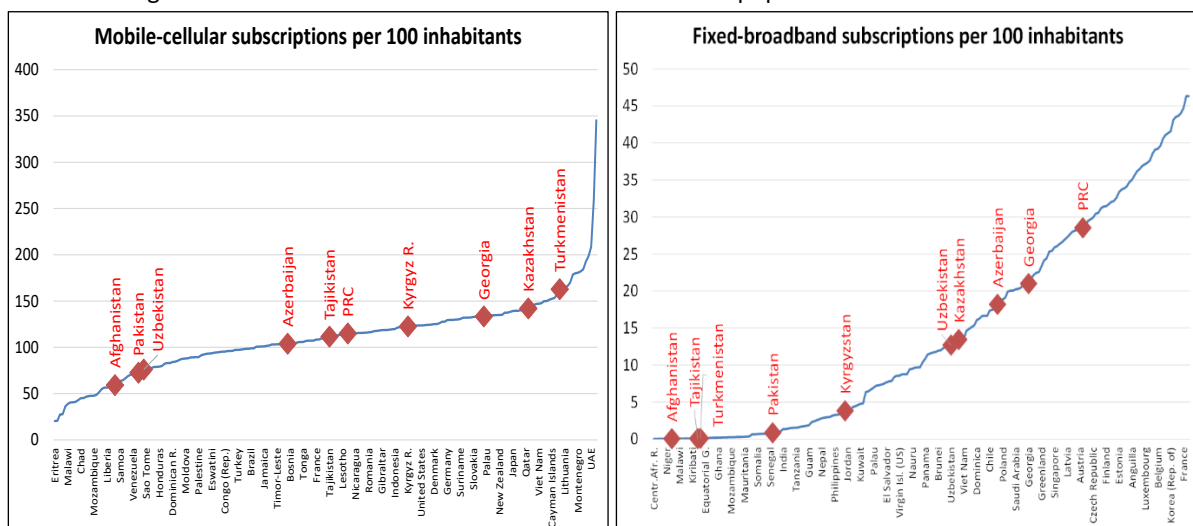
disruptions, in part because the increase in IT intensity has an impact. While there will be a recovery in FDI when the pandemic will be finally over, asset-light forms of investment and non-equity modes of international governance will thus likely play a substantially larger role than before COVID-19.

Where CAREC stands

Beside significant social and economic impacts in the short run, the COVID-19 pandemic has significant implication for the CAREC countries in the long run due to its modification of global development trends.

Attracting multinational enterprise operations and related FDI, local sourcing and consequent employment generation might become even more difficult due to the reorganization of global value chains, especially if there is insufficient infra-structure, an insufficiently qualified workforce, and an insufficient technological and business level of local suppliers. At the same time, opportunities arise to participate in GVCs, but supply chain digitalization will cause GVCs to be more platform-based and asset-light. GVC participation will require high-quality hard and soft digital infrastructure and adequately skilled local labor and suppliers.

Exhibit 8: Digitalization in the CAREC countries: some must catch up quite a lot



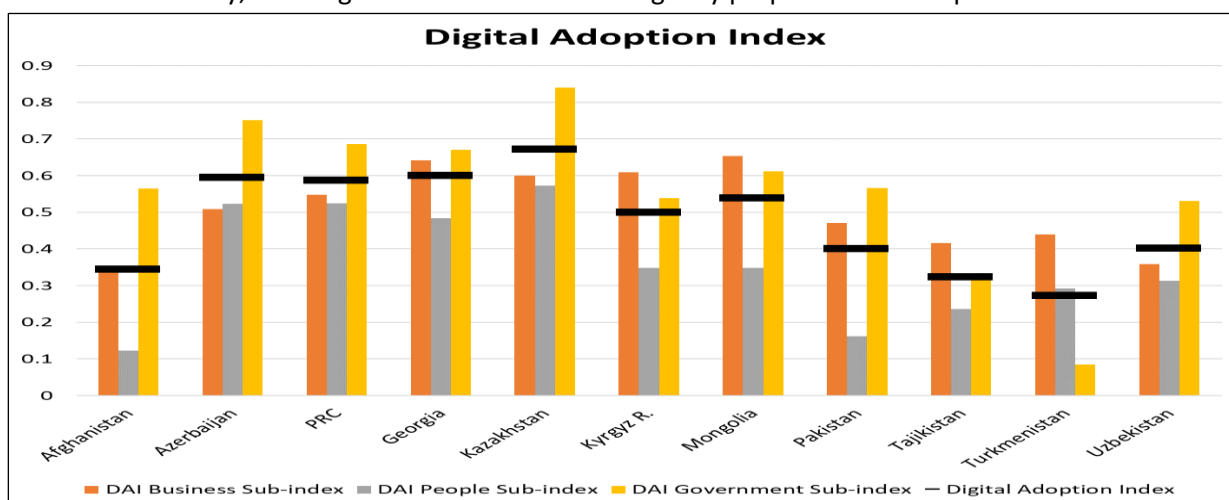
Source: <https://www.itu.int>, 2018 data, author's calculations

Digital preparedness varies quite substantially among the CAREC countries. Turkmenistan, Kazakhstan, Georgia look quite advanced regarding mobile phone subscriptions, whereas Afghanistan, Pakistan, Uzbekistan still need to catch up quite a lot (Exhibit 8). Broadband subscriptions, more important for industrial purposes, better reflect the digital preparedness of countries. The PRC, Georgia and Azerbaijan look pretty good with regard to broadband, whereas Afghanistan, Tajikistan and Turkmenistan find themselves on the low end.

The World Bank's "Digital Adoption Index" ranks Kazakhstan, Georgia and Azerbaijan as best prepared among the CAREC countries, Turkmenistan, Tajikistan and Afghanistan have to catch up most (Exhibit 9). The index also measures digital adoption across three sectors i.e., government, business, and people. The Kyrgyz Republic, Mongolia, Tajikistan and Turkmenistan do best at the "business" subindex. All other CAREC countries are best rated at the "government" subindex. A number of CAREC

countries are relatively successfully running e-government programs but will need to do more to support the private sector.

Exhibit 9: Generally, CAREC governments are better digitally prepared than the private sector

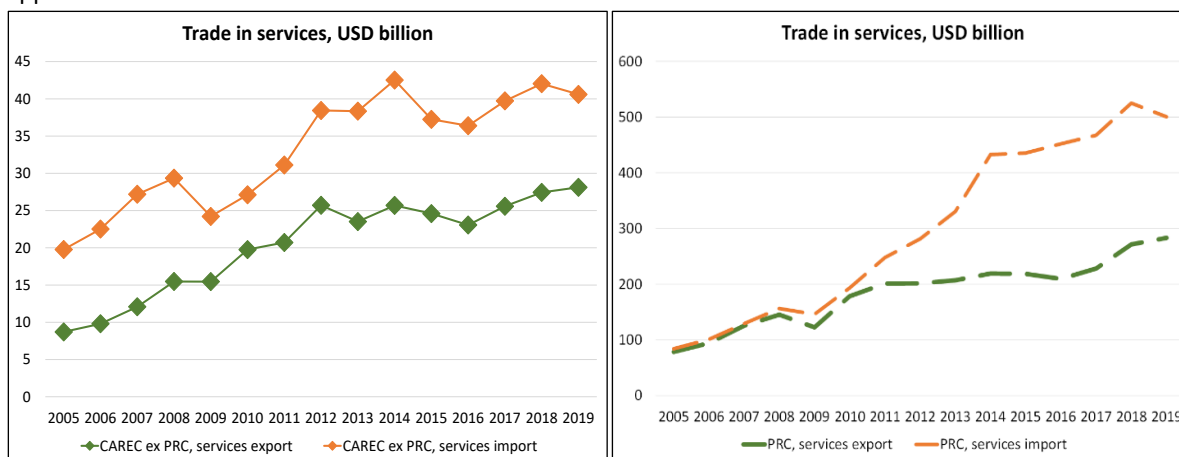


The index ranges from 0 to 1, with 1 indicating the most advanced digital adoption. Globally, Singapore ranks best on the index at 0.87, Central Afrika worst at 0.15.

Source: <https://www.worldbank.org/en/publication/wdr2016/Digital-Adoption-Index>, 2016 data, author’s calculations

Whereas global trade in services is expanding fast, CARECexPRC’s² trade in services is rather stagnating (Exhibit 10). CARECexPRC’s share in global services exports has fallen from a peak of 0.56% in 2012 to 0.46% in 2019. This indicates that CARECexPRC is not sufficiently well prepared to provide services, including in tourism, and also that the region’s earnings from transit are not as high as the geostrategic location of the region would allow. The ability to provide services at a reasonable quality/cost combination will have to be augmented. The PRC’s rising services imports should offer new opportunities to the CAREC countries and need to be investigated carefully.

Exhibit 10: CAREC ex PRC services trade stagnates since 2012. The PRCs’ rising imports might offer opportunities.

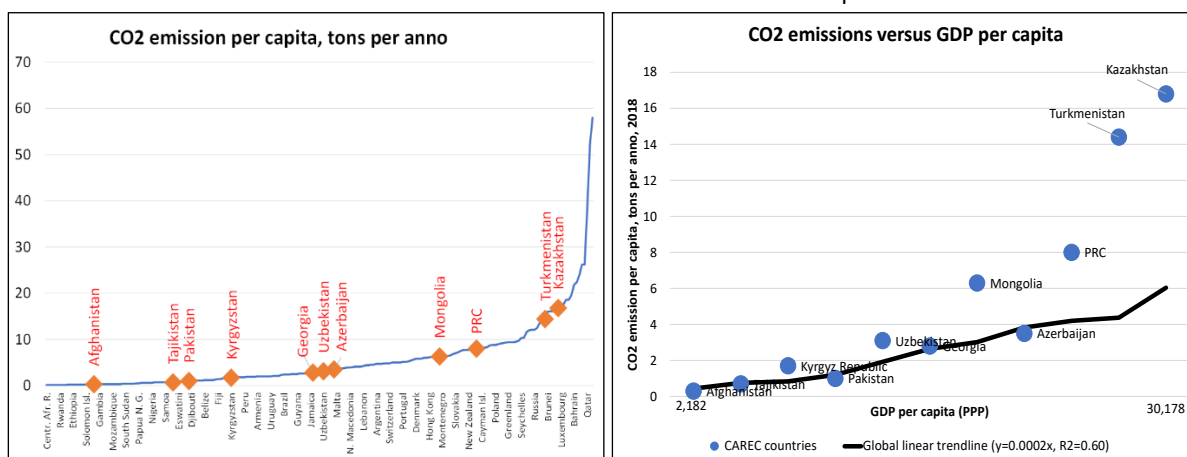


Source: TradeMap, author’s calculations

² Because of the large weight of the People’s Republic of China (PRC) in the CAREC region, and its special strategic role, it is often informative to look at indicators characterizing the region excluding the PRC (“CARECexPRC”).

CARECexPRC's services import is also stagnating. This can in part be explained by less engineering services for Kazakhstan's mining, related to the current phases of oil field development, but only in part. The stagnation is worrisome because it reflects the insufficient usage of advanced services from abroad, e.g. financial services, ICT services, usage of intellectual property such as patents, utility models, trademarks and registered designs, which can adversely affect the economic and social development in the region.

Exhibit 11: CO2 emissions in the CAREC countries: some must reduce them quite a lot.



Source: Emissions Database for Global Atmospheric Research (EDGAR), author's calculations

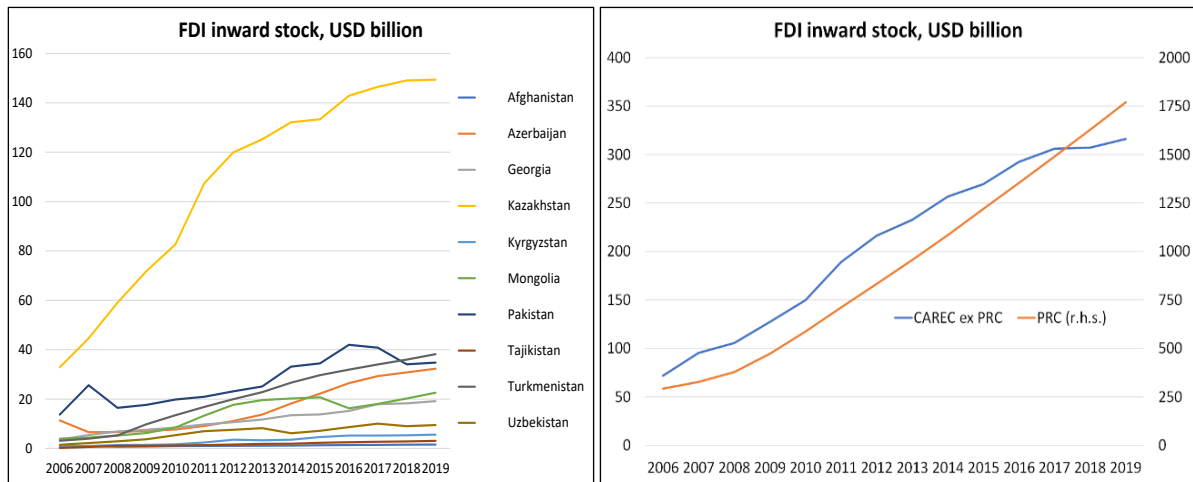
Under the slogan “recover better” greening of the global economy is a major objective for many institutions engaged in supporting the economies of the world to rebound from the COVID-19 pandemic, among them many IFIs.

While the CO2 emissions of most CAREC countries are broadly in line with their GDP per capita, Kazakhstan, Turkmenistan, the PRC and Mongolia produce a lot more than their GDP per capita would suggest (Exhibit 11). This is in part related to their industry structure and is about to decline as the services sector expands. However, there is also a lot of room for changes in electricity generation, distant heating, the traffic, and construction. These countries need to reduce emissions (CO2 and others) for the sake of the environment and the health of their populations. Especially Kazakhstan and Azerbaijan will on top be affected by global decarbonization efforts. Mineral fuels accounted for 67% of Kazakhstan's exports in 2019. Of these 59% (39% of Kazakhstan's total exports) went to the European Union. The figures for Azerbaijan are 90% of exports, of which 55% or 50% of total exports go to the European Union. The EU countries agreed to target 30% of the €750 billion “Next Generation Recovery Fund”, a COVID-19 relieve fund, to climate-change-related spending. Kazakhstan and Azerbaijan must seriously consider how to diversify, both in product and in export destination terms in order to maintain export revenues.

For two decades, foreign direct investment (FDI) in the CARECexPRC region maintained robust growth. Most of the FDI went into mining, with Kazakhstan receiving the lion's share (Exhibit 12). There are signs now of a flattening off as projects entered more mature states, and also related to less buoyant prospects for hydrocarbon exports. CAREC countries might be confronted with less external finance available in a situation where the fight against COVID-19 requires more, not less inflows. Technology transfer via FDI could slow. Besides, there has been rather little FDI outside mining in CARECexPRC anyway. In order to counteract FDI scarcity, CAREC countries will have to increase efforts to attract

more via offering viable projects other than mining, further improve the business climate, provide conducive infra-structure etc. Regional cooperation on projects beneficial to the region as a whole, or at least to more than one country, is also of high importance. In addition, opportunities related to asset-light forms of investment must be explored and enabling legal environment for such emerging forms needs to be further developed.

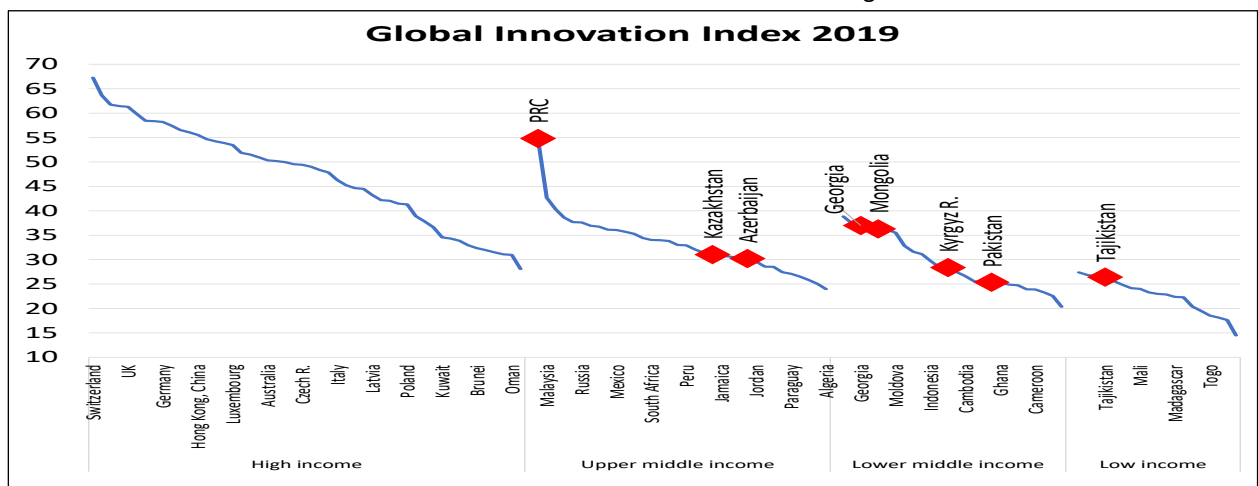
Exhibit 12: Is FDI in CAREC flattening off?



Source: UNCTAD

An over-reaching precondition for “recovering better” from the pandemic and for preparing also for its more long-term consequences is that the CAREC countries must push more successfully for innovation. This is needed for ensuring reasonable participation in global value chains, for diversifying, for greening and overcoming the decarbonization challenges, and is a pre-requisite for modern development. Exhibit 13 shows that the PRC, Georgia, and Mongolia do relatively well in this respect, but that the other countries must make more efforts to provide a conducive scientific and institutional environment for modernizing their economies.

Exhibit 13: CAREC countries need make decisive efforts not to allow a widening of the innovation divide.



Source: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2019.pdf

Conclusions and policy implications

The COVID-19 pandemic will have significant long-term consequence globally and for the region. It slows some megatrends, mostly progress in the social sphere, but it is going to speed up technological change, alter globalization and the way supply chains are organized. Major global institutions and regions strengthen efforts to “rebuild better” and speed up decarbonization. CAREC countries therefore should prepare along the following lines:

- **Speed up digitalization.**
- **Diversify into new segments of international value chains.**
- **Speed up own greening and coping with international decarbonization.**

Needed actions, include:

- Upgrade digital infrastructure, e-government, fintech
- Cooperate regionally to facilitate trade in services, including tourism
- Cooperate regionally to attract FDI
- Develop legislation and policies appropriate for asset-light investment and non-equity modes (NEMs) of international governance
- Make national innovation systems (NISs) more efficient
- Further reform higher and vocational education, especially tech education
- Update tax legislation/policies to better capture digital value-added flows
- A whole set of greening policies is needed
- A whole set of policies to cope with the social consequences resulting from the accelerating technological change is needed