

Asia Viewpoint

Supply chain realignment series (1): China-ASEAN: complements or substitutes?

Asia's role in global supply chain grows, faces realignment

The global economic landscape has witnessed a remarkable transformation over the past few decades, with Asian economies emerging as significant players in international trade, investment, as well as the global supply chain (GVC). On the other hand, cross-border production networks in the region have been undergoing major realignments in the face of recent shocks, including disruptions from the pandemic and geopolitical tensions

Trade, investment and GVC to remain in the spotlight

In view of these tectonic changes in the landscape, we are rolling out a new series of reports on supply chain dynamics in Asia and their interactions with the rest of the world. We aim to offer a timely update on trade, investment, and global value chain (GVC) movements to summarize the direction of change, timing, and industrial structural implications.

China vs. ASEAN: complements or substitutes?

In the first report of this series, we investigate whether China and ASEAN are complements or substitutes to each other now and going forward, amid the ongoing supply chain realignment. Our analysis shows both complementary and substitution features within the China-ASEAN nexus. On one hand, we see intensified bilateral trade activities between China and ASEAN across industries. China has also become a larger intermediate products supplier as well as foreign investor in ASEAN in both laborintensive and capital-intensive manufacturing sectors. But at the same time, strategic sectors in China, notably electronics and electrical sectors, may face higher substitution risks from ASEAN economies.

Trade/FDI redirection & GVC realignment to continue

Going forward, we expect the trade/foreign direct investment (FDI) redirection and GVC realignment to continue as a structural shift in the region. In particular, we expect ASEAN to see an accelerating pace of FDI inflows into its resources, advanced manufacturing and related services sectors. The export sectors in ASEAN should enjoy a faster growth across the board with the support from China's GVC exports. Such expected co-evolvement could post a "win-win" scenario for both economies.

Geopolitics remains the main concern

That said, geopolitical concerns remain the key uncertainty. Any rising tensions between major economies in the world could slow down such a process. A further ban or restrictions in certain exports directly or indirectly from China may could severely dampen the "complementary" role for China, and delay the upgrade process for ASEAN manufacturers. On the other hand, an improved China-US relationship may provide a tailwind for regional integration.

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The growing story of the global supply chain realignment Evolving roles of China & ASEAN

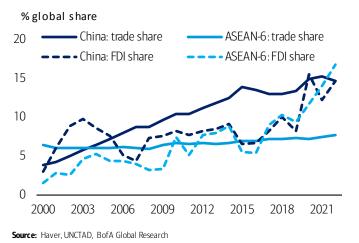
The global economic landscape has witnessed a remarkable transformation over the past few decades, with the rapid rise of Asian economies, especially China and ASEAN, emerging as significant players in the realm of international trade and investment. As of 2022, China/ASEAN have accounted for 14.7%/7.7% of the global trade (Exhibit 1), and the two regions remained as top FDI recipients worldwide, attracting over 30% of the world FDI in recent years (Exhibit 1).

The emergence of China as a global manufacturing hub can be attributed to the ample labor force, better talent pool, developed infrastructure and business environment, as well as the large and growing consumer market. Over the years, supply chains have become more deeply entrenched in China across light industries (e.g. textile manufacturing), capital-intensive industries (e.g. mechanical machinery manufacturing) and more recently high-end manufacturing industries (high-tech manufacturing and auto making) (see: FDI trending series #1: Will FDI disappear from China?).

As for ASEAN economies, they have benefited from demographic tailwinds, with ample labor dividends, competitive labor costs, as well as favorable investment policies. Trade data over the past decades suggest ASEAN manufacturers have increased their market shares in traditional labor-intensive sectors over the years, such as apparel & footwear; Meanwhile, they have also started to expand to higher value-added categories, including autos and semiconductors. On the other hand, sectors such as organic chemicals and mineral fuels experienced declining market share, which curtailed ASEAN's overall export share gains.

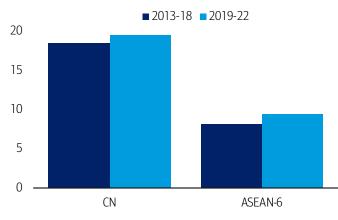
Exhibit 1: Global trade/FDI share for China & ASEAN

China and ASEAN have emerged as significant players in international trade and investment



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Exhibit 2: GVC product exports (% of world) - CN vs. ASEANChina and ASEAN gained global export share in 2020-22



Source: BofA Global Research, ITC Trade Map, WITS

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Positive trends for GVC exports and FDI inflows

A comparison of Global Value Chain (GVC) exports¹ over the past decade shows China playing an increasingly central role in global supply chains, even in the face of trade diversion, while ASEAN is assuming a larger role. Despite the falling share in US imports, China's global export share rose from 18.5% in 2013-18 to 19.6% in 2019-22 (Exhibit 2).

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¹ We refer to Global Value Chain (GVC) product groups as classified by World Banks' World Integrated Trade Solution (WITS). This comprises of 248 categories at the 4-digit HS code level, mainly covering apparels & footwears, electronics and autos.

Meanwhile, ASEAN's global export share rose from 8.2% to 9.4%, with the Philippines, Malaysia and especially Vietnam seeing notable export share gains².

In addition, FDI patterns underscore the potential for China and ASEAN to reinforce their positions in global supply chains. In 2022, China attracted 15% of global FDI (USD189bn), only behind the US (USD285bn) as a single country and almost double its average level of 8% in 2013-18 (Exhibit 3). For ASEAN, FDI into the region also doubled and surpassed that to China in most years since 2017 (Exhibit 1). Even after adjusting for this potential double counting of the total inflows³, the strong uptrend in net direct investments (i.e. netting off outward direct investment) points to "real" acceleration in FDI in ASEAN in recent years (Exhibit 4, see also: FDI trending series #2: ASEAN: Land of the rising FDI).

Exhibit 3: FDI into ASEAN, by countries (USD bn and % of global FDI)Global FDI shares have risen for China and most of the ASEAN countries

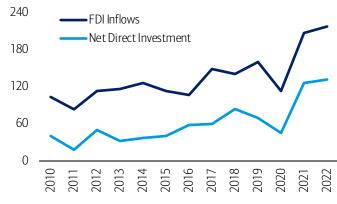
Countries	2013-18	2019-22							
Yearly Average (% share of global FDI)									
CN	8.0	12.1							
ASEAN-6	7.5	12.8							
ID	1.0	1.6							
MY	0.6	0.7							
PH	0.4	0.7							
SG	4.2	8.1							
TH	0.6	0.5							
VN	0.7	1.2							

Source: BofA Global Research, UNCTAD

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Exhibit 4: ASEAN – Net direct investment vs. FDI inflows (USD bn)

Surge in net direct investment points to "real" acceleration in FDI in ASEAN



Source: BofA Global Research, UNCTAD

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Supply chain realignment emerged amid security concerns

Global supply chains are undergoing major realignments in the face of recent shocks. The conventional approach was to build globally distributed lean supply chains aimed at achieving cost efficiencies, with Asia (and especially China) being the key production hubs. The changing landscape in recent years has prompted a rethink of supply chains, with disruptions from geopolitical tensions and the pandemic compounded by a new wave of protectionism, which is evident in rising trade and investment interventions between 2020 and 2022 (Exhibit 6). Meanwhile, concerns persist over the risk of geoeconomic fragmentation, with two blocs centered around the US and China.

As a result, given China's dominant position in numerous sectors, the "China+1" strategy has become a viable solution for the multinational corporations (MNCs) to diversify the supply chain and to increase its resilience with security being the greater concern, hence, we have observed an acceleration of near-shoring and friend-shoring of activities in recent years. More often than not, the 'plus one' tends to be Vietnam. Arguably, Vietnam benefited the most from supply chain moving out of China – given its geographical proximity to China, high export similarity with China (Exhibit 7), proven track record and market accessibility via free trade agreements – despite its scores in many competitiveness indicators are not as impressive as its neighbors (Exhibit 5).

³ ASEAN's figures are probably overstated to some extent as it partly reflects "in-transit" investment flows via the financial hub of Singapore (which accounts for more than half of ASEAN's FDI).



 $^{^2\,}$ Note that Singapore's export figures are higher and more volatile vis-à-vis regional peers, as the country serves as a re-exporting hub.

Exhibit 5: The competitiveness comparison of China and ASEAN peers

China still maintained its high competitiveness vs its ASEAN peers

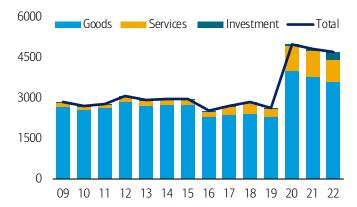
	Indicators	China	ASEAN economies				
		China	Vietnam	Thailand	Indonesia	Philippines	Malaysia
Demographics	Total population (mn)	1412	96	70	276	111	33
	Labor force numbers (mn)	792	56	39	139	44	17
	Labor force as of total population (%)	56%	58%	56%	50%	39%	52%
ă	The median age	38	32	39	29	25	30
SS	Monthly base salary (US\$)	576	273	410	377	271	451
ene	Engineer talent availability	Medium	Low	Low	Low	Low	Medium
titiv	Education level	Medium	Low	Medium	Low	Medium	Medium
эре	PISA score-math	#N/A	#N/A	394	366	355	409
COU	PISA score-science	#N/A	#N/A	409	383	356	416
Talent competitiveness	Official languages	Mandarin Chinese	Vietnamese	Thai	Bahasa Indonesia	English	Bahasa Malaysia
ν	R&D as % of GDP (2021)	2.43	0.43	1.33	0.28	0.32	0.95
Business competitiveness	WB Logistics Performance Index*	19	43	34	61	43	26
	WB Ease of Doing Business*	31	70	21	73	95	12
	Transparency Corruption Perceptions Index*	65	77	101	110	116	61

Source: CEIC, Haver, World Bank, BofA Global Research estimates; **Note:** highlighted in red indicates high competitiveness in the subsector; *international rankings

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Exhibit 6: Number of implemented "harmful" interventions

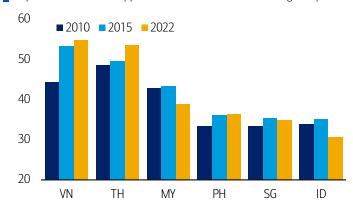
Interventions jumped in 2020-22 amidst pandemic and geopolitical tensions



Source: BofA Global Research, Global Trade Alert Note: "Harmful" measures include subsidies, tariffs and contingent trade-protective measures, amongst others

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Exhibit 7: GVC products export similarity index to China (100=closest) Export structure for VN appears most similar to CN vis-à-vis regional peers



Source: BofA Global Research, ITC Trade Map, WITS

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China vs. ASEAN: complements or substitutes?

Our analysis suggests exports of China and ASEAN are both complementary and substitutive in different categories of exports. On one hand, ASEAN manufacturers benefit from the tech parts and components imports from China, as the overall ASEAN export base is relatively less capital-intensive. China also benefits from the abundant natural resources that ASEAN uniquely possesses. On the other hand, there are quite a lot of overlapping products, which make them competitors in these exporting sectors.

The export sector specialties: China vs. ASEAN

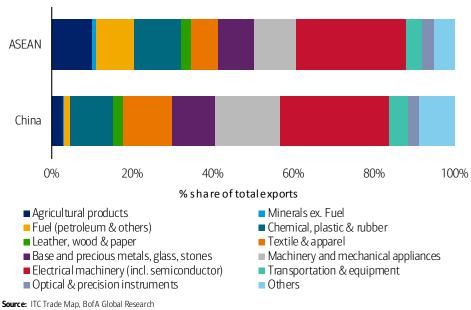
China and ASEAN have grown as integral parts of the global supply chain. While both economies possess diversified export sectors, China's exports are generally more capital-intensive and less natural-resource oriented (Exhibit 8):

1) China exported a lower share of **primary products/raw materials** than ASEAN did. Agricultural/fuel exports only took up 3%/2% of total exports in China, but each of those took up 10% in ASEAN. Agricultural products are major

- export commodities in Thailand, Indonesia and the Philippines, while fuels are major commodities in Malaysia and Indonesia
- 2) Labor-intensive exports (such as leather, textile, footwear and apparel, and other light manufacturing products) took up a larger share in China. Textile, apparel and related products together took up 12% of China's exports, but only 6.7% in ASEAN. That said, there are great variations in the share of labor-intensive exports among ASEAN exporters. For example, textile and apparels accounted for 16% of Vietnam's export in 2022, but only 1% in Malaysia and 0.5% in Singapore.
- 3) **Capital-intensive exports** took up a larger share in China as well. Although electrical machinery (including smartphones and semiconductors) took up more than a quarter of total exports in both economies, mechanical machinery and transportation & equipment took up a larger share in China vs ASEAN.

Exhibit 8: Export share by product in China and ASEAN (2019-2022 average)

Relative to total export size, China exports more capital-intensive goods and labor-intensive manufactured goods, but less primary products, including agricultural and fuels, than ASEAN



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Throughout the last decade, there have been shifts in export structure in both economies, more so in China and less so in ASEAN:

- 1) In China, exporters have been gradually shifting **labor-intensive** production away from China to lower-cost bases, with its share falling from 16% in 2010 to 11% in 2022 (Exhibit 9). The share has been more stable in ASEAN.
- 2) The change in the share of **capital-intensive** exports has been relatively mixed. Both economies saw a higher share of electrical and electronic exports (Exhibit 10), but the export share of machinery and mechanical equipment has dropped slightly in both economies. However, the share of transportation & equipment exports went up in China (to 6% of total exports in 2022).



Exhibit 9: Labor-intensive export share in China & ASEAN

China exporters have bene gradually shifting out labor-intensive manufacturing

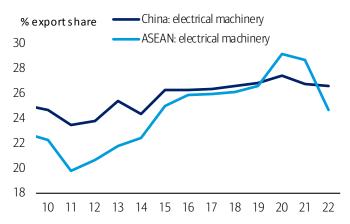


Source: ITC Trade Map, BofA Global Research

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Exhibit 10: Capital-intensive export share in China & ASEAN

Both economies saw rising electrical machinery exports



Source: ITC Trade Map, BofA Global Research

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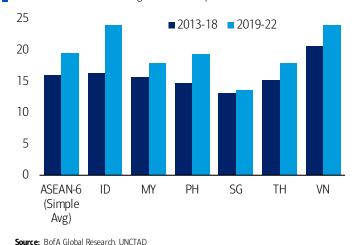
Rising complementarity amid regional integration

Intra-regional trade accelerated amid RCEP and supply chain integration

The rising complementarity between China and ASEAN has been well reflected in the regional goods trade. The ASEAN-China trade links have strengthened considerably over the past decade, with supply chain integration augmented by the upgrade of the ASEAN-China Free Trade Agreement (2018) and the Regional Comprehensive Economic Partnership (RCEP) (2022). Between 2019 and 2022, China accounted for almost 20% of ASEAN's trade vs 16% in 2013-18 (Exhibit 11). The step-up is broad-based across the ASEAN-6, especially Indonesia (due to China's heavy investments in Indonesia's base metals sector). Similar trends have been observed from China's side, with ASEAN accounting for 14% of China's trade in 2019-22 vs 11% in 2013-18. This may also suggest the intensified collaboration and better integration of production networks between China and ASEAN, in our view.

Exhibit 11: ASEAN-China trade (% of ASEAN's total trade)

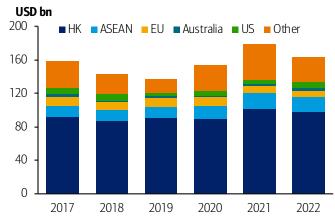
All ASEAN-6 countries have greater trade dependence with China in 2019-22



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Exhibit 12: China's ODI by major destination

ASEAN remained as one of the top destinations for China ODI in recent years



Source: CEIC. BofA Global Research

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The rising role of China as investor in ASEAN manufacturing sectors

Embedded with the rising global FDI to ASEAN, we also see China playing a more important role in driving outbound direct investment (ODI) to ASEAN in recent years. In 2022, of its USD163bn ODI, over 10% have been directed to ASEAN, the second highest



after HK (Exhibit 12). Moreover, in terms of by-industry breakdown of China's ODI to ASEAN, 44% was placed in manufacturing sectors, suggesting rising interest of Chinese manufacturers to produce in ASEAN in the future (Exhibit 13). Region-wise, Singapore, Indonesia, Vietnam, Malaysia, and Thailand were the top destinations for Chinese firms (Exhibit 14). Such FDI flows may suggest that 1) Chinese firms have invested "vertically" along the production chain in near-by regions, a "complementary" investment in nature; 2) they may have also started to re-direct their supply chain to ASEAN on the back of MNCs' "China+1" strategies and "substitute themselves" with their own overseas subsidiaries.

Exhibit 13: China to ASEAN ODI by sectors

ASEAN's manufacturing sector remained as top choice for Chinese enterprises, and accounted for over 40% of its annual ODI to ASEAN

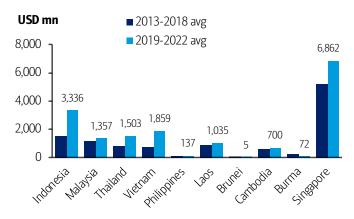


Source: CEIC, BofA Global Research

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Exhibit 14: China's ODI to South-East Asia countries

In recent years, more ODI has been flowed into Singapore, Indonesia, Vietnam and Malaysia



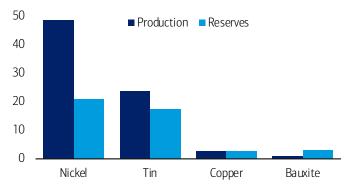
Source: CEIC, BofA Global Research

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Among manufacturing sectors in ASEAN, EV manufacturing and semiconductors have drawn sizeable investments. In the EV space, investments have centered around Indonesia (huge endowment in natural minerals for EVs, Exhibit 15) and Thailand (traditional autos hub). In the semiconductors space, the exports account for >20% of total exports for Philippines, Singapore and Malaysia (Exhibit 16). Each country has its own distinct focus within the supply chain – the Philippines and Vietnam more so in assembly, Malaysia for testing, and Singapore in the foundry sector.

Exhibit 15: Indonesia mineral production & reserves (% of global, '22)

ID is the world's largest producer of nickel – holds ~20% of reserves

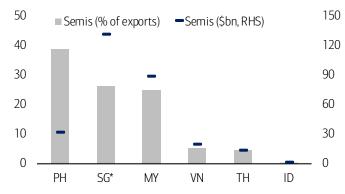


Source: BofA Global Research, USGS Reports (2023) Note: For copper, we include both mining and refining production

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Exhibit 16: ASEAN - Semiconductor exports (2022)

Semis account for >20% of total exports for PH, SG and MY



Source: BofA Global Research estimates, ITC Trade Map Note: (1) We refer to HS Codes 8541 and 8542, and (2) *For SG, re-exports accounted for around 80% of exports

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Closer interconnections in Global Value Chain

In addition, the rising complementarity is also reflected in their evolution in the Global Value Chain (GVC) and closer integration of the China-ASEAN regional supply chain, mostly through rising intermediate (or GVC) exports from China to ASEAN.

In ASEAN, Vietnam contributed the most to such an increase, as most ASEAN-bound intermediate exports went to Vietnam. For instance, 2% more of China's electronic exports went to Vietnam in 2019-2022 vs in 2013-2018 (Exhibit 17). Other than that, Indonesia/the Philippines also had a higher share of China's intermediate apparel/electronics exports. Such trade dynamics is also more formally captured in the GVC participation rate (the share of GVC-related trade in gross exports) estimated by the ADB⁴. In ASEAN, Vietnam is most integrated into the GVC, as 69% of its trade were GVC-related in 2022 (Exhibit 18).

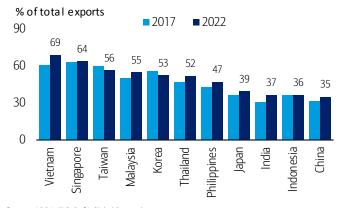
Exhibit 17: China's intermediate electronics exports to ASEAN as well as electronics export



Source: ITC Trade Map, BofA Global Research

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Exhibit 18: GVC participation by economy, 2022 vs 2017 Vietnam is most integrated to GVC in ASEAN



Source: ADB MRIO, BofA Global Research

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At the same time, China has been moving upstream in GVCs at an aggregate level as well. This is reflected in the concurrent decline in reliance on intermediate imports (for exports) and rising share of intermediate export (in total exports). The change appears more prevalent in sectors such as leather & footwear, and lower-end and intermediate manufacturing (Exhibit 19 and Exhibit 20). However, China's self-dependency in higherend manufacturing sectors (e.g. electrical and optical equipment) does not seem to have increased materially, with the ratio of foreign value added in exports relatively stable over the past decade.

In short, China and ASEAN help each other to be more deeply integrated into the GVC, and ASEAN has helped China to advance its position in the value chain.

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⁴ It measures the sum of the share of 1) foreign value-added embodied in total exports of a country (i.e. backward linkage) and 2) domestic value-added embodied in intermediate exports that are further reexported to third countries (i.e. forward linkages), expressed as a ratio of gross exports.

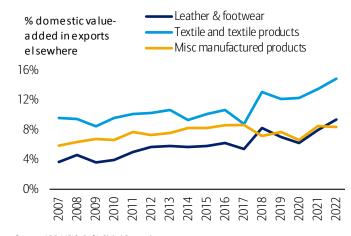
Exhibit 19: Backward linkage in selected export sectors

China has been less reliant on foreign inputs in lower-end manufacturing and general machinery exports...



Exhibit 20: China: Forward linkage in selected export sectors

And has become a more critical supplier in lower-end manufacturing to exporters elsewhere



Source: ADB MRIO, BofA Global Research

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Substitutions most evident in strategic & labor-intensive sectors

Strategic sectors saw a fast structural shift in trade

The flip side of complementarity is competition due to substitution. By looking into sectoral trades, we observe that the strategically important sectors have experienced the most direct trade re-location amid rising geopolitical tensions. One example is the electronic machinery and machine parts sector, which includes laptops, smartphones, and semiconductor devices.

For these two largest importing subsectors for the US (accounting for about 42.8% of US imports in 2022), the importing regions have been dominated by major Asian economies as well as Mexico (Exhibit 21). However, we have seen a significant shift from China to ASEAN, Taiwan, Korea and Mexico from 2018 to 2023. China's share has dropped drastically from 36.4% to only 22.7% most recently, while market shares of these latter economies have risen by almost the same magnitude, with ASEAN benefiting the most (+5.3ppt in share, Exhibit 22).



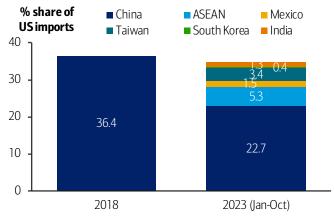
Exhibit 21: US electronic & machine parts imports by key region

Major Asian economies and Mexico dominates the US electronic $\&\,$ machine parts imports over the years



Exhibit 22: US electronic & machine parts imports by region (net change for ex-China major EM shares)

While China's share has dropped notably in the past five years, and been replaced by other major Asian and America EM regions



Source: CEIC, BofA Global Research

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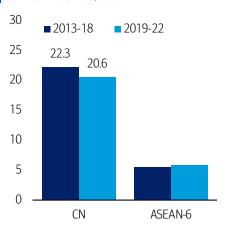
Labor-intensive exports also saw similar trends of substitution

Another example of substitution is in the labor-intensive apparel & footwear segment, with some production likely diverted from China to Vietnam, where manufacturing wages are almost half that of China. We highlight three observations below:

- 1) China's global export share declined by 1.7ppt (Exhibit 23) between 2013-18 and 2019-22, while Vietnam's global export share rose by 0.7ppt over the same period. (Exhibit 24).
- Nike is one of the brands to have shifted production. Between FY16 and FY23, Nike has reduced its production dependence on China, while concurrently raising its dependence on Vietnam and Indonesia (Exhibit 25).
- 3) The US import share of textiles, apparel & footwear from China fell by almost 12ppt between 2018 and 2023, but increased by around 3ppt from ASEAN.

Exhibit 23: Apparel & footwear exports (% of world), CN vs. ASEAN

China's global share declined by almost 2ppt between 2013-18 & 2019-22

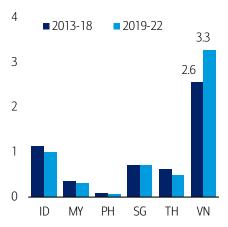


Source: BofA Global Research, ITC Trade Map, WITS

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Exhibit 24: Apparel & footwear exports (% of world), ASEAN countries

Vietnam's global share rose by around 0.7 ppt between 2013-18 & 2019-22

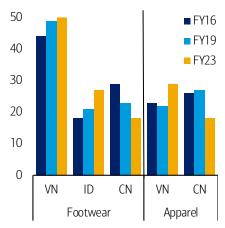


Source: BofA Global Research, ITC Trade Map, WITS

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Exhibit 25: Nike – production by location (% of total)

Nike has reduced its production dependence on China



Source: BofA Global Research, Nike

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The next stage of regional supply chain realignment

Expect complementary/substitution features to sustain within the nexus

In summary, we see both complementary and substitution features within the China-ASEAN nexus. On one hand, the unique role of China in the region (the largest consumer market as well as the largest manufacturing hub) warrants more active bilateral trade activities with ASEAN, especially with the RCEP in place. Its comparative advantage in the medium-to-high manufacturing sectors should continue to lead other EM Asia peers and to play a vital role for the regional value chain integrations. On the other hand, ASEAN shall remain one of the most favorable destinations for friend-shoring and near-shoring for the MNCs, as well as increasingly for Chinese companies trying to circumvent trade barriers.

Such co-evolvement of investment, trade, and global value chain (GVC) restructuring will continue as a structural shift in the Asia region. At the current stage, we have already observed: 1) DM imports re-directing from China to other EM economies in selected categories; 2) a re-direction of global FDI from China to ASEAN to a certain extent; and 3) preparation of a GVC re-alignment within the Asia region. Those features, in our view, are likely to only intensify in the coming decade. In particular, we expect:

- 1. An accelerating pace of FDI flows into ASEAN's resources, upgraded manufacturing and related services sectors. Indeed, ASEAN region is likely to remain as one of the top destinations for FDI flows on the back of region's higher economic growth, rising supply of skilled workers, ample resources, refining infrastructures as well as a better integration in some high value-added sectors in the ASEAN region. The fast-growing EV supply chain in the region (both for raw materials and auto manufacturing), supply chain upgrading and diversification (electronic manufacturing, semiconductor sector, and some of the traditional labor-intensive sectors) likely to remain the key themes for the region. In our view, the labor cost comparative advantage and MNC's higher needs for supply chain resilience to continue been the key drivers underneath the higher FDI attractiveness of ASEAN over China, and we may also expect further China to ASEAN FDIs to materialize on the back of it.
- 2. ASEAN trade sector to enjoy a faster growth across the board; China could see an acceleration of GVC exports. In our view, the sustained FDI inflows have warranted ASEAN to continue its pace in gaining global trade shares in manufacturing upgrading sectors, especially through the fast-growing assembly manufacturing sectors; while its relatively cheaper labor cost will also reinforce its position in the labor-intensive sectors. This, in our view, would further re-balance ASEAN's export structure and to increase its similarity versus China, and DM regions likely to import more from ASEAN vs. China. On the other hand, under the development of the Regional Comprehensive Economic Partnership (RCEP) as well as the "China+1" strategy for MNCs, China may further tie up its role with ASEAN as a critical parts & components supplier. China may continue to utilize ASEAN as a mid-point for final good exporting, and to increase intermediate goods exports while outsourcing lower valueadded supply chain downstream to the region. In this regard, a further acceleration of GVC exports for China could be expected despite the potential share loss in global final goods value.

What could accelerate or decelerate the evolving process?

In our view, the co-evolvement of China and ASEAN that we are projecting could result in a "win-win" scenario for both regions. Under such circumstances, ASEAN could benefit from technology transfers, capital gains as well as technical "know-how" from both developed markets (DM) and China; while China would likely minimize the impact of near-shoring/friend-shoring through further integration of the regional supply chain, and look for a way to move up along the value chain to a certain extent, enlarging its role for the "complementary" part of the supply-chain realignment.



That said, geopolitical concerns remain the key determinant. Such a China-ASEAN nexus assumes no intensification of tensions between major economies. For example, a further ban or restrictions in certain exports direct or indirectly from China could severely dampen the "complementary" role for China, and delay the upgrade process for ASEAN manufacturers, in our view. Further, ASEAN's manufacturing sector is still at a relatively early stage in terms of both size and its technology advancement. A sudden pick up in the pace of "de-coupling" may not warrant ASEAN to extend its "substitutive" role, but only result in a slowdown in global trade and investment activities. On the other hand, an improved China-US relationship may not alter the current trend of supply chain realignment, but could provide a tailwind for the regional integration, boosting the evolvement of the whole process as well as productivity gains in the region.



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