ASIAN TRADE CENTRE

Strengthening Supply Chain Resilience in the Asia Pacific

TAIWAN'S PERSPECTIVE

Abstract

Weathering global economic uncertainty and the downturn prompted by the ongoing pandemic and US-China trade dispute, Taiwan has maintained its leading position as a high-tech manufacturer. But with the crises highlighting vulnerabilities, businesses and governments are now re-evaluating existing supply chains to hedge against future disruptions. Taiwan, and especially Taiwan's high-tech manufacturing sector, stands ready to continue contributing vital components to global supply chains.

A global recovery requires global participation in trade regimes. But despite integration into existing global supply chains -- even those of both China and the US -- Taiwan is party to only eleven Free Trade Agreements. This hinders not only trade flows, but also adds to global vulnerabilities.

With an open economy and liberal trade policies, Taiwan is an obvious candidate for participation in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). As a 'deep' agreement, CPTPP encourages not only increased trade but also the development of shared legal frameworks and norms, diversified supply chains, and ultimately economic growth. Participation in the agreement would offer clear mutual benefits to Taiwan and the eleven current CPTPP signatories, increasing resiliency and quickening recoveries from the economic effects of the pandemic. Including Taiwan in CPTPP would enhance the agreement's benefits for all Parties, boosting economic integration and international cooperation.

The importance of including more members into regional trade agreements stems from the ability to include companies across many different types of supply chains into new, more stable relationships. The pandemic has thrown particular light into the critical role of high tech and digital sectors, but less well appreciated is the importance of the range of goods involved in supply chains and the need to build flexibility into existing operations across most products. High quality trade agreements, and especially regional trade arrangements like the CPTPP, make it easier to deliver resilient supply chains. Including diversified members contribute to greater strength.

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1. Introduction

Throughout the ongoing COVID-19 pandemic, Taiwan has demonstrated a level of economic resilience -- defined as the ability to withstand economic shocks -- seen in few other places. In part, this is due to the strength of the high-technology manufacturing sector, which is well-positioned for continued growth into the post-COVID-19 era. With a forward-looking industrial development plan and an innovative manufacturing sector, Taiwan stands to maintain its role as a global leader in high-tech manufacturing into the future. But without participation in major regional trade agreements, regional and global peers will be unable to fully harness Taiwan's high-tech manufacturing expertise and optimize economic recoveries.

As the pandemic continues, it has become increasingly clear that a global recovery will depend on deepening economic cooperation, facilitating trade, and lowering barriers to access for global markets. Though merchandise trade volume is expected to rebound strongly through 2021, new waves of infections threaten the global economic recovery.[1] A sustained recovery requires, among other factors, trade regimes that allow for open and easy trade in goods and services. Taiwanese manufacturers, already playing a key role in the global economy, stand ready to contribute to regional and global prosperity through further integration into global supply chains.

Supply chains are vulnerable to shocks, as the Covid-19 pandemic has illustrated. Firms that are connected through trade agreements are at lowered risk of sudden policy shifts and have greater certainty about future trade arrangements that will apply. Resilience comes about in many ways, but having a diversified sources of supply and demand linked by governments committed to economic engagement can help to limit supply and demand shocks.

The importance of including more members into regional trade agreements stems from the ability to include companies across many different types of supply chains into new, more stable relationships. The pandemic has thrown particular light into the critical role of high tech and digital sectors, but less well appreciated is the importance of the range of goods involved in supply chains and the need to build flexibility into existing operations across most products. High quality trade agreements, and especially regional trade arrangements like the CPTPP, make it easier to deliver resilient supply chains. Including diversified members contribute to greater strength.

2. Post COVID-19: Opportunities for Re-Adjusting Global Supply Chains

The global effects of both the COVID-19 pandemic and the ongoing US-China trade dispute have prompted governments and businesses to rethink their supply chains and have highlighted vulnerabilities stemming from overreliance on single trading partners. Now more than ever, businesses and governments are thinking about how to build more resilient and flexible supply chains.

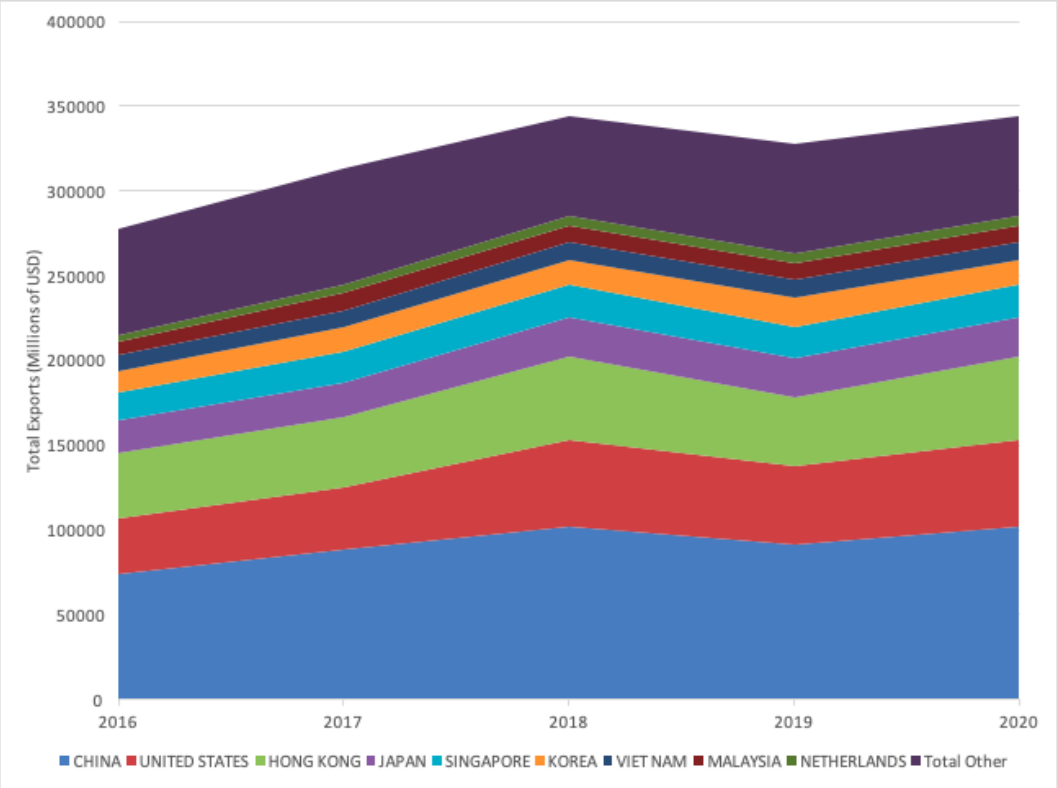
Since the World Health Organization declared a pandemic in March 2020, vulnerabilities in global supply chains have highlighted the need for diversification and flexibility. This was abundantly clear early on in the pandemic, as disrupted supply chains led to global shortages of Personal Protective Equipment (PPE) like n95 masks and clinical gowns.[2] With nearly half of the world's PPE supply produced in China at the time, export restrictions and skyrocketing demand highlighted the vulnerabilities associated with overdependence on sourcing supplies of key items from single trading partners.[3] Though PPE supply chains have since diversified and constraints lessened, governments are now keenly aware of the risks stemming from overdependence on individual trading partners.

So too has the ongoing US-China trade dispute prompted a reevaluation of current supply chains. Though largely the doing of the previous US administration, fundamental disagreements over economic and geopolitical matters signal that the dispute should be expected to continue, as few commitments were made to address the tariffs at the March 2021 US-China talks in Anchorage, Alaska.[4] The trade spat has complicated pre-existing supply chains, causing a number of downstream effects for third-party countries, reducing employment and growth in sectors affected by the tariffs.[5] These effects are being felt in countries where supply chains are integrated with either the US or China -- as many in the Asia-Pacific region are.

A large proportion of Taiwanese exports go to China, with China and Hong Kong together accounting for just over US$ 150 billion in exports in 2020. This trade is largely driven by the electronics industry -- many high-tech components are produced in Taiwan and exported to China for further assembly for the final consumer. Notably, Taiwanese exports to ASEAN nations -- particularly Vietnam and Malaysia -- are gradually increasing. The same dynamics that once drove Chinese manufacturing is increasingly taking place in Southeast Asia, where

Taiwanese high-tech manufacturers export to factories in Malaysia and Vietnam for the final assembly of consumer products.

Figure 1: Taiwan's Total Exports by Destination



Source: Bureau of Foreign Trade, Ministry of Economic Affairs, Republic of China (Taiwan), 2021.

3. Regional Trade Regimes

The Asia-Pacific region is home to more than 184 Preferential Trade Agreements, all of which lower tariffs, increasing trade and integrating economies.[6] But none so greatly facilitate integrated and regionalized supply chains as does the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). CPTPP entered into force in December 2018 with seven participants from both sides of the Pacific Australia, Canada, Japan, Mexico, New Zealand, Singapore, and Vietnam. Four member countries signed the agreement, but have not yet completed domestic level ratification procedures: Brunei Darussalam, Chile, Malaysia and Peru.[7] On 2 June 2021, CPTPP members agreed to begin accession negotiations with the United Kingdom. Taiwan, South Korea and China have

expressed interest in joining, and the United States in rejoining, though no efforts have been made to do so.

Included in the list of countries that have expressed interest in joining CPTPP is Taiwan. Most recently reiterated in early February 2021, Taiwan has signaled desire to apply.[8] Like any Free Trade Agreement (FTA), CPTPP will incentivize increased trade and investment, and therefore integrated cross-border supply chains, amongst its members. But in a post-COVID world, CPTPP is likely to take on another role -- one wherein the agreement is leveraged by its signatories to diversify supply chains and integrate value chains.[9] As a comprehensive FTA, CPTPP encourages building cross-border supply chains between member countries through preferential tariff rates (typically already reduced to become duty-free or zero tariffs) and rules of origin. As governments seek to diversify and strengthen the resiliency of their supply chains, CPTPP and Taiwan's participation stand to facilitate these efforts.

CPTPP is a "Deep Agreement," meaning that member states must do more than simply reduce tariffs -- the agreement includes chapters on labour rights, intellectual property, environmental protection, and more. This enhances the impact of the agreement, and increases its transformative power, encouraging shared norms and integrating the signatory economies. Deep Trade Agreements have been shown to increase Global Value Chain (GVC)-related trade.[10] This is especially true of industries with higher value-added shares in total production, like high-tech manufacturing.[11] Through preferential Rules-of-Origin (ROO) and trade facilitation mechanisms, CPTPP facilitates the movement of supply and value chains across borders, permitting individual member countries to specialize in specific steps of production. As a result, expanded participation in CPTPP benefits all member countries.

An FTA, and especially deep agreements like CPTPP, encourage trade in goods and services amongst its members. This is because trade agreements make trade cheaper and more reliable between signatory countries. With facilitated trade through lowered tariffs and harmonized rules, businesses can re-evaluate their supply chains, benefiting from trade agreements with new countries. These benefits are especially apparent where countries have no prior FTA in place, as businesses in member countries gain tariff-free access to new markets, allowing them to diversify their supply chains.

Trade policy is a key mechanism that supports government plans to build resiliency. FTAs reinforce bilateral and regional cooperation, creating stable regulatory

regimes and trading relationships. Reciprocal trade agreements help member countries to build capacity to tolerate shocks through developing adjustment channels, allowing for continued trade and stable prices.[12]

CPTPP offers an opportunity for Taiwan to increase bilateral trade and deepen economic integration with key trading partners like Singapore. Though the Agreement between Singapore and the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu on Economic Partnership (ASTEP) has been in force since 2014, more can be done to encourage economic integration for the benefit of both countries. Taiwanese participation in CPTPP would unlock benefits for Singapore, as the agreement is more comprehensive than ASTEP. To name a few. CPTPP has chapters dedicated to specific topics that ASTEP does not have, including but not limited to labour, state-owned enterprises, textiles, which would enhance their impacts as mentioned earlier. The inclusion of Taiwan in CPTPP may mean one more country be committed to complying with those comprehensive gold-standard regulations in addition to ASTEP. This would further both countries' efforts toward trade liberalization and, with both countries being as close and top trading partners, facilitate economic growth.

4. The Importance of Trade Agreements to Global Value Chains

Facilitated by liberalized trade, communications technologies, and improvements in complex logistics, GVCs have become commonplace. This is where production is conducted in stages in different countries. This allows for countries to specialize in different elements of production according to their competitive advantage. Already, Taiwan is a key participant in GVCs in several major industries due to high-tech manufacturing expertise. An example can be found in the semiconductor industry. A key component in modern automobiles, Taiwanese-made semiconductors are exported to auto manufacturers the world over.

While Taiwan participates in some multilateral forums like Asia Pacific Economic Cooperation (APEC) and the World Trade Organization (WTO), few governments maintain formal diplomatic relations with Taiwan. Regardless, the country remains a major trading partner to regional and global peers. But Taiwan's exclusion from trade agreements negatively impacts both Taiwan and its trading partners.

Though party to few FTAs, Taiwan participates in the WTO's Information Technology Agreement (ITA), first signed in 1996 and expanded in 2015. The

Agreement reduces or eliminates tariffs on a wide variety of high-tech products like computers and semiconductors. While this has benefited the Taiwanese Information Technology industry, the pace of innovation means that new products might not be covered under the ITA. This is in contrast to forward-looking FTAs, which can be designed to anticipate the development of new technologies, providing tariff-free trade into the future.

There is a strong body of evidence to suggest that preferential trade agreements are positively correlated with integrated supply chains.[13] With fewer burdensome tariffs and simplified import procedures, on average a free trade agreement approximately doubles two members' bilateral trade after ten years in force.[14] Taiwan's exclusion from global and regional trade agreements means neither Taiwan nor its trading partners reap the rewards from the mutually beneficial gains from free trade agreements. This has implications for the global supply chains in which Taiwan is already well-integrated.

5. Taiwan's Position in Global Supply Chains

Despite global and regional political and economic disruption, Taiwan's high-tech manufacturing industry has been standing globally competitive. Characterized by rapid industrialization and solid growth since obtaining "Asian Tiger'' status in the 1960s, Taiwan's manufacturing industry has benefited from multiple iterations of government-supported industrial development initiatives. With ample support from government-funded development programs to leverage constant innovation, the manufacturing sector has maintained its competitive edge. As a key high-tech manufacturing centre, trade with regional partners has enabled Taiwan to occupy a critical role in facilitating and encouraging regional economic development. This is due to the positive spillover effect of Taiwan's domestic high-tech manufacturing, which encourages increased R&D and trade with regional partners.

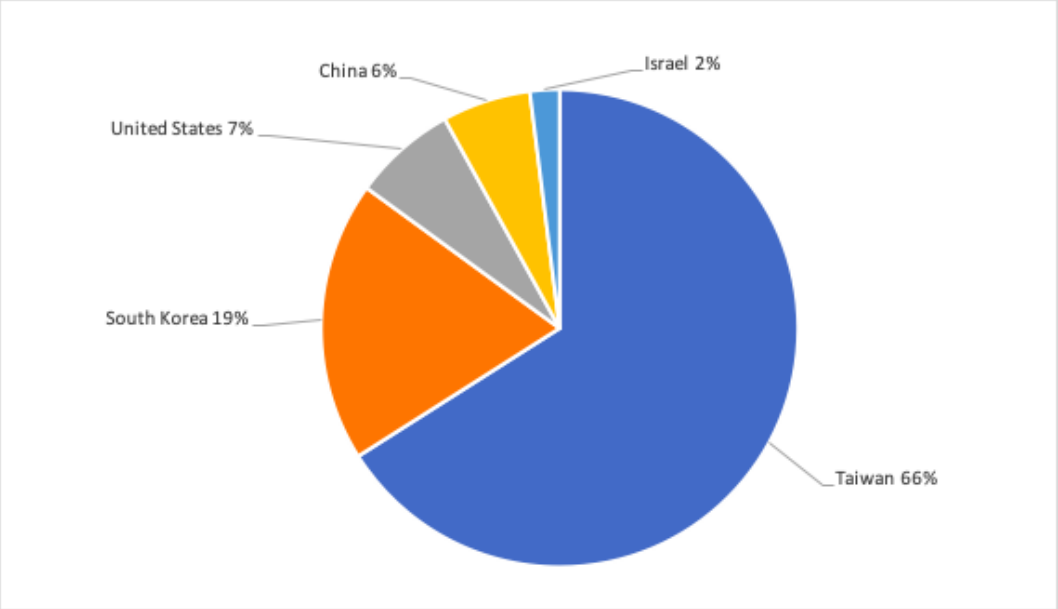
In 2019, GVC-related trade accounted for 60.04 percent of Taiwan's gross trade.[15] In comparison, Taiwan's trade in final goods accounted for only 25.64 percent of gross trade in the same period.[16] This means that Taiwanese manufacturers participate heavily in regional and global value chains. This is especially true of high-tech manufacturing -- Taiwan's most important industry, with ample prospects for future growth. But the industry is subject to intense competition from around the world. Though Taiwan's manufacturers are currently well-positioned in global markets, continued success will depend on unhindered trade with regional and global partners.

A. Semiconductors

Semiconductors are ubiquitous in daily life: a key component in consumer, industrial, automotive, and communications electronics. Given the competitive nature of these industries, the market rewards innovative companies that can develop smaller and faster semiconductors. Over the next decade, the semiconductor industry can expect robust growth, especially for automotive and Artificial Intelligence applications.[17]

Taiwan dominates the semiconductor manufacturing industry. Taiwan Semiconductor Manufacturing Co. (TSMC) alone accounted for 56 percent of global market share in 2020. [18] Given the market share of Taiwanese manufacturers, it is no wonder that these companies are key to the global electronics supply chain. Not only do Taiwanese manufacturers account for the majority of total semiconductor production – they also specialize in manufacturing the smallest available semiconductors, with TSMC accounting for nearly 90 percent of chips between five and ten nanometers.[19] With constant research and development, the company expects to soon bring even smaller semiconductors to market, maintaining its leading market position into the future.[20] Taiwan's firms contribute over 21% of total global wafer capacity.[21]

Figure 2: Semiconductor Foundries by Total Market Share, Q1 2021



Source: Statista (2021)

Semiconductor manufacturing is a key strategic industry not only because of growing demand and ubiquity in electronic devices, but also because semiconductors are necessary for military and communications technologies. This means that governments like the United States and China provide ample support to their domestic semiconductor industries. Companies like Intel in the US and China's Semiconductor Manufacturing International Corporation may see increased government support amid US-China tensions, as the governments compete for technological superiority.

Taiwan's semiconductor industry has dominated global markets and remained key to electronics, automotive, and communications technology supply chains. Maintaining this market position will rely on Taiwanese companies' ability to consistently innovate in response to growing competition. As a result, the Taiwanese semiconductor industry is already key to global communications, electronics, and automotive supply chains. Taiwan's semiconductor industry has provided clear benefits to downstream electronics manufacturers in the region, as regional trading partners rely on Taiwanese-made semiconductors for their production. The Figure below highlights the dominance of Taiwan's contract manufacturers by market share.[22]

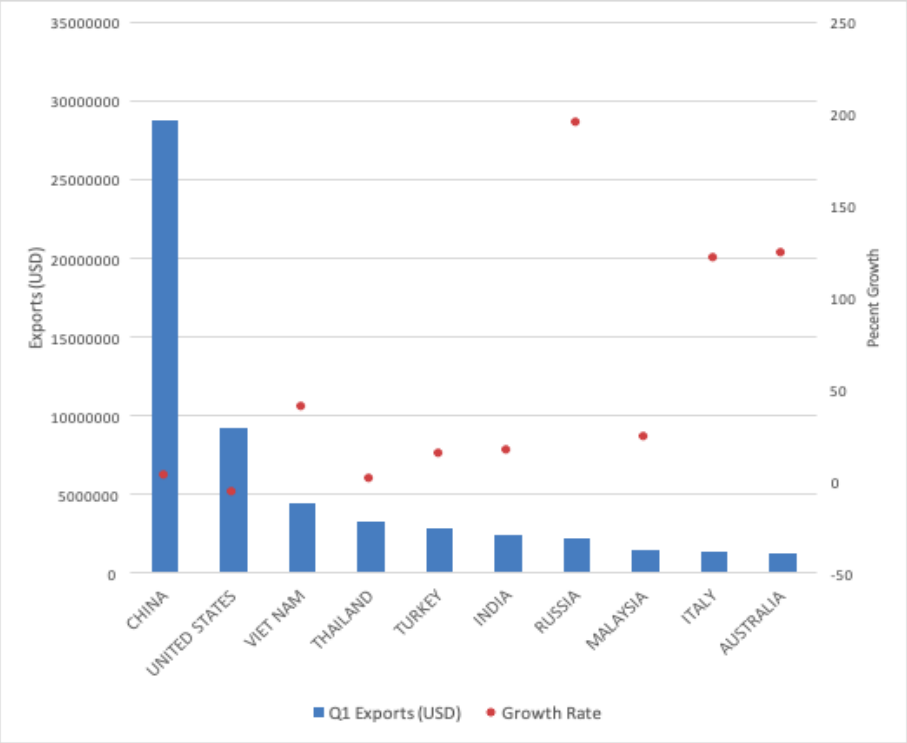
Reduced production due to the pandemic combined with ever-rising demand has led to an unprecedented world-wide shortage of automobile semiconductors. Signaling the importance of the Taiwanese semiconductor industry, the US government has made direct appeals to Taiwan's government to address the shortage.[23] Though Taiwanese manufacturers plan to step up semiconductor production, the shortage is likely to persist until 2022.[24] The shortage has both

highlighted Taiwan's dominant position in the semiconductor industry, as well as the industry's vulnerability to demand shocks.

B. Machine Tools

Machine tools are essential to industrial production of all kinds. Traditionally, the machine tool manufacturing industry has been dominated by German, Japanese, and US companies, though Chinese manufacturers are claiming an ever-increasing market share.[25] Leveraging precision manufacturing expertise, Taiwan is home to a growing machine tool industry; Taiwan ranked 5th in export volume in 2019 and 7th in annual output value in 2017[26]. Though the industry suffered a slowdown in 2020 due to reduced demand associated with the pandemic, the Taiwan Machine Tool and Accessory Builders' Association expects growth of between 15 and 20 percent in 2021.[27] From January to April 2021, Taiwan exported US$63.3 billion in machine tools, with over 40 percent of the total going to China, followed by US, Vietnam, Thailand, etc.[28] This has demonstrated that there is also close trade relations and supply chain among Taiwan and countries in this region in this industry.

Figure 3: Total Exports of Machine Tools, Q1 2021



Source: Bureau of Foreign Trade, Ministry of Economic Affairs, Republic of China (Taiwan), 2021.

The industry, centered almost entirely around the city of Taichung, enjoys ample government support through the Smart Machinery Initiative. The Initiative seeks to foster innovation to boost Taiwanese machine tool exports, seeking to attract foreign investment and enhance research and development capabilities.[29] This is especially important for the machine tool manufacturing industry in Taiwan, as the market is highly fragmented and competitive.[30] Through the initiative, the Taiwanese government hopes to diversify exports while capitalizing on high-tech manufacturing expertise.

Uncertainty around the US-China trade dispute continues to threaten growth across the machine tool industry in the short term. As machine tools are inputs in many forms of industrial production, a trade war-induced slowdown in the US and China means reduced demand for Taiwanese machine tool manufacturers. An additional challenge for Taiwanese machine tool manufacturers is that competitors from other countries benefit from trade agreements, enhancing competitiveness. Without such agreements, Taiwanese producers face both tariff and non-tariff barriers to trade.

C. Textiles

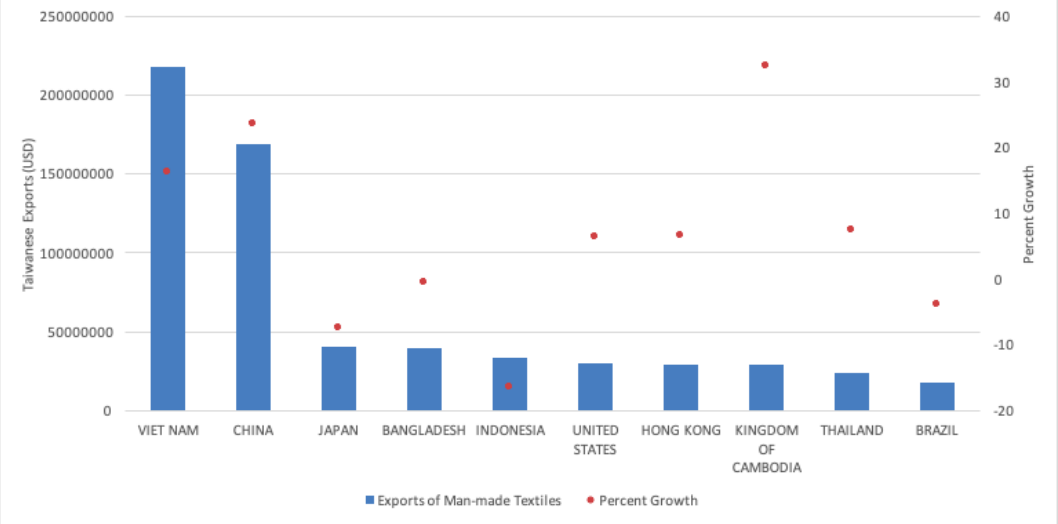
The textile industry is truly global, with many countries home to a large textile industry. However, different segments of the market are dominated by different countries -- Italy, for example, specializes in luxury fabrics, while China produces huge amounts of inexpensive cotton for their domestic garment industry. Though Taiwan has long been home to a textile industry, manufacturers have increasingly pivoted towards innovative man-made and petrochemical-based fibers to maintain their competitive advantage.

Taiwan's textile industry is highly export-oriented, with total exports reaching US$7.54 billion in 2020.[31] Many of these products are "functional" textiles, where Taiwanese firms contribute 70 percent of global supply.[32]

However, textile exports have steadily declined over recent years as international competitors saturate the market, with everything from cheaply-made cotton to high-tech petrochemical fibres. But as the market shifts toward sustainable fibres, Taiwanese producers on the cutting edge of the sustainable textile industry can expect to benefit. Already, several major global brands have pledged to transition

to eco-friendly materials in the next five years. This means that there will soon be huge demand for recycled and sustainably-produced synthetic textiles. Under the government-funded Textile Export Promotion Plan, Taiwanese manufacturers are showcasing sustainable man-made textile products to meet future demand.[33]

Figure 4: Taiwanese Man-made Textile Exports by Country, Q1 2021.



Source: Bureau of Foreign Trade, Ministry of Economic Affairs, Republic of China (Taiwan), 2021.

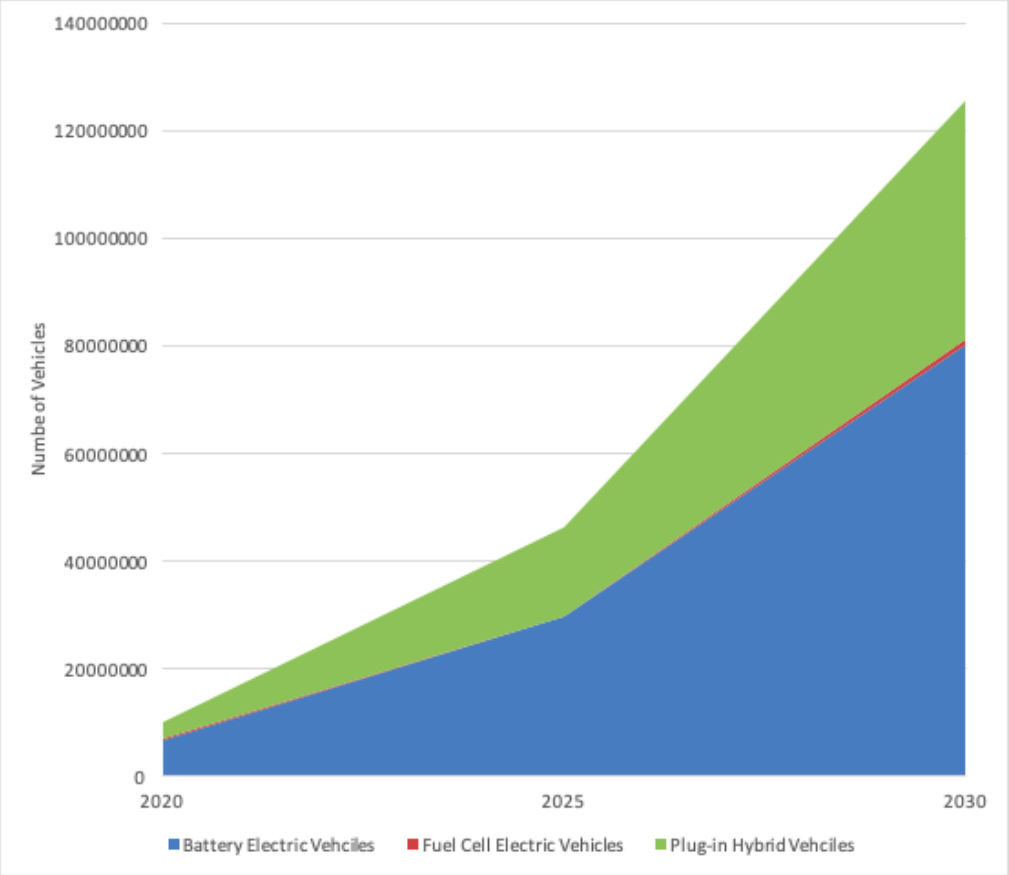
The high-tech textiles manufactured in Taiwan are generally destined for use for clothing items like rain jackets and athletic wear. Though demand for high-tech fabrics is on track to grow in the future, Taiwan is far from the only country to produce man-made fibers for downstream garment manufacturing. As a member of the WTO but with few FTAs, Taiwanese textile exports face both tariff and non-tariff barriers. This makes Taiwanese textile manufacturers less competitive in a highly fragmented international market. To take one example, Kae Hwa in recent years has been compelled to shift some production from Taiwan to Malaysia, so as to avoid 15-20% ASEAN import duties on Taiwan-made technical textiles. Under the China-ASEAN free-trade agreement, such imports into China from ASEAN countries are tariff-free. The company is considering opening a second factory in Malaysia to serve both the ASEAN and China markets under the preferential tariff regime. [34]

D. Electric Vehicles

In 2020, Electric Vehicles (EVs) accounted for a total 4.2 percent of new car sales worldwide.[35] This number is expected to increase dramatically in coming years as consumers increasingly switch to electrically-powered vehicles, reflecting United Nations climate action goals.[36] Taiwan is well-positioned to benefit from the growing demand, as the country is a major producer of several of the components needed for EVs, including lithium-ion batteries and electric motors. Taiwan's firms already contribute 75% of electric auto parts to Tesla.[37]

Taiwan has long been home to dozens of companies that manufacture vehicle components, both for domestically-produced vehicles and for export. As demand for EVs rises, so too does demand for the necessary high-tech inputs, like long-range batteries and efficient electric motors. Taiwanese companies are well-positioned to benefit from this growing demand, as the country's EV component manufacturing industry is innovative and forward-looking. Already, Taiwanese companies manufacture EV components for major global automotive brands. Taiwanese companies have successfully leveraged their high-tech and precision manufacturing experience into the EV industry, integrating into key positions in the global EV supply chain.

Figure 5: Projected Global Demand for Electric Vehicles



Source: International Energy Agency (2021).

Taiwan's EV component manufacturing industry is well-positioned to harness rapidly growing demand. In part, this is due to the fact that the EV industry requires constant innovation. As a relatively new technology, the industry rewards companies that can produce new and better technologies. Taiwanese manufacturers, though well-positioned to benefit from growing demand for EVs, will face intense competition from manufacturers abroad. These producers are likely to benefit from bilateral and regional FTAs, whereas Taiwanese manufacturers cannot.

6. Vulnerabilities

Though Taiwanese high-tech manufacturers are well-integrated into global supply chains, recent events have highlighted Taiwan's vulnerability to external shocks. Close trading relationships with both the US and China during the ongoing US-China trade dispute have underscored the need for Taiwan to diversify trading relationships to boost economic resiliency. A further difficulty can be found in

Taiwan's growing COVID-19 outbreak. Though Taiwan has weathered the pandemic better than most other countries, the recent growth in locally-transmitted cases has shown that the virus can spread rapidly among the unvaccinated, and the global pandemic is far from over.

FTAs have a key role in addressing these vulnerabilities, assuring that Taiwanese manufacturers can maintain their key positions in the international market and encouraging further integration into global supply chains. Expanded participation in FTAs addresses not only Taiwan's vulnerabilities, but also helps Taiwan's trading partners hedge against supply chain disruptions. As trade agreements stand to deepen integration of economies across borders, so too do they encourage reciprocal investment in member countries. In turn, this would help to build geographically diverse and resilient supply chains. Building resilience is key -- now more than ever. Given the global and critical role of Taiwan's semiconductor industry, including Taiwan in the CPTPP would ensure that regional supply chains can be both more comprehensive and resilient.

7. Benefits of Inclusive Trade Cooperation

As the pandemic continues, it has become increasingly clear that a global recovery will depend on deepening economic cooperation, facilitating trade, and lowering barriers to access for global markets. Though merchandise trade volume is expected to rebound strongly through 2021, new waves of infections threaten the global economic recovery. A sustained recovery will depend on, among other factors, trade regimes that allow for open and easy trade in goods and services.

Trade agreements are a key vehicle for trade diversification -- not only do FTAs lower barriers to trade, they also allow for much-needed flexibility and resiliency. Taiwan stands to play a vital role in boosting this flexibility and resiliency if given the opportunity to participate in an expanded list of FTAs. Given the vulnerabilities in global supply chains highlighted both by the pandemic and the US-China trade war, further integrating Taiwanese manufacturers into supply chains would offer clear advantages to CPTPP countries and beyond. Existing multilateral trade deals offer a key opportunity to further integrate Taiwan into regional and global supply chains.

Already, Taiwan has close economic relations with CPTPP members. In total, CPTPP countries account for more than twenty percent of Taiwan's exports.[38] Japan, Singapore, Malaysia, and Vietnam -- all CPTPP member states -- are among

Taiwan's top ten trading partners.[39] These countries depend on high-tech Taiwanese manufacturers for their domestic downstream manufacturing capabilities, as Taiwanese goods are key inputs for a number of manufactured goods.

Despite exclusion from most regional trade agreements, Taiwanese manufacturers maintain their competitive edge in high-tech exports. This is particularly apparent when considering Taiwanese manufacturers' dominance of the semiconductor industry. But for all their success under current trade regimes, Taiwanese manufacturers cannot maximize their participation in the global economy without access to key multilateral trade agreements.

8. Conclusions

As the world recovers from the COVID-19 pandemic and feels the consequences of the ongoing US-China trade dispute, the benefits of diverse and resilient supply chains are more clear than ever. Trade agreements help to foster the growth of these resilient supply chains -- but as it stands, Taiwan participates in few FTAs. Taiwanese participation in regional free trade initiatives could deepen regional integration, offering widespread benefits and economic growth.

Thanks to its high-tech manufacturing industry, Taiwan is well-positioned to deepen its integration with its regional peers despite ongoing disruptions to global trade, Taiwanese manufacturers remain key to many regional and global supply chains. But the associated benefits will remain elusive to both Taiwan and its trading partners until regional FTAs like CPTPP are extended to include Taiwan. Given the clear benefits of the agreement to its participants, as well as the need to diversify and strengthen supply chains, Taiwan's participation in CPTPP is a clear path forward. CPTPP signatories should recognize these potential benefits and actively seek Taiwan's participation in the agreement.

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