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Sri Lanka and Global Manufacturing Value Chains: Performance, Prospects and Learnings from China

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Abstract

Global manufacturing value chain (GMVC) and production sharing is an increasingly important phenomenon that shapes worldwide manufacturing and trade patterns, which is directly relevant for countries' success in export diversification and industrial upgrading. Notwithstanding the significant liberalization reforms in the late 1970s, Sri Lanka's potential to reap gains from joining GMVCs remained constrained by political instability and policy uncertainty for over three decades. However, the successful operation of many GMVC firms during these challenging times clearly points to the country's potential to regain lost ground during the post-conflict era. The review of China's experience provides salient lessons for Sri Lanka in designing better policy initiatives and strategic interventions. Focussing on trade and investment reforms and combining them with a proactive investment promotion campaign, investing in innovation capabilities, and overall reducing 'service link costs' is vital for fitting domestic firms into GMVC trade and into global production networks.

Keywords: Sri Lanka; China; Global Manufacturing Value Chains (GMVCs); supply chains; Foreign Direct Investment (FDI); trade,

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1 Introduction

Sri Lanka and China have enjoyed historically strong diplomatic and economic relations since the decades following independence from the British. The Belt and Road Initiative (BRI) is the latest avenue for partnership between the two countries. In addition to the infrastructure financing opportunities and projects introduced through the BRI, there is an ongoing effort to leverage the BRI for knowledge exchange and cross-country learning between China and partner countries like Sri Lanka, in the spirit of South-South cooperation and capacity building.

Successful integration of the manufacturing sector into production networks has played a vital role in employment generation and poverty reduction in China and other high-performing East Asian countries. It has been a distinct feature of China's recent economic development in general and industrialization in particular. As know, in a labour-abundant economy, assembly activities within production networks tend to be relatively more labour-intensive (and hence 'pro poor') compared to 'conventional manufacturing' (production from start to finish in just one country) of the given final product. It opens up opportunities for countries to participate in a finer international division of labour, to specialize in different slices (tasks) of the production process in line with their relative cost advantage. This kind of integration was a key part of China's becoming a significant player in major supply chains.

Whereas Sri Lanka's post-independence, and later post-war, economic development has witnessed limited industrialization and limited participation in such value chains. In the spirit of cross-country learning and exchange outlined earlier, this paper aims to review Sri Lanka's experience in global manufacturing value chains and policy shifts over time, set in the context of overall trade and investment performance and prospects. Furthermore, a crucial part of the paper is a discussion of Sri Lanka's learnings from China's experience and the strategic policy framework relevant to the country in formulating a more focussed approach to trade policy formulation. The rest of the paper is organized as follows:

2 Country context

Sri Lanka is a low middle-income developing country with a population of 21.9 million and a per capita GDP of US$ 3,382 by 2020. Despite a twenty-six-year civil war, Sri Lanka has seen relatively strong growth over the long-term, achieving an average growth rate between 2.5 - 5.0 per cent between 1960 and 2009. Since the end of the war in 2009, growth rose sharply as the country enjoyed a so-called 'peace dividend', with an intense public expenditure programme on infrastructure development and expansionary monetary policy that fuelled import-led consumption, which together boosted domestic economic activity.

Gains up to this point had been bolstered by historically substantial investments in health and education, resulting in solid human development indicators, some of the highest in Asia (see Table 1). Steady growth and the end of the conflict translated into a reduction in poverty across the country. Whereas in 2002, the headcount poverty rate was 22.7 per cent, by 2012/13 (the most recent available data point), poverty had declined sharply to 6.7 per cent (Department of Census and Statistics 2013).

Table 1: HDI Rank and Value: Sri Lanka in Regional Comparison, 2020

Country	HDI Rank	HDI Value
Malaysia	62	0.810
Sri Lanka	72	0.782
Thailand	79	0.777
China	85	0.761
Vietnam	117	0.704
India	131	0.645
Bangladesh	133	0.632
Pakistan	154	0.557

Source: UNDP Human Development Indicators

However, by the ten-year mark since the end of the war, the economy had exhausted the post-war growth bump and began a secular growth slowdown. Following a post-war acceleration of GDP growth during 2010-12, averaging 8.5 percent year-on-year, during 2013-2019, growth averaged around 4 per cent (with a contraction of 3.6 per cent in 2020 due to Covid-19). Notably, much of Sri Lanka's growth has come from internal sources, which is surprising for a small economy and is perhaps a reason for the recent growth slowdown.

Between 1950 to 2020, the industry sector grew from 19.6 percent of GDP to 26.2 percent, peaking at 30.6 percent in 2006 and plateauing at 26-27 per cent for the last five years (Central Bank of Sri Lanka 2020). On the other hand, the services sector grew from 36.9 percent to 59.7 percent over the same period and increased its share by 3 per cent in just the past five years. Within the industry sector, manufacturing accounts for 15.6 per cent of GDP (in 2020), and sub-sectors like construction, quarrying, and utilities account for around 7.5 per cent. While this is mainly domestic services, there has been a steadily growing international travel and tourism, transport services and information technology (IT)- services industry. Notably, IT services now contribute over one-third of services exports and 7.8 per cent of total national exports (Central Bank of Sri Lanka 2020). Comparatively, traditional and more established sectors such as rubber and tea contributed 6 percent and 9 percent, respectively, after being in existence for many decades.

Sri Lanka's firm distribution is skewed towards smaller firms. According to the first and last Economic Census conducted in 2013/14, 78.1 per cent of firms are Micro, Small and Medium-sized Enterprises (MSMEs), and around 22 per cent are large firms (see Table 2).

The following section, 2.1., discusses Sri Lanka's recent trade and investment performance in more detail.

Table 2: Distribution of industries in Sri Lanka, 2013/2014

	Firm size (by no. of employees)			Total
	Less than 50 (Micro & Small)	50 – 99 (Medium)	100 & above (Large)	
Number of establishments	3,187	1,196	1,233	5,616
As a share of total (%)	56.8	21.3	21.9	100

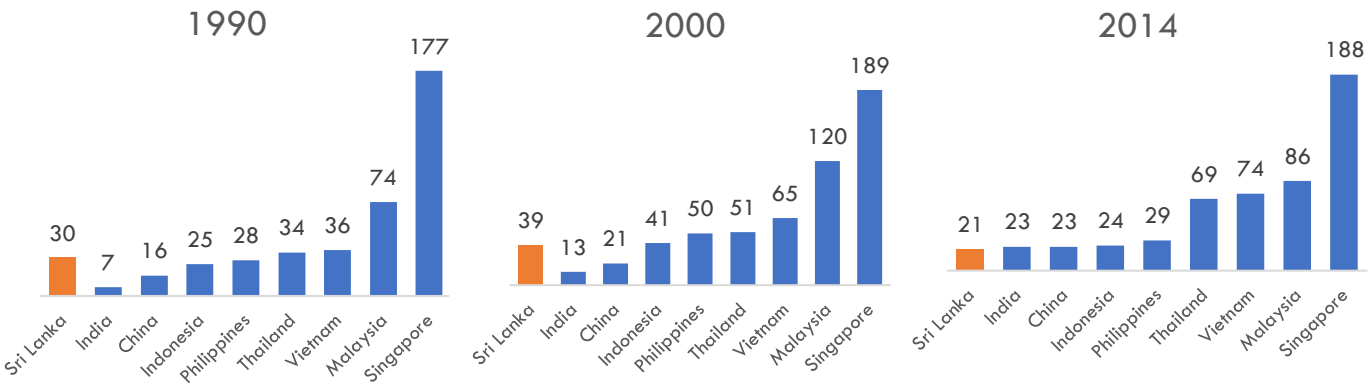
Source: Department of Census and Statistics

2.1 Sri Lanka's recent trade and investment performance

Currently, Sri Lanka's source of growth is mainly internal, which means trade (exports and imports) form a smaller share of GDP compared to previous years. The trade-to-GDP ratio has fallen drastically from 88 percent in 2000 to just 50.5 percent in 2019. Comparatively, by 2019, in Vietnam, this ratio exceeded 200 percent, 147 percent in Malaysia, 132 percent in Thailand, and 82 percent in South Korea. Even a latecomer like Bangladesh is now at 48 per cent. For Sri Lanka, the share of exports in GDP declined from 30 percent in 1995 to 22 per cent in 2019. Sri Lanka's export performance was particularly weak after the mid-1990s and especially low relative to peers since the early-2000s.

According to the Harvard's Centre for International Development (HCID, 2018), Sri Lanka's long-run growth pattern (1990-2014) has a low contribution from exports – just 1.07 percentage points of growth came from exports. This ratio is the lowest among regional comparators like Singapore (11.5 per cent), Vietnam (6 per cent), Thailand (3.3 per cent), Malaysia (4.3 per cent), India (1.7 per cent), and China (2.3 per cent).

Figure 1: Exports as a share of GDP (%): Sri Lanka and regional comparators



Source: World Development Indicators

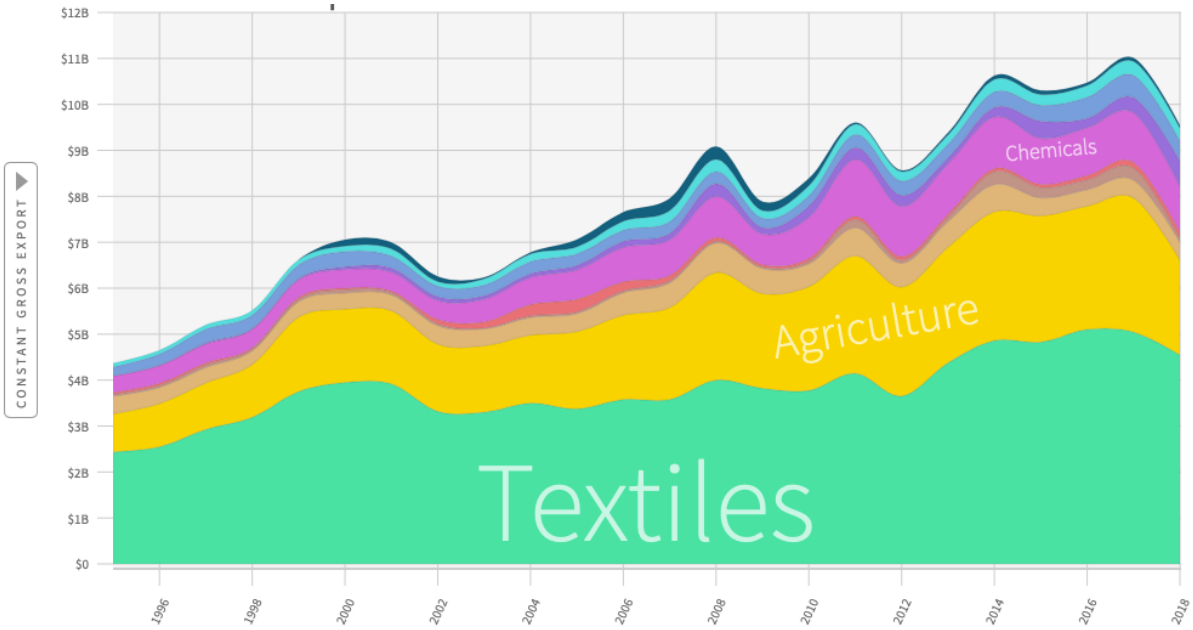
Sri Lanka's export basket remains concentrated both in terms of products and sectors. In terms of products, export diversification (or the lack thereof) is best illustrated using the product space maps and the 'Atlas of economic complexity' from Harvard's Centre for International Development. Sri Lanka's export basket composition has remained

essentially unchanged since the mid-1990s. It is noteworthy that during the early-1990s, Sri Lanka experienced the last major wave of reforms–the so-called 'second wave' after the initial 1977 first wave of liberalization.

Regarding the sectoral composition of exports, Sri Lanka is concentrated heavily in apparel and agricultural products and is hardly in more advanced manufacturing like machinery and electrical products. It is precisely the latter that is associated with global manufacturing value chains. Sri Lanka's export basket also ranks low on the product complexity index, implying they are not well linked to other supply chains in the economy or other manufacturing value chains globally (in contrast to electronics and machinery components).

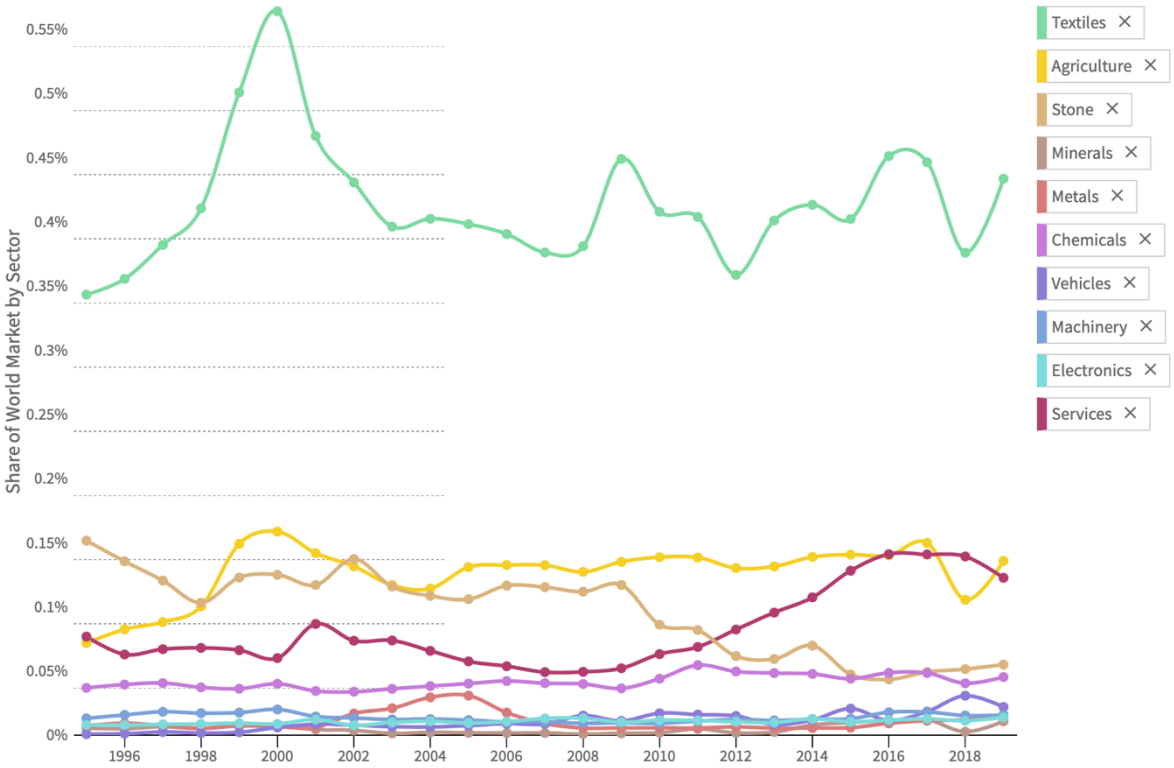
Sri Lanka's global share in various goods export categories has also remained stagnant over time, and only services exports have improved in recent years (see Figure 3).

Figure 2: Composition of Sri Lanka's exports over time



Source: Harvard CID Atlas of Economic Complexity

Figure 3: Sri Lanka's global share of exports by product type



Source: Harvard CID Atlas of Economic Complexity

In terms of foreign direct investment (FDI), Sri Lanka's performance has been modest. While the first wave of liberalization reforms yielded an interest among electronics investors (see Box 1), the outbreak of the civil war in 1983 drove those investors away. After that, Sri Lanka could only attract mostly footloose textile and garments manufacturing FDI looking to gain from low labour costs and trade preferences (like the Multi-Fiber Agreement or 'MFA'). In limited volumes, Sri Lanka attracted FDI into machinery and components manufacturing – which is of interest to the focus of this paper – largely from medium-sized foreign investors. The subsequent section discusses this topic in more detail. Overall, however, the country's adverse political and security conditions for twenty-six years and unstable policy frameworks (tax and regulatory, primarily) held back investor interest even after that. Sri Lanka's limited trade integration– considering bilateral or regional trade agreements–, lack of unilateral trade liberalization– instead, increased trade protectionism– and slow progress on trade facilitation was also discouraging efficiency-seeking investors in manufacturing industries, which would need to be located in open economies and key nodes of their supply chains. Meanwhile, competitors in the region – Singapore, Vietnam, Thailand, Malaysia, Philippines, and India – provided more compelling reasons for FDI investors than Sri Lanka.

Box 1: Lost FDI opportunity for early GMVC participation

In response to the first wave of liberalization in 1977, Sri Lanka received strong interest from foreign investors in manufacturing. During the 1978-1985 period, seven electronics and electrical goods producing firms were on the Greater Colombo Economic Commission (later the Board of Investment) investment approval list. It included two large US multinational enterprises (MNEs)– Motorola and Harris Corporation. Motorola incorporated a wholly-owned subsidiary company in 1980, with planned initial employment of the assembly plant of over 2,600 workers. At the same time, Harris Corporation established a wholly-owned subsidiary company and even started building an assembly plant with planned initial employment of 1,850 people. With the outbreak of the conflict in 1983, they left for locations in Malaysia, shattering Sri Lanka's hopes of joining regional and global GMVCs in electronics and becoming an export hub in this sector. At the investment agreement-signing ceremony in Colombo in 1980, W.D. Douglas, the vice-president of Motorola, had reportedly said that political stability was the primary consideration wherever they made new investments (Weigand 1983). There is evidence of 'herd mentality in site selection by multinational electronics firms, particularly if the 'firstcomer' is a major player in the industry. It is plausible to assume that if the Harris and Motorola projects had succeeded, other multinational FDI would have followed suit.
Source: Athukorala (2020)

2.2 Trade integration and Free Trade Agreement (FTAs)

Sri Lanka reached its first bilateral Free Trade Agreement in goods with India in 1998 (the ISLFTA).[1] Since then, Sri Lanka has also signed an FTA with Pakistan (PSFTA)[2], a regional goods agreement with South Asia in 2006 (SAFTA), and the Asia Pacific Free Trade Agreement (APTA, called the 'Bangkok Agreement'[3]). After a hiatus of nearly two decades in FTA negotiation, in 2018, Sri Lanka negotiated a comprehensive FTA with Singapore, which was the country's first agreement covering services, investment, economic cooperation, and other aspects beyond goods.

Efforts to expand the ISFTA to a more comprehensive agreement – the Economic and Technology Cooperation Agreement (ETCA)– stalled due to stiff domestic opposition. Negotiations on new bilateral FTAs with China, Thailand and Bangladesh also did not progress. Meanwhile, Sri Lanka enjoys preferential tariff access to the United States under the GSP (Generalized System of Preferences), and the European Union under the GSP Plus scheme. Sri Lanka also has a Trade and Investment Framework Agreement (TIFA) with the former.

Amidst the limited progress on bilateral liberalization through FTAs – already argued to be of little use in GMVC trade (see Box 2) – Sri Lanka has made even less progress on unilateral liberalization. In fact, over the last decade, successive Sri Lankan governments have used the so-called "para-tariffs" as a means to raise revenue and protect incumbent domestic industries. Sri Lanka has around 1,446 tariff lines a border tax called a CESS and over 4,000 tariff lines with Ports and Aviation Levy (PAL). For several protected tariff lines, the total border tax rate ranges from 20 to 150 percent, making an import duties system that is complex, uncertain and non-transparent. They are complex because numerous para-tariffs vary at the product level; they are uncertain because frequent changes in the para-tariff became the norm (sometimes by what has popularly come to

1 ISFTA was signed on 28th December 1998 and entered into force with effect from 1st March 2000

2 PSFTA came into force on 12th June 2005 and both countries completed phasing out commitments by 2009-20

3 The Asia-Pacific Trade Agreement (APTA), previously known as the Bangkok Agreement and renamed 2 November 2005,was signed in 1975. It is the oldest preferential trade agreement between countries in the Asia-Pacific region. Six Participating States- Bangladesh, China, India, Lao PDR, Republic of Korea, and Sri Lanka are the parties to the APTA

be known as “midnight gazette”); and non-transparent because changes in schedule and firm-level exemptions lack predictability.

Box 2: Free Trade Agreements (FTA) and Rules of Origin (RoOs) matter for supply chains

The trade effects of any FTA depend very much on the nature of the RoOs built into it. The conventional value-added criterion is not virtually applicable to this form of trade because tasks undertaken by each country in the value chain normally generate relatively small domestic value addition. The only viable option is to change the tariff line based (HS-shifting) RoOs, but in most cases, trade in final goods and parts and components belong to the same tariff code – even at the most detailed level of classification, the HS 6-digit level. These administrative problems could result in unnecessary customs clearance delays and open up opportunities for rent-seeking through tweaking of RoOs.

According to Kaminski and Ng (2013), “[The] para-tariff regime not only exacerbates the worst features of Sri Lanka’s MFN tariff schedule, i.e., high and dispersed rates, but also raises the levels of nominal protection to levels no longer encountered amongst WTO members” (page 15). According to the Institute of Policy Studies (IPS) (2015), “Despite the simplifications in 2010, Sri Lanka’s import tax regime is beset with non- transparency and complexity, with little predictability in view of constant ad hoc changes. The system appears to be highly discretionary, with research and anecdotal evidence suggesting that it favours individuals and groups with lobbying skills and access to bureaucrats and politicians” (page 26).

In 2017 and 2018, the government embarked on a process of rolling back these para-tariffs along with a ‘Trade Adjustment Programme’, which would assess impacts on firms and workers based on an objective, evidence-based and depoliticized manner. The former policy did not succeed– with CESS and PAL para-tariffs on around 2000 items being removed – but was put on hold thereafter. The Cabinet approved the latter programme, and initial steps were taken to establish the Trade and Productivity Commission that would implement the programme, but it was not pursued after the change of government in 2019.

Firm-level interviews confirm the presence of a duality where existing exporting industries benefit from trade protections while potential new export industries are disadvantaged. Firms in established export industries did not raise the issue of import charges as a constraint and cited various exemptions that they receive. Firm-specific exemptions do not fully address the problem due to their uncertainty and high transaction costs. They also create a bias against backward linkages between exporters and the rest of the economy. Following sweeping import restrictions introduced with the onset of the Covid-19 pandemic in March 2020, this issue has worsened.

Since mid-March 2020, the government has suspended financing facilities on selected imports and outward payments in foreign exchange. It also restricted imports of selected commodities and imports subject to value addition criteria coupled with conditional use of foreign exchange (see Annex 1). The import value of controlled items based on imports data for the last three years represents around 1/3 of the total value of imports as calculated in Table 3. Under the WTO, these measures can be recognized as de facto Quantitative Restrictions (QRs) under defined conditions. QR is a measure to limit exports or imports and, in general, is not expected to be instituted or maintained under the General Rule of Art. XI of GATT 94. Since the initial roll-out, the measures have

changed multiple times over the past year, making interpretation difficult and imposing unnecessary transactions costs on firms.

Table 3: Import value of controlled items

Item	Import Value in US$ Mn.		
	2017	2018	2019
Consumer - (Essential Food)	951	607	522
Consumer- (Food)	627	528	352
Consumer (Non-Food)	1570	2259	1456
Intermediate Goods	2839	2387	2043
Investment Goods	1386	1085	935
Total imports of controlled items	7373	6867	5309
Value of Total imports	21316	20202	15889
% of Controlled imports	34.%	34.1%	33.5%

Source: Author calculations based on ITC Trade Map data

To participate in global supply chains, firms must import materials, often under the same product codes as they export. In general, materials costs make up a large share of total manufacturing costs. Additionally, the more materials-intensive industries are, the more vulnerable to high and uncertain import charges.

In its latest annual report, Sri Lanka's central bank has acknowledged that trade openness remains a critical point of weakness in investor attractiveness. As they put it:

> *"Complexity of the tariff structure, prevalence of non-tariff barriers and lack of border clearance efficiency have led to very low trade openness rank of 140th position out of 141 countries in the Global Competitiveness Index. Sri Lanka's lacklustre performance in relation to regional trade blocs has been disadvantageous in connecting to global supply chain networks. In line with Government policy, all the foreign trade agreements are being revisited and necessary adjustments are expected in order to improve the bilateral trade balances with Sri Lanka's key trading partners" (pg. 62)*

3. Policy orientations and recent efforts

From trade policy orientation, Sri Lanka has faced a see-saw approach since independence. It has ranged from autarkic policies in the 1960-70s (including nationalization of industries) to near-overnight liberalization of the economy in 1977, and then a period of internal civil strife that neutralized some of the gains from the opening up strategies.

Liberalization reforms initiated in the late 1970s put the country on the radar of foreign investors. The investment promotion policy package offered to investors in the newly established 'Free Trade Zones' under the Greater Colombo Economic Commission (the first avatar of the investment promotion agency, later succeeded by the Board of Investment) was comparable to, or more attractive than, incentive packages in most other countries (Athukorala and Rajapatirana 2000). A guarantee against the

nationalization of foreign assets without compensation was provided under Article 157 of the Constitution of Sri Lanka adopted in 1978, which provided added comfort to investors. The international media dubbed Sri Lanka 'the new investment centre of Asia' (Athukorala and Jayasuriya 2004).

The second wave of reforms in the early 1990s brought renewed vigour in FDI promotion and industrialization and continued until the late 1990s when the war escalated once more. In the early 2000s, with the advent of a temporary ceasefire, there was renewed interest in trade and investment. However, much of the economic policies aimed at securing the peace dividend and drumming up donor funding for reconstruction. As the devastating tsunami hit in 2004, economic efforts were further re-focused on reconstruction and relief, with little time and resources available for advancing trade and investment.

With the recommencement of the war in the mid-2000s and the advent of a government that was more favourable towards protecting domestic industries over trade liberalization, export-oriented industrialization and GMVC participation was of little focus. A reform-minded government elected in 2015 attempted to rapidly reverse the tide of protectionism and focus on trade and investment reforms again but was not able to remain in power for a feasible timeframe to anchor the reforms. As such, with the election of a new government in 2019, much of these initiatives were rolled back.

Sri Lanka has never had an explicit policy regarding global value chains, supply chains, or product networks. Implicitly, FDI and trade policies from time to time have been export-oriented in nature and consequently had been supportive of GMVC trade and investment. In 2016-18, the 'New Trade Policy' was a more recent effort for Sri Lanka to recast its trade policy in a singular document and encapsulate the then government's outward orientation. This policy was the first time that a policy mentioned the imperative for Sri Lanka to more actively enter Asian supply chains. While this document received Cabinet approval in July 2017, it did not become mainstream national policy as Parliament did not authorize it. With the change of government in 2019, a new effort has been underway to draft a new national trade policy in line with the current regime's manifesto and policy framework ('Vistas of Prosperity and Splendor') that prioritizes domestic production (Ceylon Today 2020, Ministry of Finance, 2020).

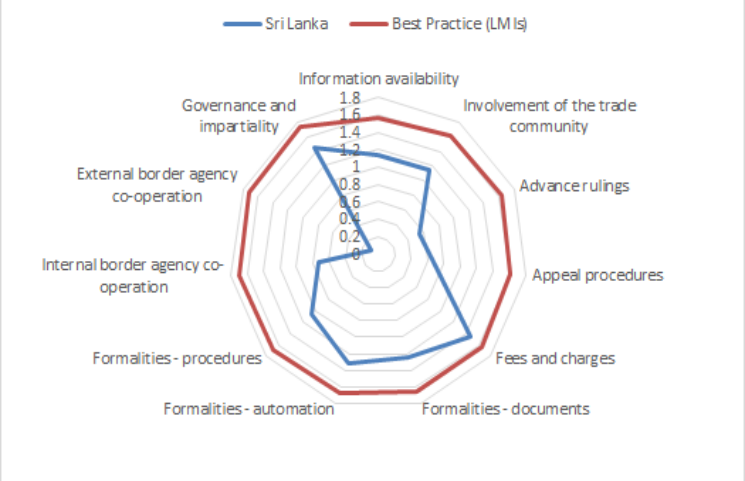
Over the last five years, efforts to improve trade facilitation (TF) have formed a more active part of trade policy. Sri Lanka was an early signatory and ratifier of the WTO Trade Facilitation Agreement and has commenced implementation of it with the early establishment of a National Trade Facilitation Committee (NTFC) to oversee TF reforms. Early progress was made in some key areas that matter for trade, such as the online publication on trade procedures via the Trade Information Portal. Covid-19 has accelerated efforts in customs digitization and some procedural change in border agencies. However, more advanced measures – like introducing a National Single Window (NSW) - progressed rapidly at first but have stalled, following the preparation of a blueprint (by an international financial institution) and submission to the government in 2018[4].

Overall, the score based on the TFA status of implementation depicts a significant distance to best practice levels, even comparing with low and middle-income countries (LMI) (Fig 6). A critical TF aspect relevant for GMVC participation – port efficiency – shows that cargo clearance time in Sri Lanka is above 51 hours (70th percentile of the

4 The World Bank supported the development of a blueprint on the National Single Window and submitted 12 documents to the Government for consideration regarding the operating model, financing and other aspects.

sample), performing relatively poor (0.29) compared with its peers and competitors such as UAE (0.57), Vietnam (0.57), and Singapore (0.57)[5].

Figure 4: Sri Lanka's performance on TFA implementation



Source: OECD Trade Facilitation Database

In 2018, the Finance Ministry announced a roadmap for reducing para-tariffs to reverse this trend. It began by removing para-tariffs on nearly 2000 tariff lines, with the rest slated for removal over a three-year horizon. However, with the constitutional crisis in October 2018, the Easter Sunday attacks in April 2019, and the change of government later the same year, these plans were abandoned. Moreover, with the onset of Covid, the problem has worsened. A highly restrictive imports regime was introduced in March 2020 to conserving foreign currency and managing the fallout of the crisis on the balance of payments (due to collapsing exports). Since then, even as exports have recovered and remittances have remained steady, the import controls have not been eased (on the contrary, they have been tightened), and new stipulations introduced on exports as well (for instance, a central bank-stipulated compulsory conversion of export proceeds within a certain period).

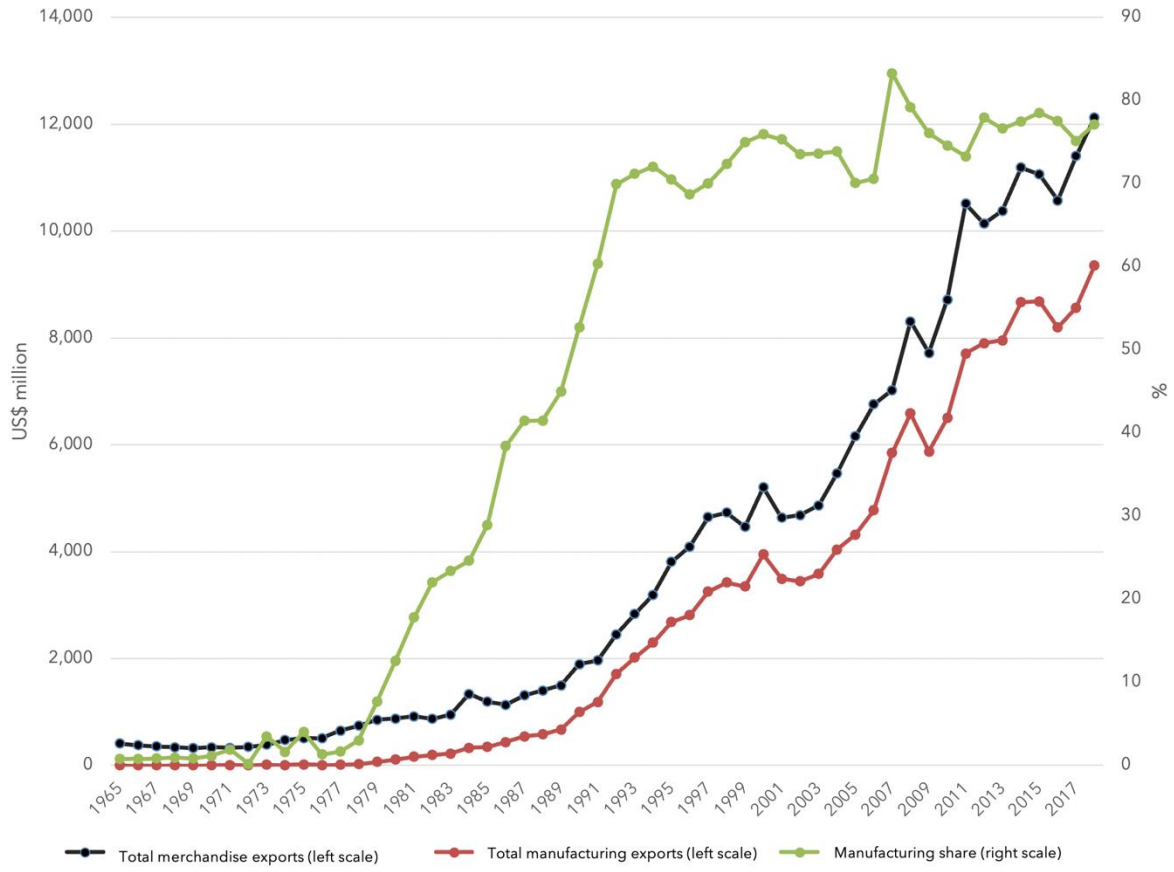
4. Sri Lanka's performance in GMVCs and prospects

This paper refers to the global manufacturing value chain (GMVC) rather than simply the global value chain (GVC), and follows the conceptual approach used by Athukorala (2014). The preference in this paper for using GMVC rather than GVC is because the term 'global value chain' is a catch-all term applied to both primary products and manufactured goods, popularised by economic geographers, sociologists and international political scientists. It refers to the firm-to-firm relations (governance structure) involved in a vertical sequence of activities, from producing a good to its final delivery to the consumer across national boundaries, of both primary products and manufactured goods. Instead, the term global manufacturing value chain (GMVC) refers to the international management of different stages of the production processes within vertically integrated global industries. GMVC is a way of organizing production such that different stages and tasks of production are located in different countries, that is, inter-firm relationships among a set of firms engaged in 'global production sharing'. GMVC

5 Based on OECF TF database

trade refers to trade within the global manufacturing value chain, including parts, components, and the final assembly. 'Parts and components' are 'relationship-specific intermediate goods' that are not sold on commodity exchanges. They are a sub-set of 'intermediate goods' (although the terms 'intermediate goods' and 'parts and components' are often erroneously used interchangeably).

Figure 5: Sri Lanka's merchandise exports, 1965-2018



Source: ITC Trademap

In considering Sri Lanka's initial prospects to enter GMVC trade, it is useful to recall that, in response to the 1977 reforms, there were seven electronics and electrical goods-producing firms on the investment approval list of the Greater Colombo Economic Commission (GCEC) during 1978-1985. This list included two large US multinational enterprises (MNEs) - Motorola and Harris Corporation (see box 1), but subsequently left due to the civil unrest. Although large MNEs shunned Sri Lanka, a sizeable number of export-oriented medium-sized firms (over 42, according to records at the Board of Investment- BOI) are currently operating in electronics, electrical and automotive components industries (see Annex 2), employing approximately 20,000 workers.

Looking at trends in Sri Lanka's participation in producer-driven GMVCs (see Table 5), the share of GMVC exports in total manufacturing exports has grown from 7.1 per cent in 2007 to 17.9 per cent in 2018, although the share of parts and components in this has remained stagnant at 74 per cent over this period.

4.1 Insights from a firm-level perceptions survey

In 2016, the author interviewed 13 firms (out of 25 initially contacted) in electronics, electrical and automotive components manufacturing for exports to understand key aspects of their operations and their motivation for investing and staying in Sri Lanka. The selection of interviewees was not randomized, but the firms represent export-oriented manufacturing companies in the sector (see Annex 3 for summary information on the firms) The interviews were face to face and based on a semi-structured questionnaire. Most firms had some form of foreign ownership. Besides, they represent a total workforce of 5,120 people, with an average size varying from 40 to 1,000 workers (medium to large-scale). Finally, the companies were founded between 1980 and 2012, with the majority of them in the last two decades. Notably, their parent firms are not large MNEs but medium-sized companies, by their home country standards.

Some key findings from the survey included the following:

- Threats from automation: The assembly processes of Sri Lankan firms within GPNs require a human touch, which was amply available due to the skills developed through the textile and garments industry. Firms reported that they are unlikely to be affected by automation and consequent re-shoring or near-shoring ('robotization' and 3-D printing) and was not a concern for all 13 firms. Most firms (10 out of 13) had plans for expanding production.
- Labour: Availability of trainable labour, including supervisory and managerial workforce, was the prime attraction of Sri Lanka. Only two firms, which are located in Katunayaka and Biyagama Foreign Trade Zone (FTZs), operate below capacity because of labour shortages (presumably because of the high cost of living in these areas and social stigma associated with working in FTZs). One of the two firms had factories in Katunayaka and Koggala. The Koggala factory had a waiting list for vacancies.
- Concerns: Several firms noted a lack of clear policy signals and some policy backsliding as a major deterrent to business operation. Additional key concerns include:
    - The sudden suspension of tax concessions for export-oriented firms
    - Reintroduction of the requirement to surrender export proceeds.
    - Continuation of various para-tariffs which increased input costs

Table 5: SL participation in 'Producer-driven' global manufacturing value chains - exports from 2007-2018

	GMVC exports, US$ mn	GMVC share in total manufacturing exports (%)	Share of Parts and components in GMVC exports (%)
2007	414	7.1	74.7
2008	558	8.5	69.0
2009	512	8.7	60.0
2010	713	11.0	57.7
2011	813	10.6	60.7
2012	862	10.9	60.9
2013	777	9.8	72.3
2014	833	9.6	75.8
2015	982	11.3	65.6
2016	875	10.7	71.5
2017	1000	11.7	73.3
2018	1676	17.9	74.1

Source: Data compiled from UN Comtrade database

5. China's experience: Lessons and Relevance

As UNCTAD (2020a) highlights: "Despite the specificities of the Chinese economy and the obvious difficulties that one would encounter trying to apply elsewhere the specific measures devised, important lessons emerge from the Chinese experience[p.2]". As discussed in Hausmann et al. (2007), Fortunato and Razo (2014), among others, when devising policies and strategies to leverage global supply chains and production networks for upgrading and structural transformation, a more strategic approach is needed. Specifically, this approach should consider countries being more selective in their choices of processes, products and markets, especially when it relates to the composition of manufactured exports. More technologically intensive and sophisticated, with greater linkages to other parts of the economy (rather than on the periphery), the more likely it is to induce structural transformation and economic diversification.

This section will discuss the lessons and relevance of China's approach to Sri Lanka.

5.1 Stage of reforms

Firstly, China's opening-up phases provide a helpful blueprint for calibrating reform efforts over time, across regions, and using innovative policy experiments – 'graduality and experimentation'. However, this relevance to Sri Lanka is somewhat limited given that the country embarked on an ambitious liberalization in 1977 virtually overnight, from over a decade of near-autarky. Importantly, however, the lesson from the Chinese experience is that of a steady and continual reform process that did not suffer from 'fits and starts'; continued with little interruption; utilized experiments that were then scaled up based on feedback and lessons learnt; and did not regress. In contrast, Sri Lanka's reform pathway has been characterized by 'stop-go' efforts, plenty of backtracking and policy instability, and significant policy backsliding. However, the difference between the country's governance model means that it is not easy to replicate the Chinese approach

to complete policy stability. One option for Sri Lanka to consider is to emulate China's approach to Special Economic Zones (SEZ), which also followed an 'experiment, learn, and scale' model. From 2003 to 2019, Sri Lanka did not build any new zones for industrial activity. Even after that, the new zones constructed by the Board of Investment did not follow any experimental or innovative model but were approached as land allocations with infrastructure improvements. Instead, adopting the SEZ approach of a geographically bound, highly liberalized business environment complemented by proactive investment promotion is something Sri Lanka should seriously consider. There is already some precedent being set for this – albeit in services – with the establishment of the Colombo Port City project (led by Chinese state-enterprise China Harbour Engineering Corporation) and the SEZ-type legal framework introduced for investors there.

5.2 Bringing in FDI

Secondly, the Chinese approach of 'bringing in' and 'going global' and its role in integrating China with global value chains is also relevant to Sri Lanka. In enhancing Sri Lanka's participation with global production networks and supply chains, 'bringing in' FDI becomes essential to build domestic capabilities, link to foreign markets, foster technology and know-how transfer and enter new value chains. Attracting inward FDI helped Chinese domestic industries transform and modernize, improve firm-level manufacturing technology and managerial capabilities. As pointed out in an earlier section, Sri Lanka's recent FDI inflows have largely been in the domestic non-tradable sectors and not in export-oriented manufacturing, which needs to be reversed if the country is to integrate more with GMVCs. Earlier examples in the electronic components industry serve as 'bright spots' that signal those opportunities are available for Sri Lanka. The second aspect of 'going global' would need to be considered practically, alongside realities of Sri Lankan manufacturing firms' size and capital availability. There are some limited examples of 'going global' in the apparel industry: Leading Sri Lankan firms like MAS Holdings have acquired operations in key markets like the United States and the United Kingdom, with mixed success.

5.3 Improving FDI quality

Thirdly, China's approach to improving the quality of inward FDI is noteworthy. Mainly, how it used policy measures to gradually adjust its targeted sectors, from the attraction of investment in light manufacturing to FDI in high-tech sectors –. This approach has relevance to Sri Lanka, as it aims for industrial upgrading and is increasingly constrained by rising labour costs coupled with changing aspirations of young people away from basic factory work. While Sri Lanka also followed similar strategic approaches - identifying sectors and gradually opening them up for FDI and liberalizing foreign ownership thresholds - those efforts have waned more recently. The current policy stance is to attract investment in general, with little emphasis on gradually improving the quality of FDI through a more targeted approach. Some recent efforts at targeting were made as part of a technical assistance programme with the Harvard Center for International Development, where sectors and sub-sectors were identified, pitch-decks prepared, and proactive contacting of investors was done. Even though some strong leads were generated - for instance, with electronic component manufacturers in Japan like Sumitomo Wiring Systems - the programme suffered from weak leadership and follow-up and did not see concrete results.

5.4 Infrastructure improvement

Fourthly, China's investment in infrastructure and the role it played in improving industrial capacities bears vital lessons. This was particularly true of connective infrastructure. As noted in the reference paper, "Since the early stages of the reform process, China carried out large-scale transportation infrastructure projects, and gradually built a network of railways, highways, aviation, and maritime infrastructure able to reach the whole country and to effectively connect the country with the rest of the world" (p.11). In Sri Lanka, the upgrading of connective infrastructure has been a key priority since the mid-2000s. A new port and airport in the Southern city of Hambantota, new expressways connecting the airport, the central province and the southern province, new terminals at the Colombo Port, and planned expansions at the main airport, improvements to hundreds of kilometres of roads are some of the steps taken to improve connectivity and transportation. Yet, much of this has focussed on road transport, and rail transport has been neglected. Rail infrastructure would be an area to look into, especially for freight transport, to reduce transportation costs for industrial activities located at a distance from the main seaports. The energy sector was another area that Chinese policymakers focussed on, with massive gains made in enhancing electricity grid capacity and power generation (including a recent ambitious drive towards renewable energy). Although Sri Lanka has near-100% electricity connectivity, financing constraints are emerging alongside economic growth and urbanization. Therefore, plans for new power plants have been delayed; grid capacity is reaching its peak and power generation remains vulnerable to adverse weather due to the high reliance on hydropower. As such, businesses face load shedding and power instability – especially those located outside of industrial zones and parks. Information Communications Technology (ICT) infrastructure is an area that China has prioritized, and Sri Lanka has increasingly done well. China increased its optical cable capacity by ten times in 15 years and rapidly increased mobile and internet penetration.

In Sri Lanka, ICT infrastructure has also improved rapidly since an ambitious telecoms sector liberalization programme in the mid-1990s. As of January 2021, 50.8 per cent of the population were internet users, and the number of mobile connections as a percentage of the population was at a staggering 141.7 per cent (there is also ownership of multiple connections per person). In 2020, computer literacy was 30.8 percent, up from 27.6 per cent in 2016. Yet, Sri Lanka is ranked 83rd out of 134 countries in the Network Readiness Index, lower than the average across the lower-middle-income group. With the advent of the 'Fourth Industrial Revolution' and the proliferation of the industrial internet, the future of manufacturing in general, and GMVC in particular, is likely to be shaped by technology. As such, Sri Lanka's digital capabilities need t improved to be ready to latch on to these shifts. China, for instance, has become a world leader in the Internet of Things (IOT)-driven manufacturing, robotization of production, among other applications., through vast investments in internet infrastructure (for instance, the 'Broadband China' programme), R&D, and human resource capabilities in these technologies. This transformation takes place not just in large cities like Guangzhou, Shenzhen, Shanghai, and Tianjin but also in smaller towns. For instance, the city of Wuxi in the Jiangsu Province hosts over 2,000 foreign companies (most of them are hi-tech), of which over 120 factories have been set up by 'Global Top 500' firms. Morevoer, the Wuxi city government alone spends up to 2.8 per cent of its GDP on R&D investment (Wijesinha 2014). Meanwhile across China, between 2011and to 2014, nearly 100 universities in the country started departments to research on the 'Internet of Things'.

5.5 Strategic industrial policies

Finally, a key pillar of China's policy orientation was strategic industrial policies towards achieving faster industrialization. As noted in the reference paper, "the government shaped the industrial structure adopting selective industrial policies" (p.13), anchored to the publication of 'industry guidance catalogues' that stipulated the policy stance. The various forms of state interventions were aimed at adjusting capital, foreign exchange, taxation, technology, and infrastructure policies to suit identified industries and allocate resources accordingly. According to the stages of industrial base upgrading, the policy stances were continuously over time that the government desired and planned. More recently, the Government has shifted away from such active intervention and instead focussed on policies that promote competition and encourage innovation overall. For Sri Lanka, this entire approach bears important lessons. As noted earlier in this section, the policy approaches in the country have been subject to much instability and inconsistency over time, thus preventing the steady upgrading of the industrial base. Policies have oscillated too sharply between those that promote competition and innovation to those that depend on state intervention.

For instance, between 1995 and 2005 the policy orientation was promoting private sector enterprise (including through Public-Private Partnerships (PPPs) while continuing public investments in infrastructure. This approach then shifted to a much more heavy-handed public intervention approach (including selective tax and trade policies benefiting sectors and individual firms, as well as expropriation of some thirty businesses) up to 2014. Subsequently, a new government attempted to reverse much of these measures and move towards more open trade policies, export-oriented FDI promotion, and the reduction of protection for domestic industries. With the change of government in 2019, once again, this stance was sharply reversed, favouring more interventionist trade, fiscal and monetary policy regimes.

Overall, if one characterizes the main pillars of policy efforts towards influencing the industrial structure, they are based on "tax tinkering" and "directed credit". The former refers to providing various tax concessions and exemptions from time to time, intending to encourage or discourage certain types of business activities. The latter refers to using banking sector regulation and moral suasion to promote credit to selected sectors (e.g. agriculture, export-oriented, etc.) and types of borrowers (e.g. SMEs, youth, women, etc.). A more nuanced, calibrated and strategic approach of the kind seen in China has not been practised in Sri Lanka so far. It would need to be considered if the country is keen to drive forward new industrial activities and integration with GMVC, like how China did. For this, an important consideration is whether Sri Lanka has the requisite state capacity – competent public officials and institutions –to drive such an agenda.

China's more recent moves to focus on R&D and technology innovation, and improving the national innovation system, as the key ingredient for industrial upgrading, also hold lessons for Sri Lanka. Sri Lanka's Gross Expenditure on R&D (GERD) is low at around 0.16 per cent of GDP, only 9 per cent of enterprises in Sri Lanka use technology licensed from foreign companies (World Bank Enterprise Surveys). Research institutions are scattered and poorly staffed[6], the quality of research outputs remains weak, fewer than one-third of tertiary enrollees study Science, Technology, Engineering and Maths (STEM) subjects, and new patent filings are less than 500 per annum.

6 Out of 69 research institutions that comprise the public R&D sector, only 11 (all universities) have more than 100 researchers. Only an additional nine have over 50 researchers.

6. Transformation with GMVC: Key policy considerations for Sri Lanka

This section provides an outline of key policy areas for Sri Lanka to strengthen its participation in GMVCs. At its core, reducing 'service link costs' should be a key focus. Service link costs refer to the costs involved in coordinating production blocks and tasks located across borders. It depends on a range of factors associated with the overall business and trade environment, with high priority given to the trade and investment policy regime and trade facilitation and logistics.

6.1 Trade and investment regime

As assessed earlier, Sri Lanka's trade regime has become more restrictive over time, hurting GMVC participation/integration. Of course, the investment regime has become more open (albeit with ad hoc changes to the tax incentives regime). The growth of global production sharing makes a strong case for concurrent liberalization of trade and FDI policy regimes as they are co-determinants of the location choice of MNEs in production networks. Within this, there is a need for proactive policies to attract MNEs to boost Sri Lanka's integration with GMVCs, particularly investment promotion campaigns with a strong signal from top political levels couple with committed follow-up.

While Sri Lanka's FDI policies have remained largely stable, the tax incentives regime has been continually changing. Moreover, particular policy and legal frameworks introduced over the last decade have been detrimental to investor sentiment. For example, the government introduced the Land Act, No. 38 of 2014 (Restrictions on Alienation, applied retroactively back to January 2013), which prohibited land transfer to a foreigner, foreign company, or local company with more than 50 percent foreign ownership, with some exceptions. The act also stipulated that foreigners must make lease payments upfront. Additionally, the government expropriated over 30 businesses between 2011 and 2013 following the Underperforming Enterprises and Underutilized Assets Act of 2011 (which was later repealed by a new Government in 2018).

6.2 Trade facilitation and logistics

As highlighted earlier, Sri Lanka's progress on trade facilitation reforms has been slow. Sri Lanka ranked 103rd out of 136 countries (drop from 96th place in 2014) in efficiency and transparency of border administration, according to the Global Trade Enabling Index (2016). To stimulate GMVC integration and participation, reducing transactions costs and increasing efficiency at the border is essential. In this, some priorities include fast-tracking the implementation of the National Single Window, complete digitization at Customs and other measures linked to border regulatory agencies, accelerating implementation of commitments under the WTO Trade Facilitation Agreement, and upgrading logistics infrastructure at the port and airport by attracting private investment and technology.

Sri Lanka has much to leverage on its location and port efficiency. A landmark privatization drive in the mid-1990s opened up Colombo Port for private terminal operations through PPPs. Handling efficiency has increased 350 percent between 2000 and 2004, from 200,186 twenty-foot equivalent units (TEUs) to 899,720 TEUs and reduction in average waiting times of vessels from 6.9 hours in 1997 to 0.9 hours in 2004 (Wijesinha 2021). At various times in the last five years, it has been ranked as the 'Busiest port in South Asia', 22nd 'Best Port in the World', and 13th 'best port in terms of

connectivity. Moving forward from here, ensuring that a) the problematic industry structure currently prevalent is resolved and b) investments in new terminals are accelerated and done so with private investment by world-class operators will be key to retaining and enhancing the competitiveness of the port. To elaborate on the former, the Sri Lanka Ports Authority is the port regulator, the landlord, a shareholder (in 3 private terminals), and a terminal operator. Sri Lanka's standing on the Liner Shipping Connectivity Index needs to improve – it currently stands at 53, above that of Vietnam at 47, and Thailand at 45, but behind Malaysia at 104 and Singapore at 114 (Wijesinha 2021). The foreign ownership cap of 40 percent would need to be liberalized in order to enhance liner connectivity and investment in the port by major shipping lines. Efforts in 2017 and 2018 to liberalize this was met with stiff resistance from incumbent domestic players.

Strategic policy formulation

While acknowledging that initial conditions and political economy environments are far from comparable, some underlying principles of China's approach and the overall thrust remain relevant for Sri Lanka - notably, China's strategic and steady approach to export orientation. To achieve meaningful results in the future, Sri Lanka's policy approaches will necessarily have to be more innovative and strategic. With frequent policy backsliding, the previous stop-go approaches need to be abandoned in favour of more consistent and integrated policy frameworks, where certain fundamental anchor elements (like tariff rationalization, trade liberalization and integration, and export-oriented FDI promotion) survive political regime changes and are implemented smartly and continually. It's clear from Sri Lanka's recent economic policy history that the era of 'big bang' reforms may be over – there have not been ambitious and courageous liberalization efforts of the likes seen in 1977-79 and in the early 1990s, and only some tinkering on the policy margins. Even as the present government enjoys a two-thirds majority in Parliament and was elected with a massive popular mandate, there have not been any meaningful efforts at reforming tricky areas like trade. The remaining approach seems to be a more steady, consistent, and incremental reform effort towards greater openness and competitiveness by forging more multi-stakeholder consensus.

Regional integration, Covid-19 and supply chain shifts

Sri Lanka needs to remain committed to regional integration and build on the gains made with the FTAs with India, Pakistan, Singapore, and South Asia, to forge closer integration with the rest of the continent. In particular, the ASEAN region, active in GMVCs and has dynamic regional supply chains. This south-south cooperation is particularly important in the context of COVID-19 and planning for a sustainable recovery. As noted in UNCTAD (2020b), "developing countries, who cannot afford comparable bailouts [to the global North], will, at all levels, need to revive the use of strategic trade and industrial policies. Learning how to successfully implement these policies can begin through closer south-south arrangements" (p.13). Sri Lanka had commenced discussions on forging FTAs with Thailand, Bangladesh, and China up to mid-2019 - these should be continued and concluded. Leveraging the relationships with Singapore and Thailand – recent chairs of ASEAN – Sri Lanka must deepen ties with ASEAN economies.

Looking at the trends in 2021 and beyond, Sri Lanka must be mindful of the shifting sands of global supply chains brought on by the US-China trade war and compounded by the pandemic. Analysis by Wijayasiri and Wijesinha (2021) show that in the first couple of years of the US-China trade war, Sri Lanka made many efforts to attract investors seeking new locations but was unsuccessful. Only limited trade diversion effects were observed either.

However, with the onset of the pandemic, global firms changed their perception from a single-minded focus on efficient supply chains to more on resilient supply chains. Therefore, there could be new opportunities emerging for Sri Lanka to participate in supply chains that hitherto overlooked the country due to pure cost considerations. A Gartner Inc. survey of 260 global supply chain leaders conducted in early 2020 revealed that only 21 per cent of survey respondents believed that they have a highly resilient network at the time (meaning that they have good visibility and the agility to shift sourcing, manufacturing and distribution activities around quickly). The same survey showed that 55 per cent expect to have a highly resilient network in the next two to three years (a reaction to disruptions such as Brexit, the trade war and COVID-19), and 58 per cent acknowledge that this would mean incurring additional costs.

A recent report to which the author contributed noted that, "International businesses are responding to the above challenges of COVID-19, trade tensions, increasing supply chain costs, and technological change by reviewing their supply chain strategies to balance total cost of ownership, resilience, and domestic market size" (Daily FT, 2020). It also added that, "while a rise in geopolitical tensions may further accelerate the supply chain relocation, shifting politics, high cost of changing installed base, long-term contracts with existing suppliers and Chinese industrial policy (Made in China 2025) could constrain these shifts" (Daily FT, 2020). As the author's interviews with industry leaders suggested[7], Sri Lanka's strategic location and prominent positioning in international transport routes can help its cause in attracting those firms looking to relocate parts of their supply chain, and mainly in non-strategic industries like consumer durables, apparel, retail, automobiles and components, and processed food and beverage industries[8]. These potential shifts will necessarily influence Sri Lanka's own trade and investment policy approaches. As the report asserted, Sri Lanka could stand to benefit from these shifts, if the right policy measures and incentives framework are adopted. To take advantage of the shifts in supply chain strategies by international businesses, Sri Lanka needs to articulate industry-specific strategies for 'why Sri Lanka', identify areas for improvement within the country to enhance investor attractiveness, and market Sri Lanka as a destination to specific companies seeking to diversify their supply chains.

7. Concluding Remarks

Global manufacturing value chain (GMVC) is an increasingly important phenomenon that shapes worldwide manufacturing and trade patterns, shaping countries' success in export diversification and industrial upgrading.

Notwithstanding the significant liberalization reforms in the late 1970s, Sri Lanka's potential to reap gains from joining GMVCs remained constrained by political instability and policy uncertainty for over three decades. However, the successful operation of many GMVC firms during these challenging times clearly points to the country's potential to regain lost ground during the post-conflict era.

The review of China's experience provides salient lessons for Sri Lanka in designing better policy initiatives and strategic interventions. Focussing on trade and investment reforms and combining them with a proactive investment promotion campaign, investing in innovation capabilities, and overall reducing 'service link costs' is vital for fitting domestic firms into GMVC trade and into global production networks.

7 Research conducted with Deloitte Consulting LLP for a report by the USAID PARTNER project in Sri Lanka on 'Global Supply Strategies: Current Trends & Future Shifts'.

8 In contrast, strategic industries were those like semi-conductors, medical devices, PPEs.

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Appendix

Appendix 1: Summary of Sri Lanka's covid-related trade restrictions

Date	Policy Directives by	Details of the Policy Measure
19th March, 2020	Central Bank of Sri Lanka	Advised commercial banks and the saving banks to suspend facilitation of import of 487 items including motor vehicles (other than passenger, heavy-duty and health-related vehicles) and 202 non-essential consumer goods at HS 8 digit level. On the same notice, commercial banks were advised to suspend the purchase of Sri Lanka International Sovereign Bonds.
16th April, 2020	Government of Sri Lanka	Suspension of import of 749 items of consumer, intermediate and investment goods at HS 8 digit level and 631 items of im2ports of the same categories only under 90 days credit basis at HS 8 digit level.

21st May, 2020	Government of Sri Lanka	New import control notice by amending the Import control measures of the previous gazette on 16.04.2020 and adding further items to the restricted list of items with the following controls;
		• The measures are targeted for 90 days from 16th April 2020
		• Minimum Values additions of 20% to be proved when imports in both list I & II are undertaken as inputs for exports, under Scheme of Temporary Imports for Export Purposes (TIEP). The local value addition is expected to be improved gradually.
		• Export earnings (made by using import inputs) have to reach the respective banks within 60 days of the shipment.
		• Importation of raw material for export is not subject to the above restrictions when;
		  • Imports on the basis of not involving payment in foreign exchange
		  • Imports with the involvement of buyers without resorting to borrowing from local banks for payments
		  • Import by using importers' own money in Foreign Currency Banking Unit accounts
		  The importer has to declare the source of earnings to the bank
		• Importation of items in the list I, for the local market, within the prescribed 90 days are temporarily suspended with an exception on the following conditions:
		  • It can be imported only on a 30-60 day credit facility provided by the foreign supplier.
		  • At least 35 percent of local value addition is to be maintained and proved.
		  • Sri Lanka Customs Department to submit a report on the calculation of the value addition on import substitution industry to the Cabinet of Ministers.
		• Items in List II, other than IT equipment, communication equipment, cement, sugar and palm oil, can be imported only on a minimum 90-days credit facility provided by the foreign supplier from the loading date of the goods or on the availability of foreign currency deposits of importers in local banks for import.
		• With regard to IT equipment, communication equipment, cement, sugar, and palm oil, can be imported only on the minimum of 180-days credit facility provided by the foreign supplier from the loading date of the goods or on the availability of foreign currency deposits importers in local banks for import.
		• Flagship projects approved by BOI (Under (section 17) which are not mentioned in the Negative list issued by the Ministry of Finance, can be imported under the direct foreign investments of investors. Furthermore, the loans of local banks shall not be used for importation.
		
		The above import control notice says that "The temporary suspension of imports' shall mean that the importation of goods which does not comply with the conditions stated above."

Sources: CBSL (2020)

Appendix 2: BOI-approved global manufacturing value chain (GMVC) firms

Firm	Product	Year of approval	Foreign equity share	Source country
1	Strain gages and load cells	1982	100	USA
2	Magnetic heads and electronic components	1984	100	Germany
3	Instruments based on transducer technology	1989	100	Sweden
4	Piping systems and steel band process equipment	1989	63	UK, Sri Lanka
5	Transformers and related components	1990	100	UK, Sri Lanka
6	Electronic components	1991	100	Switzerland
7	Electronic components	1994	100	Japan
8	Electronic weighing machine components	1994	97	Sweden
9	Automotive components and gaskets	1998	52	Japan, Sri Lanka
10	Fibreoptic cables	1999	71	Norway, Sri Lanka
11	Steel rims, wheels and parts	1999	100	USA
12	Weighing systems and strain gauge sensors	2000	100	Australia, Sri Lanka
13	High precision tools and dices	2000	100	Germany
14	Precision moulds and plastic moulding	2000	100	UK, Sri Lanka
15	Polyurethane panel & refrigeration equipment	2002	51	UK, Sri Lanka
16	Steel and wire rods	2003	51	USA, India, Sri Lanka
17	Steel injector moulds and components	2003	81	Germany, Sri Lanka
18	Steel mould dies and tools	2004	40	USA, Hong Kong, Sri Lanka
19	Precision parts	2005	100	Japan
20	Sensors, connectors and rear caps	2006	100	Switzerland
21	Iron bars and tor steel	2007	71	Australia, Sri Lanka
22	SMT assembly of automated products	2007	63	Japan
23	High tensile deform bars	2007	100	India
24	Electrical and machinery tools	2007	100	Germany
25	Electric transformers	2008	60	Japan, Sri Lanka
26	Fibre optics and printed circuits	2009	85	Switzerland
27	Lead ingots and granules	2009	100	India

28	Parts of electrical and allied products	2009	86	Japan, Sri Lanka
29	Grid systems and cable trays	2010	83	Israel, Sri Lanka
30	Assembly of motor vehicle parts	2010	23	Japan, Sri Lanka
31	Car seat sensor harnesses	2012	100	Japan
32	High precision moulds and tools	2012	100	UK
33	Spiral ductwork and fitting	2012	89	UK, Sri Lanka
34	Bicycles and wheels assembly	2012	100	China
35	Parts for machines and automobiles	2013	95	UK, Sri Lanka
36	Bicycle frames and forks	2013	100	China
37	Automobile parts	2014	48	India, Sri Lanka
38	Latching and hanging systems	2014	100	Sweden
39	Electronics components	2014	100	Sweden
40	Cable harnesses and related accessories	2015	86	India, Sweden
41	Electronic components	2015	100	Japan
42	Energy meters	2016	30	China, Sri Lanka

Source: Compiled from BOI records as of May 2019.

Appendix 3: Overview of electronic components firms surveyed

No	Investor country(ies)	Products	Establishment Year	Employees
1	Sri Lanka	Telecoms and electronic components	1980	75
2	Norway, Sweden, Germany, Sri Lanka	Cable harness, mechanical and precision machine components	1982	40
3	Switzerland	Surface Mount Devices and cable assemblies.	1986	880
4	Japan	Optical isolators	1990	650
5	Japan, Sri Lanka	Electrical parts, electronic circuits and cathode tubes	1994	70
6	Japan, Sri Lanka	Printed circuit boards and automotive harnesses	1995	300
7	Sweden	Strain gauge load cells	1996	800
8	Switzerland	Printed Circuit boards and wire harness	1998	800
9	Sri Lanka	Electronic Modules and radio Frequency products	1999	10
10	Japan, Sri Lanka	Sensor switches for seat belts and airbags	2003	380
11	Japan, Sri Lanka	Noise suspension capacitators and inductor coils	2008	1000
12	UK	Sensors & transducers for aerospace industry	2009	75
13	Australia	Weight Controllers and Weight Transmitters.	2012	40

Source: Author's survey