

Section on Sustainable Development and Countries in Special Situations

Applying the Growth Identification and Facilitation Framework to the Small Island Developing States

The Case of Solomon Islands

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Abstract

This report employs the Global Identification and Facilitation Framework to the Solomon Islands, aiming to reveal latent comparative advantages and propose targeted national policies. By analyzing the factor endowments, the paper argues that due to abundant natural resources and limited capital formation, the Solomon Islands should focus on developing labor-intensive light manufacturing and resource-based manufacturing. In light of potentials and feasibilities, the paper identifies China as a benchmark country that could serve as a reference and provide industrial transfer opportunities, given its industrialization

trajectories and relocation possibilities of light manufacturing sector. The identified key constraints to the recommended specialization include low accessibility of electricity, high transportation, and labor cost. Therefore, to stimulate structural economic transformation in the Solomon Islands, the report highlights the need for the government to actively seek external funding for infrastructural improvement and gradually raise the reserve ratio to reduce the real exchange rate and avoid “Dutch disease”.

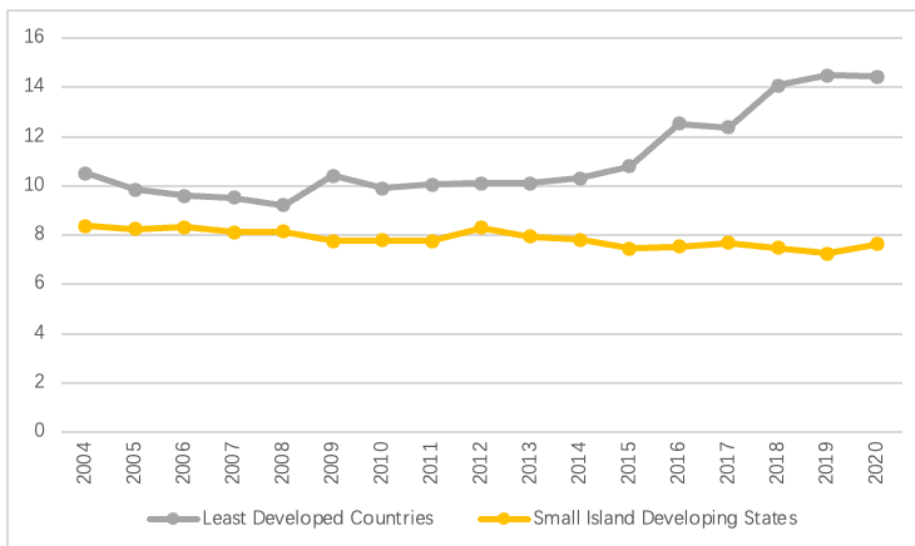
Keywords: Structural Transformation, Industrialization, Special Economic Zones, Diversification, Manufacturing

1. Introduction

At the 1992 United Nations Conference on Environment and Development, a distinct group of 38 member states and 20 non-members/associate members of United Nations Regional Commissions that face unique social, economic, and environmental vulnerabilities was officially grouped as the “Small Island Developing States” (SIDS). Solomon Islands is one of them.

Although Small Island Developing States include countries ranging from Least Developed Countries such as Timor-Leste and Comoros to High-Income Economies such as Singapore and Seychelles, the average manufacturing value-added (MVA) of these states is lower than the Least Developed Countries (LDCs) average. What is even more alarming is that while the MVA in LDCs is climbing over the years, the MVA in SIDSs is exhibiting a slight decline (see Figure 1).

Figure 1: Manufacturing Value Added, % GDP



Source: The World Bank 2021. World Development Indicators, as accessed Sep. 2022.

This corroborates the claim that SIDSs are faced with unique obstacles. On one hand, they face limited domestic market demand. In 2021, the average population of the SIDSs was 1.79 million, which is a mere 4.95% of the world average. Furthermore, their aggregate population is around 65 million which is less 1% of global population.¹ As a result, the ratio of total trade (including exports and imports) relative to GDP is much higher in SIDS than the average ratio of the LDC

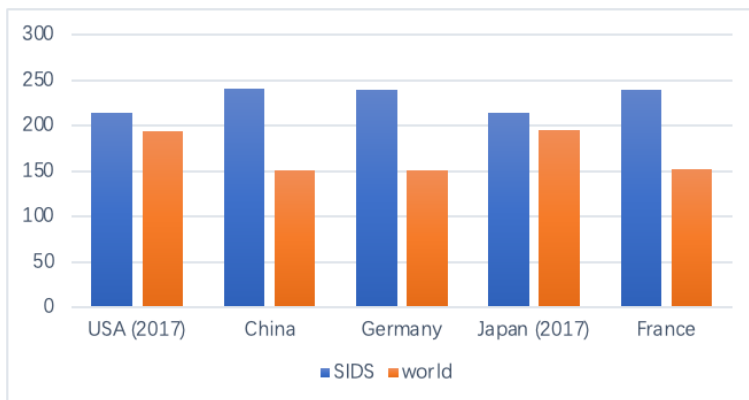
group (McGillivray et al., 2010). The limited country size (see Figure 3) deems it necessary for SIDSs to look beyond their borders for opportunities that drive economic growth, including foreign aid, remittances, and export revenues (Heger et al., 2009; McGillivray et al., 2010). On the other hand, geographic isolation from foreign markets may leave them disadvantaged in the global market. Compared with the world average, SIDSs' trade costs with the top 5 importers

¹ UNOHRLLS. <https://www.un.org/ohrlls/content/about-small-island-developing-states#:~:text=The%20aggregate%20population%20of%20all,for%20many%2C%20their%20remote%20geography>.

(the USA, China, Germany, Japan, France) are much higher (see Figure 2). This results in reliance on a few trade partners (UNCTAD, 2022a). Due to a limited resource base and infrastructure (UNCTAD, 2022a), they may also rely on the export of a limited number of agricultural commodities or resources (Heger et al. 2009;

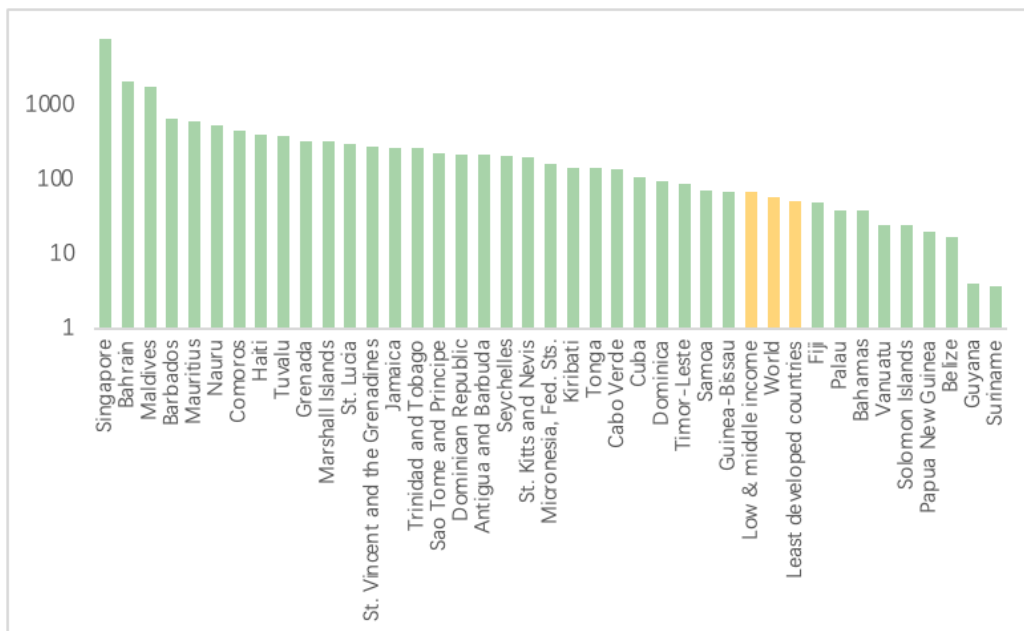
McGillivray et al., 2010). The resulting vulnerability to economic shocks, combined with the higher exposure to environmental shocks (UNCTAD, 2022a), further dampens both domestic investment and foreign direct investment (FDI hereafter) (Guillaumont, 2010), which is fundamental for facilitating industrialization.

Figure 2: Trade Cost² of Manufactured Goods with Top 5 Importers, ad valorem equivalent (as a percentage of price), 2018



Sources: ESCAP World Bank. International Trade Costs.

Figure 3: Population density, people per sq. km of land area, logarithmic scale, 2020



Source: The World Bank 2021. World Development Indicators, as accessed Oct. 2022.

There is a vast variation in the population density of SIDS. Economies such as Singapore, Bahrain, and Maldives are more than 100 times denser than

the world average. Yet countries like Guyana and Suriname have a population density that is only around one-tenth of the world average.

² Computed by using the Inverse Gravity Framework (Novy, 2011), which covers all costs adding up to the traded goods as a percentage of the price of the goods.

Therefore, apart from the common reasons that lead to the failure to industrialize, such as the first mover problem (Lin and Xu, 2016), the challenges faced by SIDSs make it even more difficult to industrialize without strong policies to foster and facilitate the industries that are more likely to succeed based on its latent comparative advantages. In the present paper, we use the Growth Identification and Facilitation Framework (GIFF hereafter) to analyze how to foster economic transformation in SIDSs.

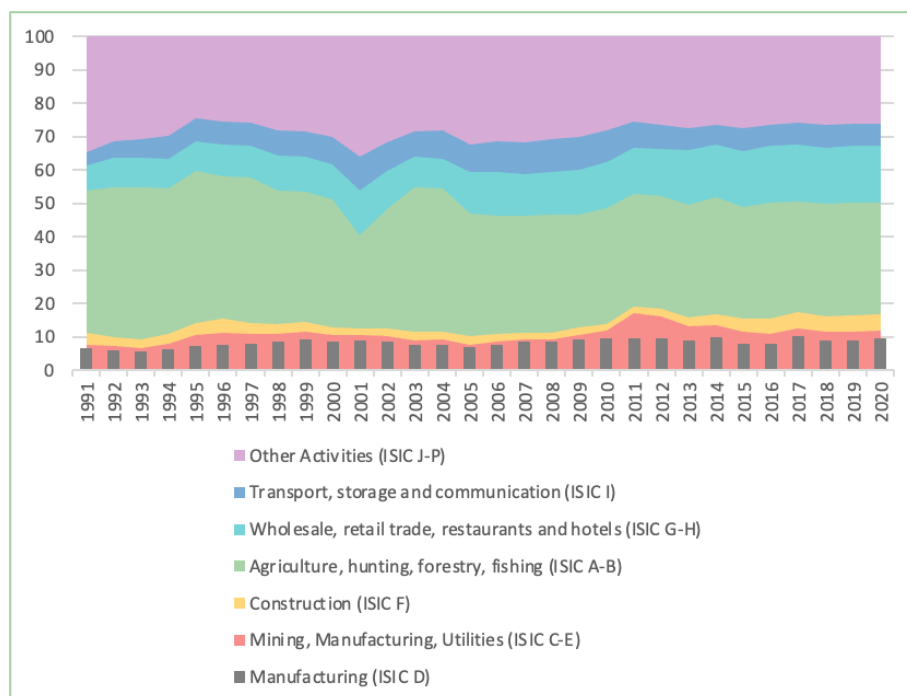
2. Background Analysis: What is Holding Solomon Islands Back?

The contribution of the manufacturing sector to total value added in the Solomon Islands has stagnated, remaining at a low level below 10% (see Figure 4). This indicates that there are constraints holding back the industrialization process.

Besides the common challenges discussed in Section 1, a unique challenge facing the Solomon Islands is a “mutated” version of Dutch Disease under the condition of pegged exchange rate. The term “Dutch Disease” originally referred to the adverse effect of natural gas discovery in

Netherlands on the manufacturing sector (Corden, 1984). It has since been generalized to incorporate adverse structural changes that economies undergo as a result of sectoral booms associated with factors such as positive external terms of trade shocks and large capital inflows (Mwanza, 2004). In the case of Solomon Islands, the high net official development assistance (ODA) and reliance on export of wood products may have contributed to the mutated version of the Dutch disease.

Figure 4: Share of Value Added by Sector, % GDP

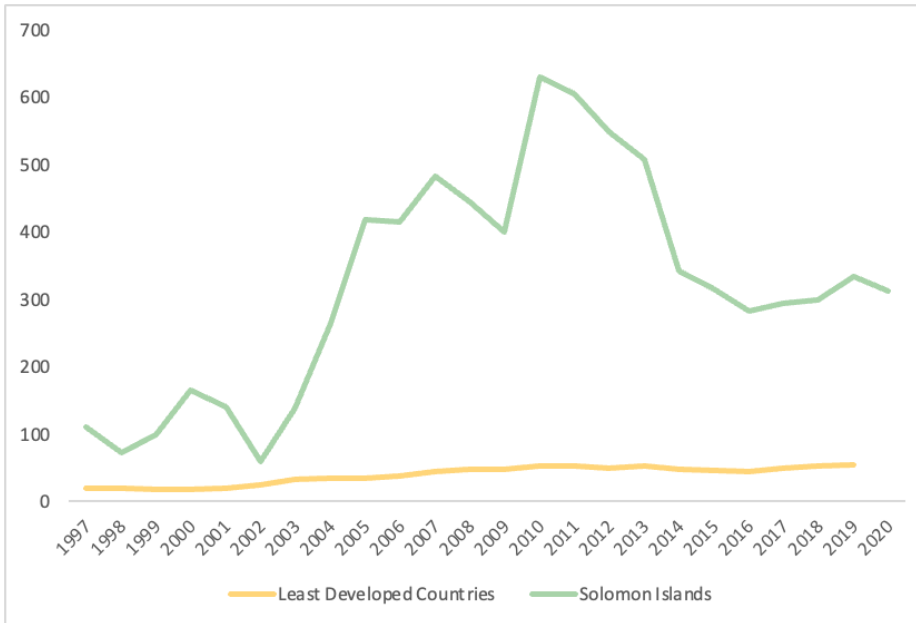


Source: United Nations 2021. AMA: National Accounts, as accessed by August 2022.

The Solomon Islands ranks as one of the highest recipients of official development assistance (ODA) in the world (Gay, 2016), at 334 USD per capita in

2020, which is more than six times the LDC average (see Figure 5).

Figure 5: ODA receipts, USD per capita

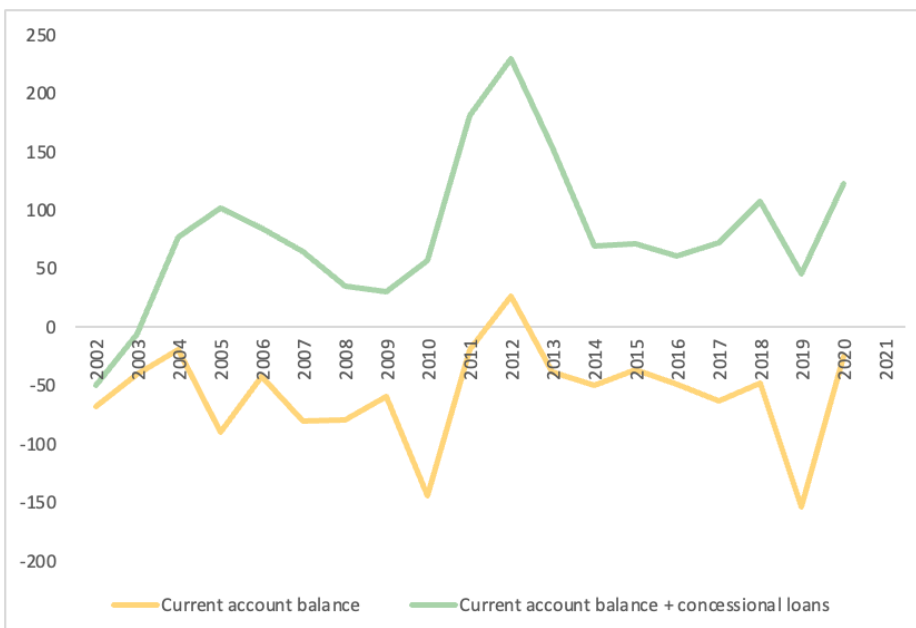


Source: The World Bank 2021. World Development Indicators, as accessed September 2022.

While the country is experiencing a current account deficit, this indicator only looks at foreign aid that does not require repayment, and excludes the weighted amount of concessional loans. When

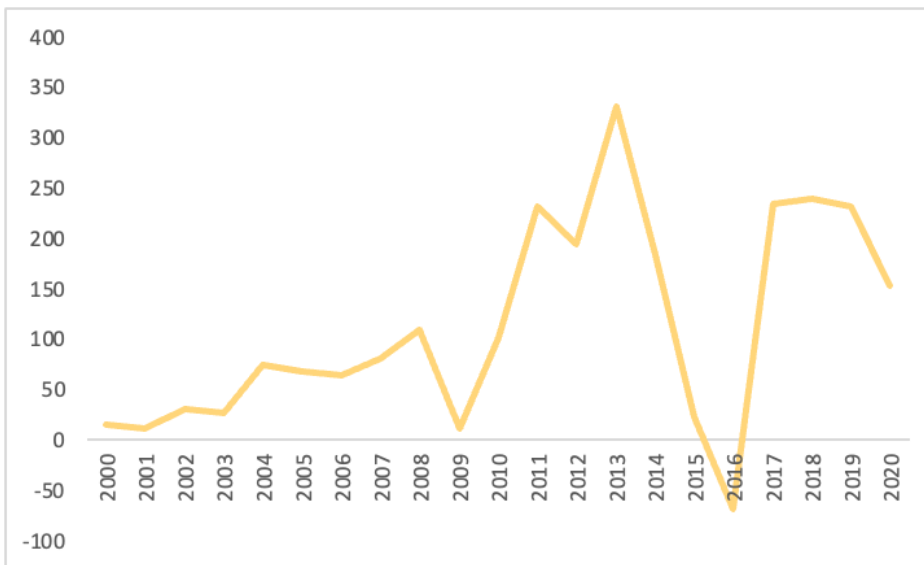
taking into consideration concessional loans, the ODA equivalent it receives more than makes up for its trade deficits (see Figure 6).

Figure 6: Current Account Balance, current million USD



Source: The World Bank 2021. World Development Indicators, as accessed Sep. 2022.

Figure 7: Net export, million USD

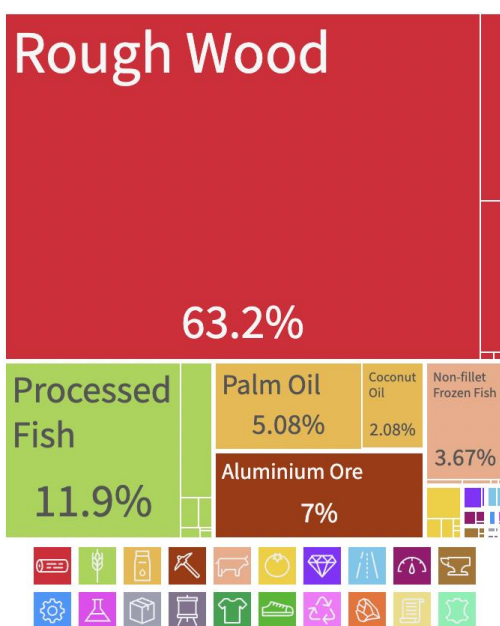


Source: Author based on Gaulier, G. and Zignago, S. (2010) BACI: International Trade Database at the Product-Level. The 1994-2007 Version.

The adjusted data also suggests that the country may actually be experiencing a trade surplus (see Figure 7). The dataset is based on UN Comtrade data, but addresses discrepancies between the reports of importers and exporters by weighting the two according to the report quality of the two

countries. While it is uncertain whether the adjusted data is perfectly reflective of the nation's economic reality, it is sufficient to suggest that the net export data reported by the Solomon Islands itself has been underestimated.

Figure 8: Export Decomposition of the Solomon Islands, percentage of total export, 2020



Source: MIT. The Observatory of Economic Complexity (OEC), as accessed Oct. 2022.

A large proportion of the country’s export is composed of rough wood resources (see Figure 8). In 2020, rough wood made up 63.2% of the nation’s total export, along with export of its derivatives (1.69% for sawn wood, 1.36% for veneer sheets, and 0.037% for plywood).

The above factors can potentially cause the Dutch Disease. Traditional analytical framework predicts that in an economy with a floating exchange rate, the Dutch Disease will cause its local currency to appreciate, resulting in disadvantaged export of manufacturing products. This is because as foreign currency flows into the nation due to export or foreign aid, domestic demand for local currency increases. As a result, local currency appreciates.

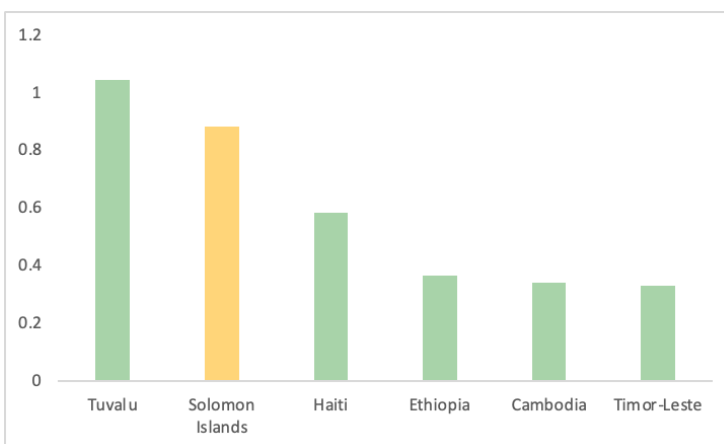
The situation for the Solomon Islands is different from the traditional framework, in that it operates with a fixed exchange rate pegged against its trade weight composite baskets of currencies.³ As a result, the local currency will not appreciate in response to the capital inflow. Instead, the government is required to exchange all US dollars for Solomon Islands dollars at the pegged rate. If no other action is taken, currency in circulation in the economy increases, and the domestic price rises to

adjust the real exchange rate. Due to the existence of non-tradable goods, especially as the transportation cost is high for an SIDS, the difference in price does not go away.

While no empirical literature exists that studies the causal effect of this mutated version of the Dutch Disease, the preliminary evidence supports our conjecture that it might be at play in the Solomon Islands. The price level ratio of PPP conversion factor (GDP) to market exchange rate in the Solomon Islands is much higher than its competitors⁴ (see Figure 9). The figure has also risen from 0.60 in 1998 (the year the peg was adopted) to the current 0.88⁵.

As a result, the economy is put at a disadvantage in exporting manufacturing products. It is also forced to set an excessively high minimum wage measured in USD, leaving labor-intensive industries in a disadvantaged position. We leave the discussion of how detrimental this is to the overall economy and corresponding policy recommendation in Section 6, after the identification of the Latent Comparative Advantage of the Solomon Islands.

Figure 9: Comparison of price level ratio of PPP conversion factor (GDP) to market exchange rate, 2021



Source: The World Bank 2021. World Development Indicators, as accessed Sep. 2022; United Nations, as accessed Sep. 2022.

³ Central Bank of Solomon Islands, available from <https://www.cbsi.com.sb/statistics/exchange-rates/definition-and-sources/>.

⁴ We look at representative LDC countries from different regions.

⁵ The World Bank 2021. World Development Indicators, as accessed Sep. 2022.

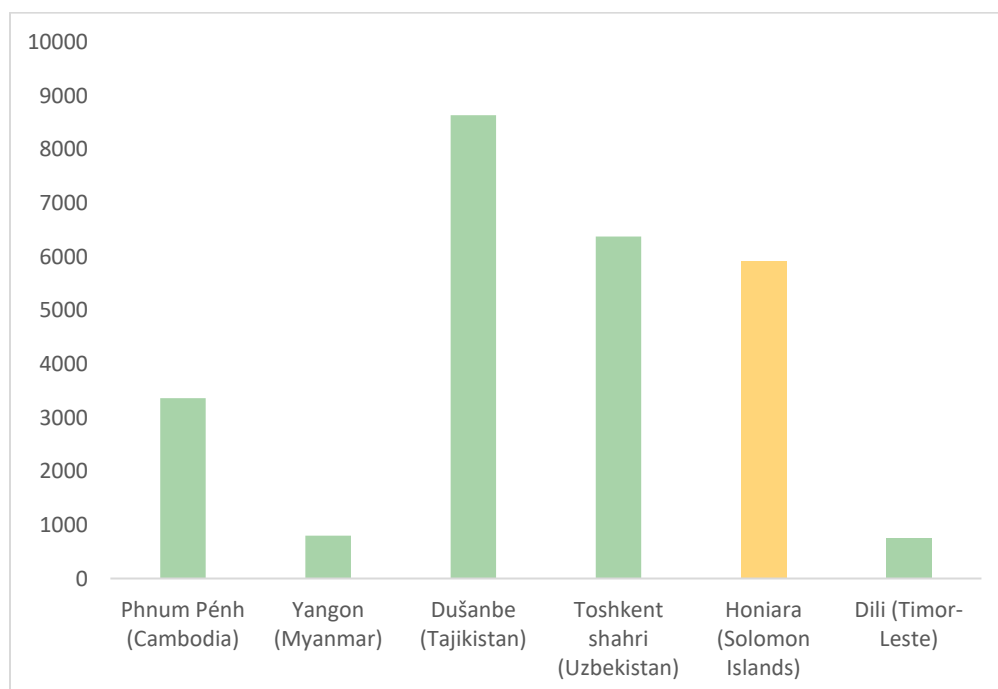
3. Factor Endowment Analysis: What Does Solomon Islands Have?

3.1 Factor Endowment - Labor

The Solomon Islands has a small population size of around 700 thousand people. It is also sparsely populated, with a population density of 24.5 people per square kilometer in 2021, compared to 39.98, the average of Pacific Island small states.⁶ It is significantly less densely-populated compared with its potential competitors that seek industrial transfer of light manufacturing sectors from China (101.87 in Ethiopia, 413.73 in Haiti, 94.71 in Cambodia, and 393.07 in Tuvalu, in 2020).⁷ Its

capital, Honiara, however, is much more densely-populated. With a population density of 5917 people per square kilometers⁸, it is comparable to the major cities of competing Lower-Middle Income Countries that have a developed manufacturing industry (see Figure 10). As a result, the Solomon Islands can first kick-start its light manufacturing industry in its densely-populated cities.

Figure 10: Population Density Comparison of Major Cities in Lower-Middle Income Countries, 2021



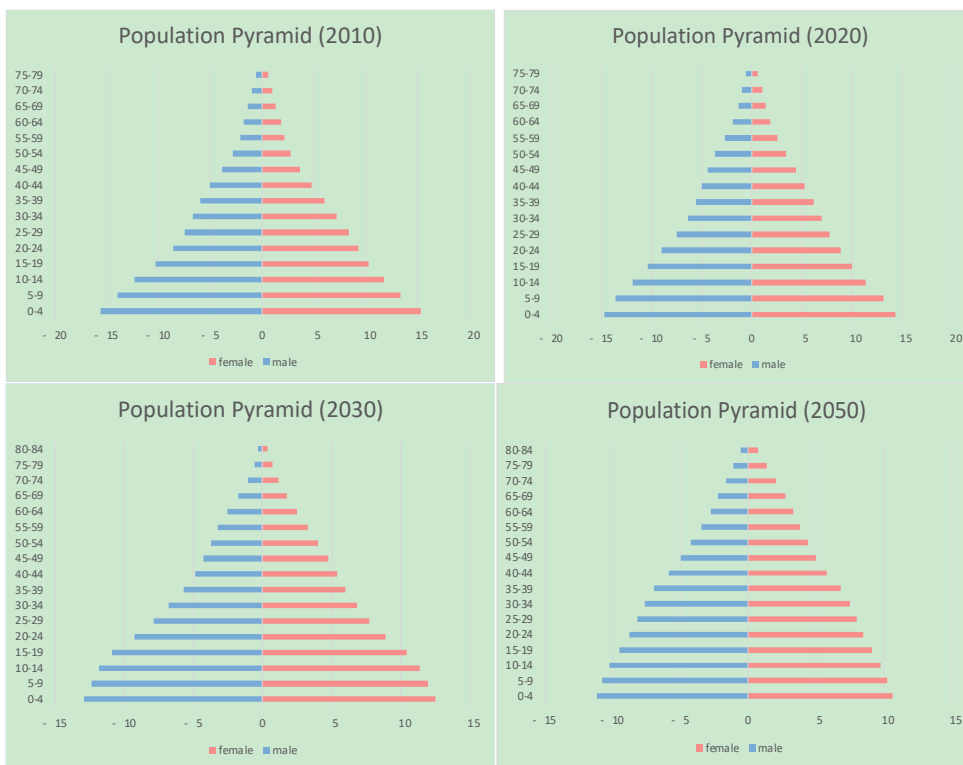
Source National Directorate of Statistics Timor-Leste; Myanmar Central Statistical Organization; State Committee of Uzbekistan on Statistics; State Statistical Committee of the Republic of Tajikistan; National Institute of Statistics of Cambodia. Solomon Islands National Statistical Office.

⁶ The World Bank 2021. World Development Indicators, as accessed Sep. 2022.

⁷ We look at representative LDC countries from different regions.

⁸ Solomon Islands National Statistical Office.

Figure 11: Population Pyramids by Age and Sex, % of total population



Source: United Nations. *World Population Prospects 2022*.

According to the projection of the United Nations Population Division, the working-age population of the Solomon Islands will remain at a high level through the twenty-first century, increasing from the current 57.21% in 2021 to 62.20% by 2050 (see Figure 11). The population pyramids show that the aging process in the Solomon Islands is promisingly slow, with the young population continuing to dominate the population. Therefore, the nation still has high potentials for labor-intensive industries.⁹

The nation's workers are highly concentrated in occupations with medium levels of skills (see Figure 12)¹⁰. In 2013, only 13.73% of working-age population are high-skilled workers, which is a typical level for an LDC country (17.57 % in Cambodia, 10.72 % in Timor-Leste, 4.51 % in

Ethiopia)¹¹. However, medium-skilled workers, which are essential for agricultural and manufacturing productivity, take up a share of 71.72%. Currently, the private sector has failed to provide sufficient jobs for these medium-skilled workers, employing a mere 7% of population aged 10 years and over, while the public sector employs 5% of them (SINSO, 2013). The rest of the workforce are made up of homemakers, producers of goods for self-consumption and sales, students, or retirees. Low- and medium-skilled workers are encouraged to seek foreign employment opportunities through Australia's Seasonal Worker Programme (SWP) and the Pacific Labour Scheme (PLS)¹² or New Zealand's Seasonal Work Scheme, which grants temporary work permit for Pacific Islands workers. Workers in Australia, for instance,

⁹ We look at representative countries with the closest GNI per capita level to Timor-Leste in the UN's LDC list from different regions.

¹⁰ According to ILO, high-skilled workers include managers, professionals, technicians, and associate professionals; medium-skilled workers include clerical support workers, service and sales workers, skilled agricultural, forestry and fishery workers, craft and related trades workers, plant and machine operators, and assemblers; low-skilled workers are all elementary occupations, which consist of simple and routine tasks that mainly require the use of hand-held tools and often some physical effort.

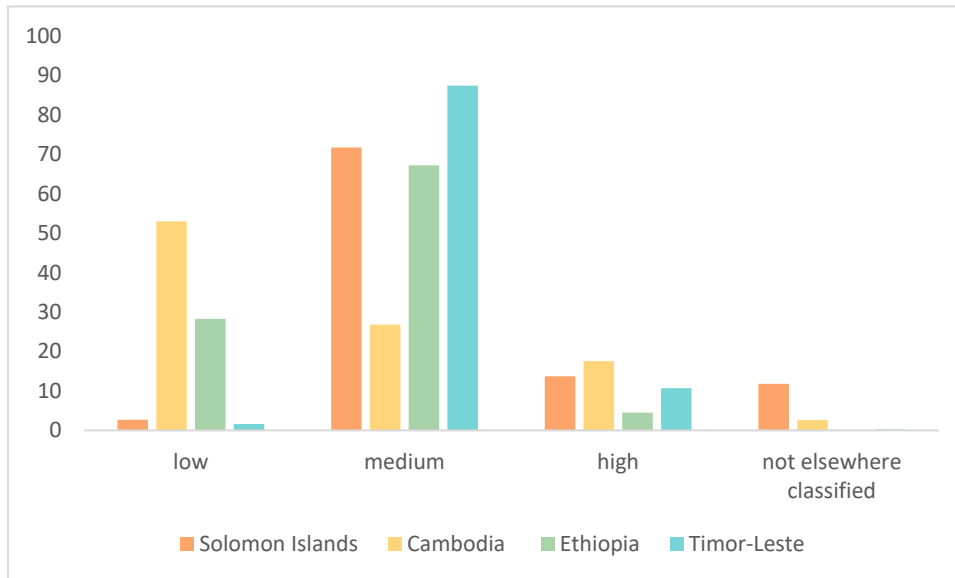
¹¹ We look at representative LDC countries from different regions.

¹² Replaced by the Pacific Australia Labour Mobility (PALM) stream in 2022.

has grown fast from 395 in Dec, 2020 to 2525 in Dec, 2021¹³. In the future, domestic job opportunities can take advantage of the low- and

medium-skilled workers by attracting them back from the foreign seasonal work.

Figure 12: Comparison of Working-Age Population by Skill Level, % of total working-age population, 2013



Source: ILOSTAT 2022.

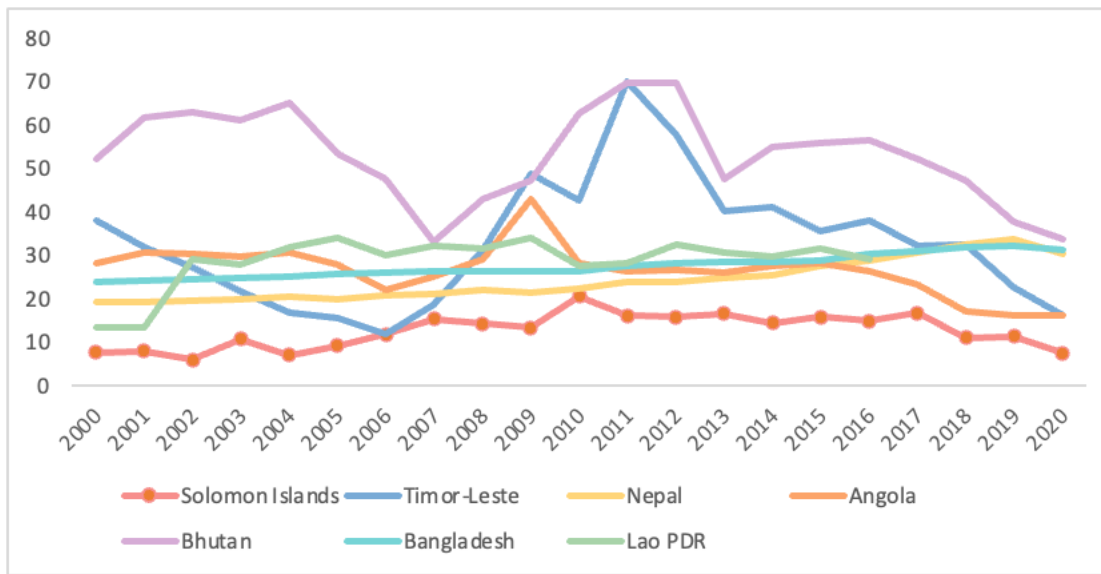
¹³ Source: Department of Home Affairs, Australia.

3.2 Factor Endowment – Capital

Fixed capital formation is particularly low compared with other countries scheduled to be

graduated from the Least Developed Countries (LDCs) Group, remaining at the lowest level of its peers (see Figure 13).

Figure 13: Gross Fixed Capital Formation of Solomon Islands Compared with Potential LDC Graduates, % of GDP



Source: The World Bank 2021. World Development Indicators, as accessed Aug. 2022.

3.3 Factor Endowment – Natural Resources

The sparsely populated nation is rich in biodiverse rainforest, and it relies on its forests for economic output (see Figure 14). However, the logging business is not well managed. On one hand, logging has been going on at an increasing speed ever since 2000, increasing to a highly unsustainable rate (United Nations, 2013). What’s even more alarming is that illegal logging has been prevalently unrecorded (United Nations, 2013). Between 2005 and 2011 logging occurring outside of allocated concession areas covered over 36,100 hectares (SKM, 2011).

As an island nation made up of 992 islands, the Solomon Islands is rich in marine resources. It also

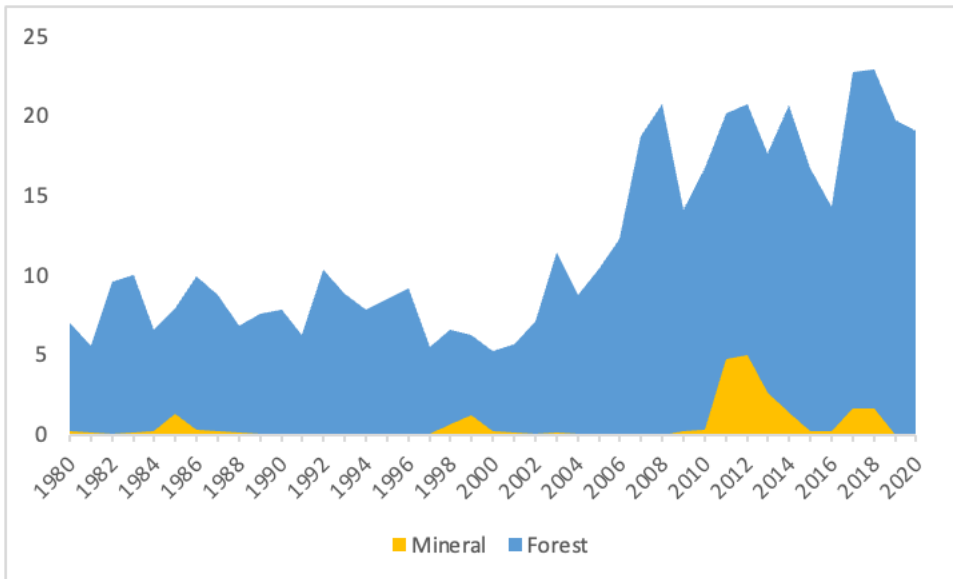
has one of the highest diversities of reef fishes and corals, with 1019 fish species and 494 coral species recorded (Green et al., 2006). In 2020, processed fish accounts for 11.9% of total export, and non-fillet frozen fish accounts for 3.7%¹⁴. Apart from export of fishing products, this provides opportunities for attracting tourism and sport fishing. However, similar to the logging resources, about 80–88 per cent of the land and marine resources of Solomon Islands is owned by family groups or clans (Kile, 2000), making it difficult for maintaining sustainable growth and overall planning. Evidence of overfishing is witnessed throughout the Solomon Islands, including paucity of large-sized reef fishes and abundance of Napoleon Wrasse (Green et al., 2006).

¹⁴ The Observatory of Economic Complexity, as accessed by Apr, 2023.

The Solomon Islands is also endowed with rich mineral resources such as zinc, lead, gold, and nickel (MMERE, 2016; DFAT, 2021). However, it is relatively undeveloped, contributing to only around 1-2% of GDP each year. By 2021, there is only one low-technology bauxite mine in operation (DFAT, 2021). Previous mining has also been

unsustainably managed. For example, the Gold Ridge Mine was closed from 2014 to 2018 due to irresponsible management and environmental concerns (MMERE, 2016).

Figure 14: Natural Resources Rent by Type (% of GDP)



Source: The World Bank 2021. World Development Indicators, as accessed Aug. 2022.

4. Benchmark and Transfer Country: Who Should Solomon Islands Learn From?

We identify the benchmark countries of Solomon Islands using 3 criteria:

- a) It has a GDP per capita that is about 100%-300% higher than that of Solomon Islands, or has a similar per capita GDP 20 years ago to Solomon Islands' current GDP per capita.
- b) It enjoys a high GDP growth in recent years (an average 20-year growth rate of over 5% from 2000 to 2020)
- c) It enjoys a high GDP growth in recent years (an average 20-year growth rate of over 5% from 2000 to 2020)
- d) It has a higher proportion of manufacturing value added than Solomon Islands (over 9.30% of GDP)

As a result, 8 countries stand out as the potential benchmark countries of the Solomon Islands: Armenia, Bangladesh, China, Ghana, India, Nigeria, Uzbekistan, and Vietnam.

Table 1: Economic Indicators in Solomon Islands and Benchmark Countries

Country	Ratio of GDP per capita (PPP) (2021) to the Solomon Islands (2021)	Ratio of GDP per capita (PPP) (2000) to the Solomon Islands (2021)	average GDP growth (2000-2020)	GDP (2000-2020)	Manufacturing Value-Added (2021, % of GDP)
The Solomon Islands	1	0.61	2.33		9.30
Armenia	5.51	1.00	5.66		11.34
Bangladesh	2.49	0.50	5.98		21.24
China	7.28	1.10	8.69		27.44
Ghana	2.33	0.67	5.87		10.70
India	2.76	0.79	5.88		14.07
Nigeria	2.06	0.87	5.25		14.61
Uzbekistan	3.20	1.00	6.37		

Sources: The World Bank 2022. World Development Indicators, as accessed Aug. 2022.

It has already been established that China is losing its comparative advantage in certain light manufacturing sectors (Lin and Xu, 2016; Xu and Hager, 2017). We also look at whether light manufacture in the other 7 countries is losing its comparative advantage, taking into consideration both changes in export share and changes in wages.

For export share, we track the top 10 exports in the light manufacturing sector in 2001 of these countries from 2001 to 2021, which tend to include the manufacturing of clothes (HS code

starting with 62), shoes (HS code starting with 64), parts and accessories (HS code starting with 8), etc. The results indicate that they are either remaining strong and growing, as in Vietnam, Armenia, Bangladesh and India, or never contribute stably to high volumes export, as in the case of Ghana and Nigeria (see Figure 15). In addition, we have to discard Uzbekistan as a benchmark country as trade data of Uzbekistan is only available from 2017 to 2020, so we are unable to identify the declining industries.

Figure 15: Export of Top 10 Light Manufacturing Sectors in 2001

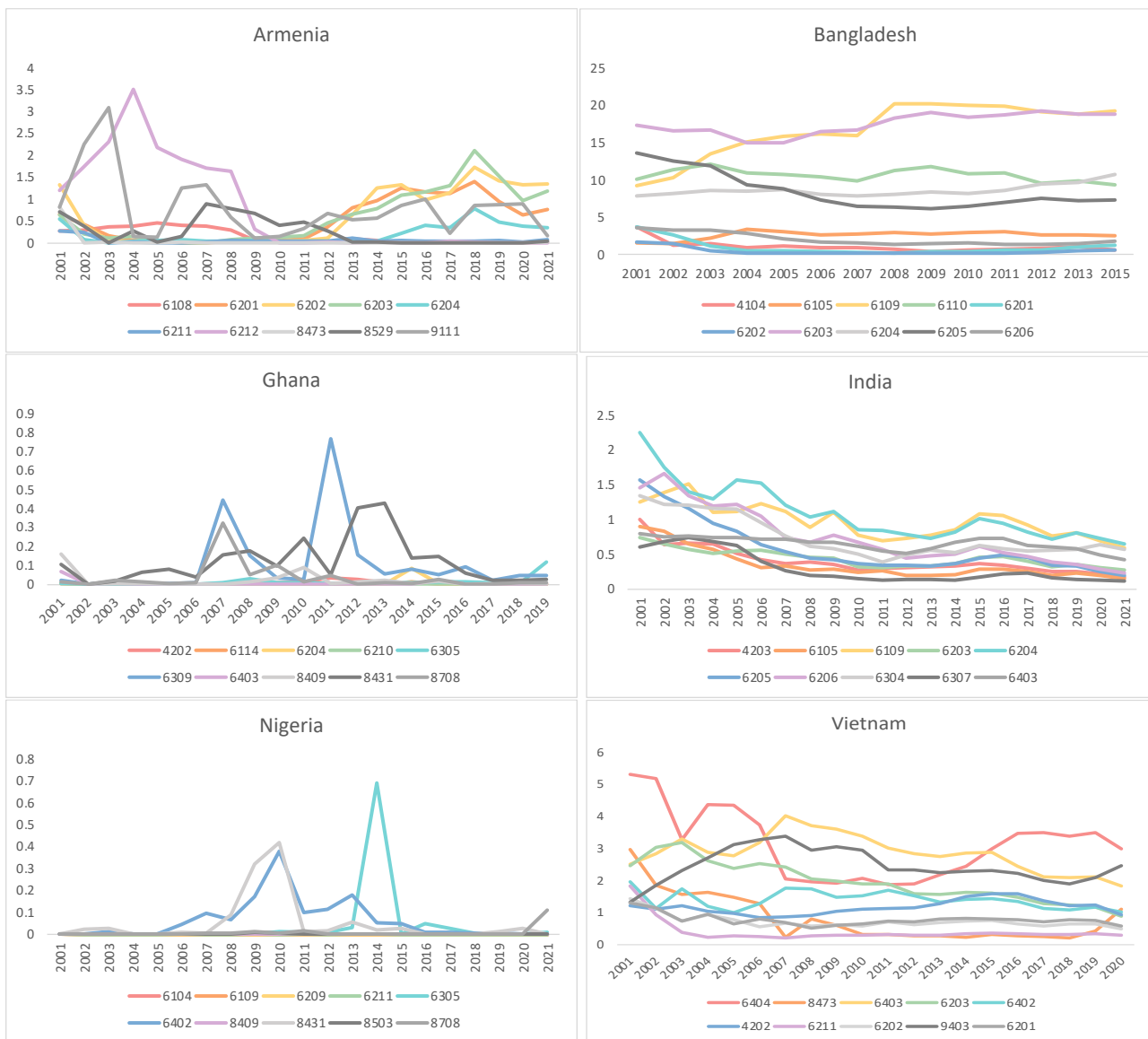


Source: UN Comtrade

Changes in light manufacturing export share shows a more mixed picture (see Figure 16). For Ghana and Nigeria, it is still clear that their industrial bases are not strong enough to sustain a constant high export share. For Bangladesh, export share of light manufacturing industries is steadily growing. For Vietnam, 6403 (Footwear, With Outer Soles And Uppers Of Leather) and 6203 (Men's Or Boy's Suits, Not Knitted Or Crocheted) are experiencing declines in export share. However, closely related industries such as

6201, 6202, 6402, 6404 remain steady, and are even rebounding in recent years, indicating that Vietnam has not yet lost its comparative advantage in light manufacturing. For India, a majority of its top 10 light manufacturing industries in 2001 are indeed undergoing declines in export. We further look at its wage data to determine whether India is a suitable benchmark country for the Solomon Islands.

Figure 16: Export Share of Top 10 Manufacturing Sectors in 2001, % of total export

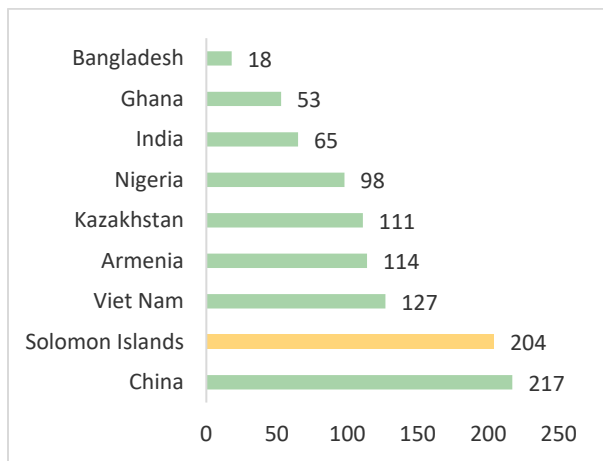


Source: UN Comtrade

The wage level in the Solomon Islands is significantly higher than that in Kazakhstan, India, Armenia, Bangladesh, Ghana and Viet Nam (see Figure 17), so transferring light manufacturing sectors from these countries to the Solomon Islands will not help save their firms production costs. Combined with the declining trends in export share and high labor costs, China may serve as the suitable benchmark country for the Solomon Islands in light manufacturing sectors.

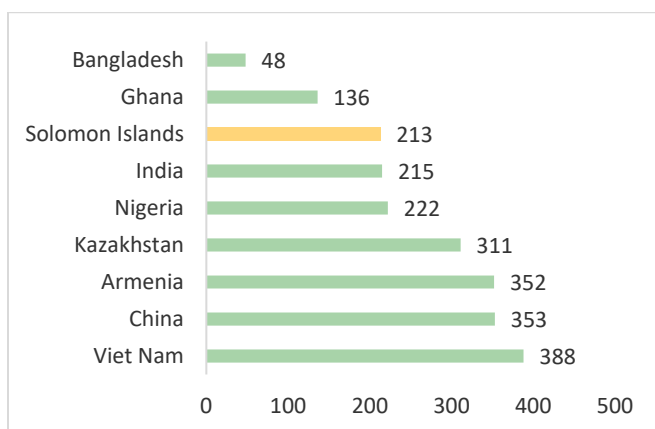
However, even when compared with China, the minimum wage in the Solomon Islands measured in US dollars is not significantly lower. While it is slightly lower than that in China, it also has a high transportation cost as an Island state: in 2020, it ranked 160 out of 188 countries in terms of trading costs¹⁵ across borders¹⁶. Therefore, it may not be a popular choice for firms' relocation given the availability of lower-cost options in other low-wage developing countries..

Figure 17: Minimum Wage Comparison, Nominal US\$, 2019



Sources: International Labor Organization. *Global Wage Report 2020-21*.

Figure 18: Minimum Wage Comparison, PPP, 2019



Sources: International Labor Organization. *Global Wage Report 2020-21*.

Interestingly, the minimum wage measured by Purchasing Power Parity (PPP) in the Solomon

¹⁵ Including the cost associated with exporting a standardized cargo of goods by sea transport through 4 predefined stages: document preparation; customs clearance and inspections; inland transport and handling; and port and terminal handling.

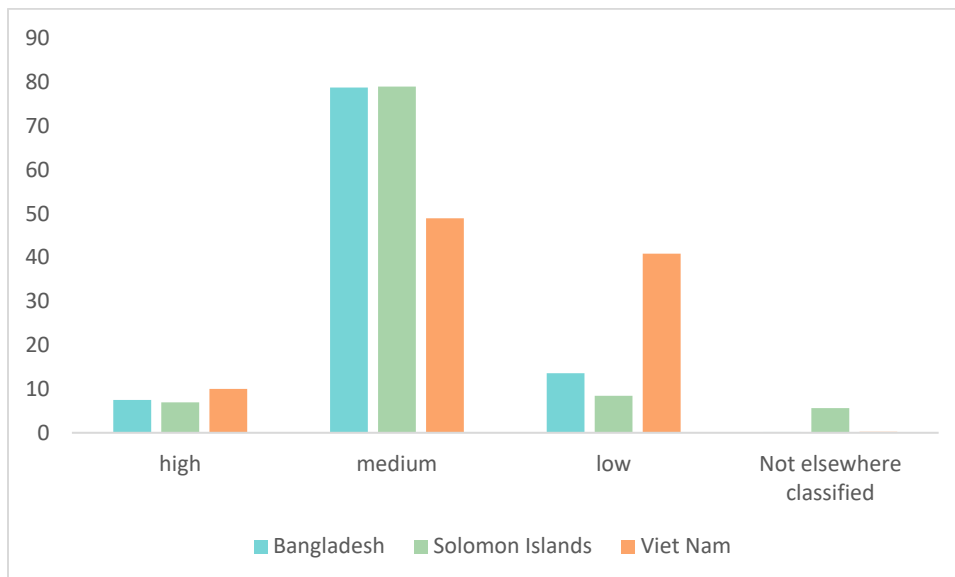
¹⁶ Source: World Bank Doing Business Database.

Islands is already quite low (see Figure 18). In fact, real wages in the Solomon Islands are the second lowest in the Asia and Pacific region, second only to Bangladesh, resulting in workers migrating to countries like Australia for higher earnings. This suggests that to develop a competitive labor-intensive industry, it might be helpful to adjust the real exchange rate to better reflect the domestic wage level. We will further discuss this issue in Section 6.

We also measure whether the labor in the Solomon

Islands is equipped with sufficient skills for the transfer of industry. We compare the latest data of the Solomon Islands in 2013 with countries that have a solid manufacturing foundation and whose data is available: Vietnam and Bangladesh. Overall, the Solomon Islands' percentage of workers at different skill levels is comparable to that of Bangladesh, and its percentage of workers with middle-level skills is higher than that of Vietnam, suggesting that it is able to develop the industries that these countries have developed (see Figure 19).

Figure 19: Skill Level Comparison, percentage of total working-age population, 2013



Source: ILOSTAT 2022.

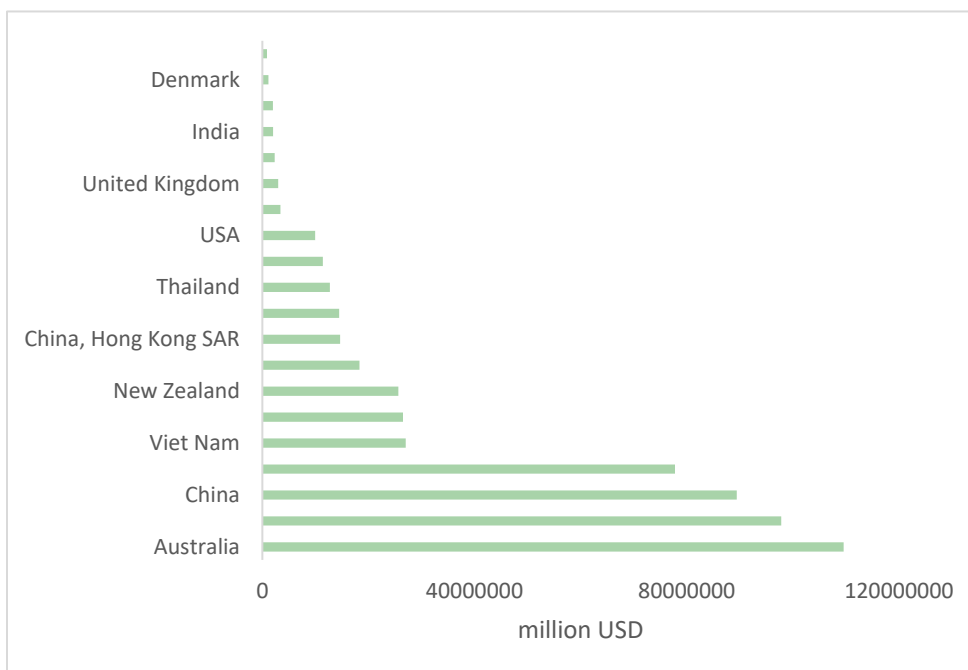
5. Latent Comparative Advantages: What Should Solomon Islands Produce?

We look at the average export percentage data from China. From the 26 industries that have appeared as the top-10 exporter from 2001 to 2021, we have identified 12 decliners whose shares of export are starting to exhibit a declining trend. As China is losing comparative advantage in these industries, it will have the incentive to relocate these industries abroad, or invest in foreign enterprises in these industries. Therefore, the Solomon Islands can exploit this opportunity to attract these industries to kickstart its industrialization. These include 8 light manufacturing industries such as suits, jerseys, trunks, footwear, and parts and accessories for

machines, and 4 technology-based industries (transmission apparatus, monitors, televisions). We then apply a series of pre-screening criteria to the 12 decliners to identify the Latent Comparative Advantage of the Solomon Islands.

Firstly, we measure the potential of the 12 industries. This is mainly measured by market demand. As an SIDS, the domestic market demand is not sufficient to support an industry. Therefore, we take into consideration domestic market demand, as well as the demand of its top 5 importers: Australia, Singapore, China, Malaysia, and Vietnam¹⁷ (see Figure 20).

Figure 20: Import Value of the Solomon Islands' Top Importers, 2018 (latest year)



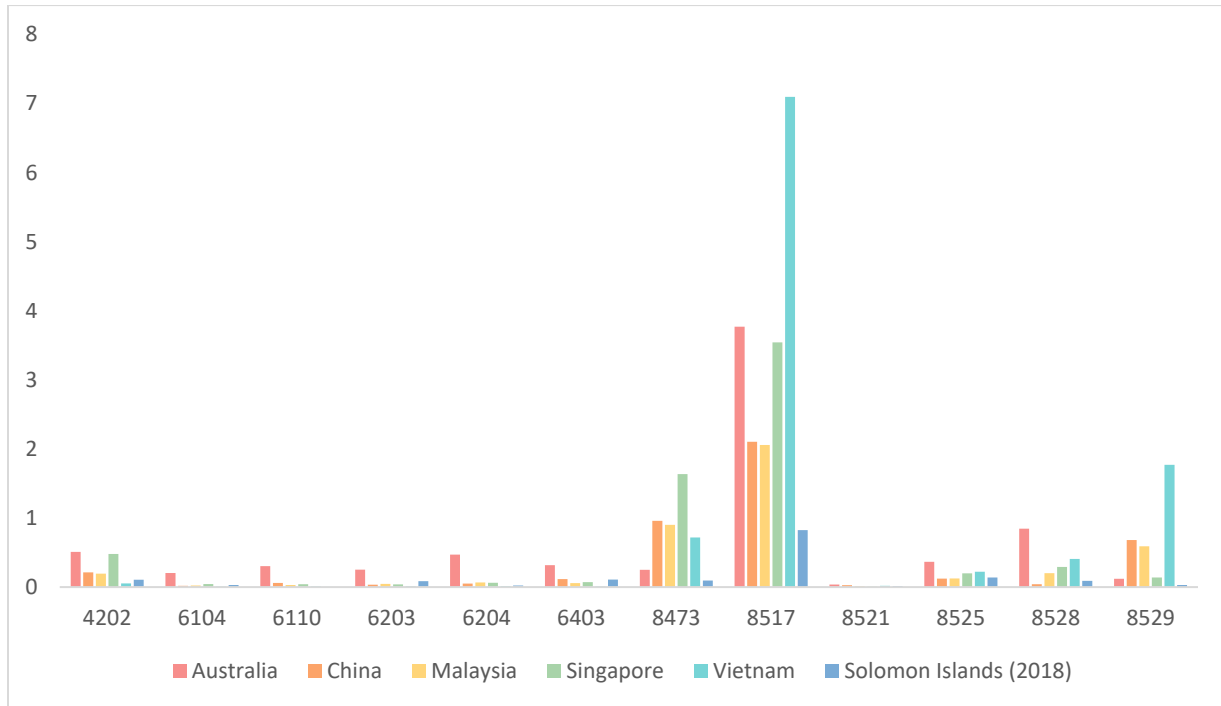
Sources: United Nation. 2022. UN Comtrade Database, as accessed Apr, 2023.

¹⁷ UN Comtrade, as accessed by Oct, 2022.

The result indicates that all commodities except for video recording or reproducing apparatus (HS code 8521) have sufficient demand in Australia (see Figure 21). However, the other trade partners have

low demand for textile products. In particular, telephone sets (HS code 8517) face especially high demand both domestically and abroad.

Figure 22: Import Share of Decliners in Domestic Market and Top Trade Partner, % of total import, 2020



Sources: United Nations. 2022. UN Comtrade Database, as accessed Aug, 2022.

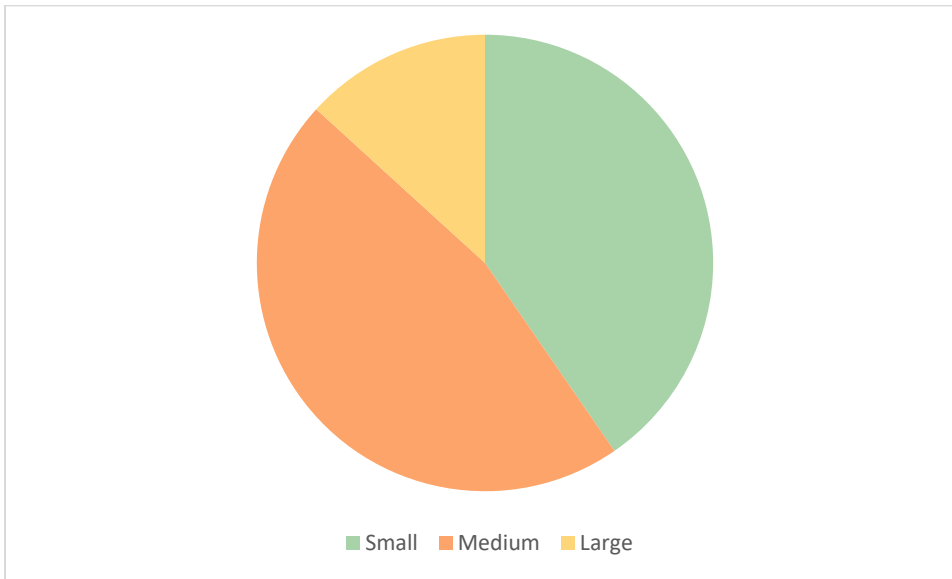
Secondly, we discuss the feasibility of these industries. As 86.75% of firms in the Solomon Islands are small- and medium-sized enterprises (SMEs) (see Figure 22), the economy’s supporting arrangement (such as its financial system) is more well-adapted to the development of SMEs. We therefore check whether the decliner commodity has been produced in China with SMEs that as defined by UN have less than 100 employees. We also check whether the industry is capital-intensive, which is not suitable for the Solomon Islands as it is more abundant in labor.

Next, we look at whether any specific factor endowment or skills is required in the production

of a certain commodity that are not available to the Solomon Islands. Finally, as the Solomon Islands is an island nation, most cargoes are transported via the sea, which is slower than land transportation. Besides, border compliance and documentary compliance in the Solomon Islands take approximately 170 hours (over 7 days), among which port or border handling takes 108 hours. This is longer than an average East Asia and Pacific country, which takes 113.1 hours¹⁸ in total. We therefore consider whether the transportation difficulty will significantly impact how the Solomon Islands develops its industry.

¹⁸ World Bank. 2022. Doing Business Archive, as accessed Dec, 2022.

Figure 23: Size of Enterprises, 2021



Sources: World Bank. Solomon Islands Enterprise Surveys (2021).

Secondly, we discuss the feasibility of these industries. As 94.70% of firms in Timor-Leste are small- and medium-sized enterprises (SMEs) (see Figure 23), the economy's supporting arrangement (such as its financial system) is more well-adapted to the development of SMEs. We therefore check whether the decliner product has been produced by small SMEs in China. We also check whether the industry is capital-intensive, which is not suitable for Timor-Leste as it is more abundant in labor

Next, we look at whether any specific factor endowment or skills is required in the production of a certain commodity that are not available to

Timor-Leste. Finally, as Timor-Leste is an island nation, most cargoes are transported via the sea, which is slower than land transportation. Besides, border compliance and documentary compliance in Timor-Leste takes approximately 129 hours (over 5 days), among which port or border handling takes 90 hours. This is longer than an average East Asia and Pacific country, which takes 113.1 hours¹⁹. We therefore consider whether the transportation difficulty will significantly impact how Timor-Leste develops its industry. However, it is worth noting that due to geographical vicinity, cargoes can be transported to Australia and Indonesia in a short amount of time.

¹⁹ World Bank. 2022. Doing Business Archive, as accessed Dec, 2022.

Table 2: Screening Result of Potential Products in line with Latent Comparative Advantages (LCAs)

4-digit HS code	Commodity	Criteria 1: sufficient market demand	Criteria 2: low capital intensity and produced by SMEs	Criteria 3: factor endowment and skills	Criteria 4: impact of transportation difficulty
8473	Parts and accessories for use with machines of heading 84.69 to 84.72	High demand both domestically and abroad, especially in Malaysia, China, and Singapore.	While the production is more and more automated, some exquisite parts such as the polishing of optical readers are still largely produced manually.	While the process is exquisite, the skill is transferrable after training. Raw materials can be imported.	Neutral, as it's not time-sensitive.
6403	Footwear with outer soles of rubber, plastics, leather or composition leather and uppers of leather.	High demand in Australia.	Yes.	Yes.	Neutral, if these clothes are relatively less time-sensitive.
6203	Suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear); men's or boys' (not knitted or crocheted)	High demand in Australia.	Yes.	Yes.	Neutral, if these clothes are relatively less time-sensitive.
8517	Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of	High demand both domestically and abroad, especially in Singapore, Vietnam, and Australia.	No.	No.	Neutral, the item is usually not time-sensitive.

	voice, images or other data, including apparatus for communication in a wired or wireless network				
4202	Trunks; suit, camera, jewellery, cutlery cases; travel, tool, similar bags; wholly or mainly covered by leather, composition leather, plastic sheeting, textile materials, vulcanised fibre, paperboard	Medium domestic demand and large international demand in Australia and Singapore.	In some cases.	Yes.	Negative for bulky items like trunks. Neutral for smaller bags.
6204	Suits, ensembles, jackets, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear); women's or girls' (not knitted or crocheted)	High demand in Australia.	Yes.	Yes.	Neutral, if these clothes are relatively less time-sensitive.
6110	Jerseys, pullovers, cardigans, waistcoats and similar articles; knitted or crocheted	High demand in Australia.	Yes.	Yes.	Neutral, if these clothes are relatively less time-sensitive.
8521	Video recording or reproducing apparatus, whether or not incorporating a video tuner.	Low demand both domestically and abroad.	No.	No.	Neutral, the item is usually not time-sensitive.

8525	Transmission apparatus for radio broadcasting or television, whether or not incorporating reception apparatus or sound recording or reproducing apparatus; television cameras, digital cameras and video camera recorders	High demand both domestically and abroad, especially in Australia.	In some cases.	Yes. Export already exists in the Solomon Islands.	Neutral, the item is usually not time-sensitive.
6104	Suits, ensembles, jackets, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (not swimwear), women's or girls', knitted or crocheted	High demand in Australia.	Yes.	Yes.	Neutral, if these clothes are relatively less time-sensitive.
8528	Monitors and projectors, not incorporating television reception apparatus; reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus.	Medium domestic demand and large international demand in Malaysia, Australia, Singapore and Vietnam.	No.	No.	Neutral, the item is usually not time-sensitive.

8529	Parts suitable for use with the apparatus of headings 85.25 to 85.28.	Medium domestic demand and large international demand in China, Malaysia, and Vietnam.	Yes.	Yes.	Neutral, the item is usually not time-sensitive.
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To briefly conclude this section, the recommended subsectors for the Solomon Islands include light manufacturing of clothing items such as suits, footwear, and jerseys. Due to the extended transportation time to most countries, manufacturing unfashionable clothing is more

Box 1: The Prospects for Light Manufacturing - Fiji

According to the Observatory of Economic Complexity, in 2021, the textile, clothing, and footwear (TCF) industry accounts for 6.15% of Fiji’s total export. The success of Fiji has been summarized as a strategy of “near-sourcing”, where neighboring high-income countries (in this case Australia and New Zealand) that have lost comparative advantage in light manufacturing outsource to geographically near producers. This is especially attractive for small volume demands with fast turn-around that can’t be satisfied by large producers like China, which tends to require a minimum volume for sales.

The comparative advantages of Fiji include 1) the low labor cost compared with neighboring high-income countries; 2) the flexible number of items per stock-keeping unit (SKU); 3) the fast turnaround of stock; 4) common language and time zone that facilitate communication. These are especially valuable for the production of sportswear and workwear, which may involve a nuance of multiple sizes, with limited number of orders for each size. It also provides an advantage in producing fashionable clothes immediately in a Just-in-Time (JIT) manner.

suitable. However, with its vicinity to Australia and New Zealand, the Solomon Islands can learn from Fiji to develop its niche in ‘near-sourcing’ market (see Box 1).

These advantages, especially the flexible number per SKU and the fast turn-around, has enabled Fiji to not only attract outsourcing in from the neighboring countries, but also from Europe. With a growing trend for quickly catering to each customer’s particular, changing needs, this niche will continue to be valuable in the future.

Due to the limited size of Fiji’s economy, there is a slice of pie for the Solomon Islands to share. It also shares the same language (English) with Australia and New Zealand; it is in between the time zones of Australia (GMT+10) and New Zealand (GMT+12); it is small in size, with the majority of private firms being SMEs that are willing to provide flexible orders without volume threshold; its labor costs (204 USD in 2019) is even lower than that of Fiji (316 USD in 2019). A major binding constraint is therefore to achieve the fast turn-around rate and the JIT production. Transportation infrastructure including ports and airports are important in bringing down the time of trade. Besides, a sustained energy production will help maintaining a longer hours of work shift, leading to more timely production. Finally, industrial parks allow these infrastructures to be gathered at a single place to serve a maximal number of firms. We will further discuss the provision of infrastructure in Section 6.2.

Manufacturing of parts of machines is also an LCA. While in some processes, labor is being replaced through automation, others, such as the polishing of exquisite parts, can still be labor-intensive and involves transferrable skills. However, previous experience in other SIDSs has cast doubt on the feasibility of such schemes (see

Box 2). Different types of parts and accessories involve different levels of skill and capital intensity. Therefore, further analyses are required for determining whether labor-intensive production can be favorable in specific types of accessories manufacturing.

5.1.1 Box 2: The Prospects for Manufacturing of Parts and Accessories - Yazaki Samoa

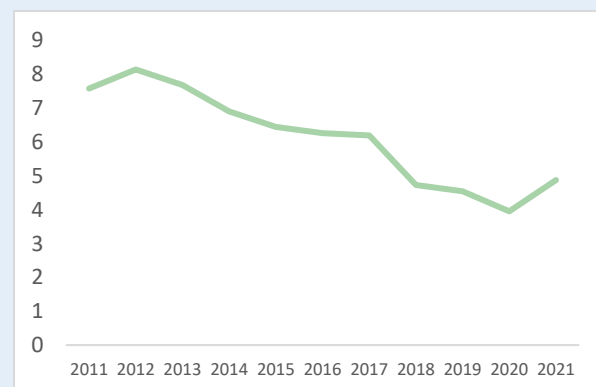
Yazaki Samoa is a subsidiary of the Yazaki Corporation, a Japanese-owned global automotive parts supplier with a focus on wire harnesses, instruments and components. In 1991, when Yazaki closed its branch in Australia, the Samoa government immediately encouraged Yazaki to consider Samoa as place of operation, offering attractive terms including free-of-charge utility of government-sponsored buildings, and exemption from duty taxes. Yazaki subsequently started its branch factory in Samoa.

This seemed to be a win-win situation: for Yazaki, the operation enables it to leverage its favorable concessional market-access arrangement for export to Australia; for Samoa, the main objective is to provide more employment opportunities. As a result, according to Samoa's Prime Minister Tuilaepa, 3,000 jobs were created; the plant made up over 20% of the manufacturing sector's total output. Net receipts amounted to between \$1.5 million and \$3.03 million annually (Samoa Observer, 2017).

In 2017, however, Yazaki Corporation closed its subsidiary in Samoa. This led the manufacturing value added in Samoa to dampen from 6.19% of GDP in 2017 to 4.73% in 2018 (see Figure 24). The immediate cause is the close down of several car manufacturers in Australia, including Ford, GM Holden, Toyota. With Yazaki Samoa's export depending entirely on the favorable terms with Australia, the firm is highly susceptible to demand shocks in the Australian market.

However, the root cause is more inherent. The reason why Yazaki Samoa can only gain an edge in terms of costs with favorable trade conditions, is because its production is inherently at odds with the local endowment. According to Samoa's Prime Minister Tuilaepa, 3,000 employees were hired for jobs that 1,000 people could do, as the economy has little capital formation, but a large amount of workers hoping to be hired. Meanwhile, the production was not properly adapted to a labor-intensive environment, leading to redundancy in employment. This has led to the high cost of production, and ultimately to the failure of the operation.

Figure 24: Manufacturing Value Added in Samoa, 2011-2021



Source: The World Bank 2021. World Development Indicators, as accessed Sep. 2022.

Apart from the Latent Comparative Advantage, we also look at whether certain Revealed Comparative Advantages (RCAs) have emerged through self-discovery. By 2021, 15 3-digit HS code sectors exhibit RCA in the Solomon Islands. These sectors share a common trait: they are all derivatives of natural resources that are abundant in the Solomon Islands. They can be classified into 3 groups: 1) wood-based products; 2) fish and its derivatives; 3) mineral-based products. A common trend in each group is that from 2001 to 2021, related industries have been moving along the value chain to discover more value-added sectors than direct export of resources. Take wood-based products as an example. In 2001, only rough or simply-worked wood has an RCA. Starting in 2015, worked wood, which is classified as a manufacturing product rather than crude materials, gained RCA. However, rough wood remained dominance in export, with its RCA increased from 710.5 in 2015 to 793.3 in 2021. This suggests that resource-based manufacturing potentials in the Solomon Islands can be further facilitated to make better use of its natural resources²⁰.

²⁰ United Nations. 2022. UN Comtrade Database, as accessed Dec, 2022.

6. Policy Recommendation: How to Remove Key Constraints?

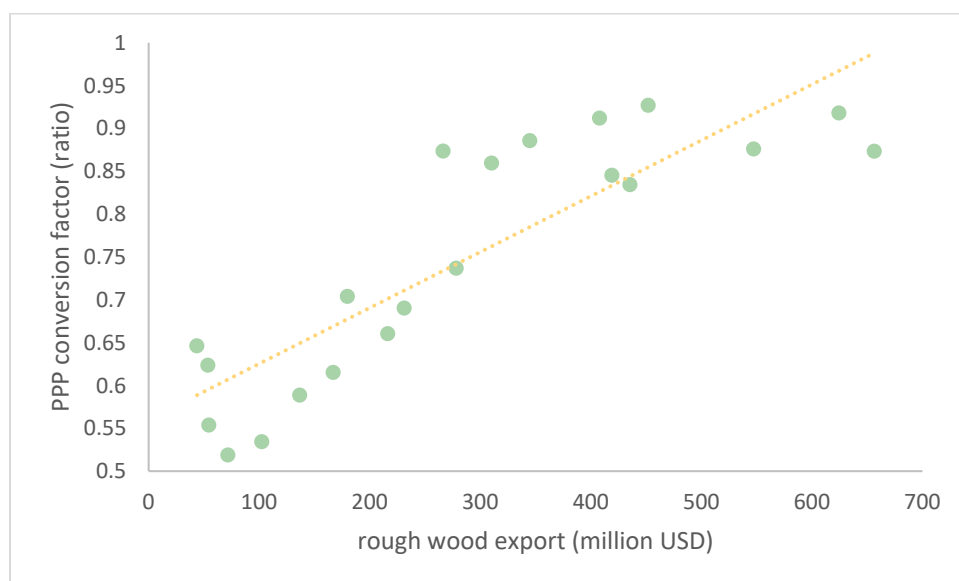
6.1 Escaping the Dutch Disease

As has been discussed in Section 4, there has been a significant discrepancy between the wage level of the Solomon Islands measured by US dollars and Purchasing Power Parity (see Figures 16 and 17). As a result, while the real wages in the Solomon Islands are low domestically, suggesting LCA in light manufacturing, this comparative advantage is not realized due to high nominal wages. This suggests that the real exchange rate in the Solomon Islands might be too high, which is indeed the case

when compared with most of its potential competitors²¹ (see Figure 9).

As has been discussed in Section 2, Dutch disease is an important cause of the high real exchange rate in the Solomon Islands. Although further studies are needed to establish a causal relationship, from 2000 to 2020, the correlation between rough wood export in the Solomon Islands and its PPP conversion factor is as high as 0.87 (see Figure 23).

Figure 24: Correlation between Rough Wood Export and PPP Conversion Factor, 2000-2020



Source: The World Bank 2021. World Development Indicators, as accessed Oct. 2022; MIT. The Observatory of Economic Complexity (OEC), as accessed Oct. 2022.

²¹ We look at representative LDC countries from different regions.

Interestingly, another SIDS -Timor-Leste- is also highly reliant on resource export, and has been experiencing a constant current account surplus before 2015. However, it is not inflicted with the Dutch disease, and its PPP conversion factor remains low. A major reason is that the country has set up the state-managed Petroleum Fund, governing all revenues from Oil export. As a result, profits from resource export do not flow directly into the economy, causing inflation of real prices, but are gradually released into the economy under the government's control.

Due to the difference in the ownership structure of natural resources, it is unrealistic for the Solomon Islands to establish a similar fund managed by the government: in 2010, publicly-owned forest areas only account for 0.29% of total forest areas, the rest being privately-owned, and publicly-owned areas are continually sold to private institutions through lease agreements (FAO, 2015). Therefore, to make up for the inability of state intervention in terms of export revenue, other measures must be taken to prevent the increase of the real exchange rate.

One alternative would be to actively adjust the required reserve ratio of banks. Take China as an example, after its accession to the World Trade Organization in 2001, it has been enjoying a trade surplus annually since 2003.²² In order to prevent inflation, the government has been gradually raising the required reserve ratio, from 6% in 2001 to as high as 21% in 2011.²³

In response to the COVID-19 Pandemic, the statutory reserve ratio in the Solomon Islands has been eased from 7.5% to a mere 5%.²⁴ As the

Pandemic shock has become a past event, the pass-through effect is hitting the economy, with inflation rate increased from 4.3% in June 2022 to 9.1% in December 2022²⁵. In the short run, raising the reserve ratio can help combat inflation after the pandemic shock. It also serves as an opportunity to bring the exchange rate to a more appropriate long-term level with relatively little political resistance. The government can gradually raise the required reserve ratio to absorb the influx of liquidity resulting from resource exports. The raised reserve ratio will also induce banks to hold more treasury bills, thereby financing the government deficit (Sterne, 1996), which in 2020 amounts to 11.46% of GDP.

6.2 Building Infrastructure for Industrialization

Geographically, the Solomon Islands is made up of 6 main islands and a total of 992 isolated islands, making it difficult to provide essential infrastructure services including electricity, transportation, and industrial parks.

A stable source of energy is crucial for the planning and operating of manufacturing firms. However, by 2020, only 73.35% of the population have access to electricity.²⁶ The number is only marginally improved to 77.32% of the population, when we restrict our attention to urban areas, where power is mostly supplied through diesel generators operating on fuel: in 2019, power generation from diesel accounted for 86.64% of total power generation.²⁷ Due to a lack of local sources of fuel, petroleum fuel is usually imported, accounting for 17.01% of total export in 2020.²⁸ As

²² The World Bank 2021. World Development Indicators, as accessed Oct. 2022.

²³ The People's Bank of China.

²⁴ Central Bank of Solomon Islands.

²⁵ Central Bank of Solomon Islands.

²⁶ The World Bank 2022. World Development Indicators, as accessed Dec. 2022.

²⁷ Solomon Islands Electricity Authority (Solomon Power) Annual Report (2019).

²⁸ MIT. The Observatory of Economic Complexity (OEC), as accessed Oct. 2022.

a result, the costs of electricity are high, averaging at 0.25 USD per kWh, compared with countries that have successfully developed their light manufacturing sector (0.08 USD per kWh in Vietnam²⁹, 0.06 USD per kWh in India³⁰). To reduce the costs of energy and improve accessibility, the Solomon Islands government has been trying to expand its grids and develop renewable energy. However, as both solutions entail considerable up-front costs, the progress has so far been slow.

Besides, transportation infrastructure is essential for both domestic logistics and cross-border trade. Due to geographic factors, the country mainly relies on maritime transportation for export. However, of the 81 wharves nationwide, only 33 are in maintainable conditions (United States Agency for International Development, 2021). Besides, the country only has one international airport, which is the Henderson Field near Honiara. Domestic transportation is poorly managed, with its quality of trade and transport related infrastructure index (including ports, railroads, roads, information technology) scoring 76 out of 100. Overall, in 2023, its logistics performance ranks 73 out of 147 countries.

Besides, as has been discussed in section 3, the population of Solomon Islands is relatively scattered, it would be advisable to kickstart its industrialization at a single densely-populated area. This would not only enable firms to access a large pool of low- and middle-skilled labor, but will also bring down the transportation cost, by pooling freight containers of different firms on a single ship. Providing related infrastructure, including utilities, telecommunications, waste treatment, landscaping, storage units, requires a large amount of upfront funding.

As a small island nation, the Solomon Islands

needs to resort to external sources of funding from international organizations or other countries to support the funding of these large-scale projects. Currently, it has partnered with Australia under the Solomon Islands Infrastructure Program (SIIP), which provides the government with 1.65 billion SBD (199 million USD) for infrastructure building, with a focus on port construction and market redevelopment.

Besides, China has been actively promoting infrastructure investments in BRI countries. Take green energy as an example, by the first half of 2020, China's investment in renewable energy in BRI-related countries surpassed investment in fossil energy for the first time (Zhou, 2021), rising from 35% in 2017 to 56% in 2020 (Green BRI Center, 2020). Recently in 2022, a new Opinion has been issued, encouraging Chinese firms to scale up renewable energy investment and cooperation abroad (National Development and Reform Commission, 2022), which provides a favorable condition for the Solomon Islands to cooperate with experienced Chinese corporations to scale up its clean energy infrastructure.

²⁹ Ministry of Industry and Trade (Vietnam).

³⁰ Central Electricity Regulatory Commission (India).

6.3 Taking a Pragmatic Approach to the Opportunity of Digitalization

Digitalization is the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business. Currently, digitalization in the Solomon Islands is still at an early stage: the number of secure Internet servers in 2020 is 62.21 per 1 million people, which is significantly lower compared with the average level of lower-middle income countries (671.26 per 1 million people). As a result, only 11.92% of the total population uses the Internet in 2017³¹. A natural question to follow is whether the inaccessibility of the Internet is a major binding constraint that has thwarted the development of industries.

In the context of the light manufacturing sector, the most relevant part of digitalization is the idea of “smart factories” emerging along with Industry 4.0. This includes interconnected machines and people, information transparency, technical assistance, and decentralized, automated decisions. With the combination of up-to-date data and efficient algorithms, “smart factories” can boost production efficiency and avoid waste.

In this section, we focus on the “smart factories” aspect of digitalization for two reasons: 1) in Section 5, the sectors identified as the LCA’s of the Solomon Islands are mostly light-manufacturing sectors; 2) in light of the light manufacturing sector in China and Vietnam, it is the dominant impact of digitalization.

While “smart factories” are no doubt impacting the competitiveness of traditional labor-intensive factories, a study has shown that even in more developed countries, such as Vietnam, when it comes to fabrication, advanced methods for manufacturing related to Industry 4.0 are used by

only 6.1% of the firms and robots by 5.9% of the firms. (Cirera et al., 2021). This suggests that traditional manufacturing is still competitive, and that the LCA of the Solomon Islands is not fundamentally challenged by digitalization.

While the digitalization process is not necessary, it is certainly beneficial to firms’ productivity and the economy’s industrialization (UNIDO, 2020). We therefore look at the specific case of the Solomon Islands to determine whether it is ready for some degree of digitalization in the manufacturing process.

Two important criteria for digitalization-readiness are 1) digitalization opportunities reflected by the development of manufacturing and 2) digitalization skills measured by high-skill employment as a share of the working population (UNCTAD, 2022b).

Digitalization opportunities are a measure of industrial foundation. As has been discussed in Section 2, the manufacturing sector in the Solomon Islands is highly limited (see Figure 4). Without a strong industrial foundation, the automation potentials related to the production process are small. As a result, automation is unable to fully unleash the increasing return to scale, and will not be profitable. In terms of skills, by 2013 (latest data), only 13.73% of the Solomon Islands’ working population are high-skilled workers, which is significantly lower than the world average of 23.60% at that time³². We therefore conclude that the Solomon Islands is not yet ready for digitalization in its light manufacturing sector. Instead, it should focus on building a strong industrial foundation, and improving the skills of workers, to equip itself with the necessary prerequisites for digitalization.

³¹ Source: The World Bank 2021. World Development Indicators, as accessed Sep. 2022.

³² ILOSTAT 2022.

7. Conclusion

This report applies the GIFF to the Solomon Islands, to help identify industries in which it has a latent comparative advantage, and design policies that specifically target these industries. In this way, the countries can kick-start industrialization, and realize long-term structural transformation.

We start by analyzing the country's factor endowment (or what it has). We find that capital formation is insufficient, making it more suitable for the Solomon Islands to develop labor-intensive light manufacturing, than capital-intensive heavy industries. It is also rich in natural resources, suggesting the possibility of developing resource-based manufacturing if it is not capital- and technology- intensive..

Next, we identify appropriate benchmark countries that can indicate the latent comparative advantage of the Solomon Islands, and provide opportunities for industrial transfer. Countries selected must have sustained high growth in the past 20 years, and be at a more advanced development stage than the Solomon Islands but not too advanced to provide useful benchmarking. In addition, the benchmark countries must have established a strong industrial base, and are losing their comparative advantages in light manufacturing, thus having potential incentives to

relocate its industries to the Solomon Islands. As a result, China may serve as the benchmark country of the Solomon Islands.

By looking at the declining industries of China, we determine which industries might be attracted to the Solomon Islands, taking into account factors of potential, feasibility, and the transportation challenge. The products most likely to be successful in the Solomon Islands are light manufactured goods. Self-discovery also reveals that the country has a comparative advantage in producing light manufacturing products related to wood, fish, and mineral resources.

However, light manufacturing firms are held back by many challenges including limited electricity supply, high transportation costs, and high labor costs due to the high real exchange rate. To address these challenges, it is recommended that the Solomon Islands actively seek external funding from international organizations and other countries, to build power and transportation infrastructure needed by firms in the light manufacturing sector. Besides, it should use the required reserve ratio as a tool to gradually adjust the real exchange rate to a more appropriate range.

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³³ 国家发展改革委等. 2022. “国家发展改革委等部门关于推进共建“一带一路”绿色发展的意见”.

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