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EQuIP

Enhancing the Quality of Industrial Policies

TOOL 7

Global Value Chains

EQuIP Tool 7:

Global Value Chains

Summary Sheet

Enhancing the Quality of Industrial Policies (EQuIP) – Tool 7	
Name of the tool:	Global Value Chains
Objective:	For developing countries, integration in global value chains (GVCs) has been highlighted in recent years as a key avenue for promoting industrial development. While significant economic and social developments have been achieved in many cases, the experiences of numerous developing countries show that not "any integration in any GVCs" is necessarily good for development. This tool enables the analyst to reveal the position of a country in GVCs, and to assess the developmental potential of a specific sector in GVCs, while outlining key strategic industrial policies accordingly. The tool is split into three sub-tools : GVC integration, GVC governance, and GVC upgrading.
Key questions addressed:	At the macro-level, the tool helps to understand the position of a country within GVCs and to identify the key GVC partners of the country through the use of some qualitative and quantitative indicators. Is the country directly linked to final markets in GVCs? Or is it linked through an assembly hub? What are the key sectors in which the country is integrated in GVCs? At the sub-sector level, the tool helps the analyst to understand the key factors underlying the integration of the country in GVCs. Is such integration driven by low production and labour costs, or is it driven by trade preferences? Does proximity to markets play a role? Or is the availability of special skills a crucial factor? These questions will be linked to indicators that allow the analyst to discuss the issues of control and capacities in order to answer questions such as: Who controls the integration of the location in GVCs? What capacities are localised in the country? What is the role of national or foreign firms in this integration? The tool will provide a matrix to discuss the strategic policy options that could emerge from this discussion and to answer questions such as: How fragile is the integration in GVCs? Should firms in a specific sector receive special advantages from the government? Finally, the tool presents methodologies to address questions such as: How can one assess trajectories of economic upgrading in GVCs? What are attractive GVC segments and attractive markets, and how successful is the country tapping into these attractive markets? How can one assess trajectories of social upgrading in GVCs?

Indicators used:	Value of exports in a manufactured or agricultural sub-sector Share of a sub-sector in total manufactured or agricultural exports Dependency on advanced markets Trade in semi-processed goods Use of foreign value-added in exports Ratio of imports of raw materials and semi-processed goods against exports of final goods Share of foreign value-added in exports Value of raw and semi-processed exports to “non-final” markets Ratio of imports of raw materials against exports of semi-processed goods Ratio of exports of semi-processed goods against exports of final goods Share of top two importers of inputs and intermediary products Dominance of a small number of advanced markets in total sub-sectoral exports Dominance of a small number of lead firms in the sub-sector Share of different markets in total exports of final goods Share of different markets in total exports of intermediary products Share of different countries in the exports of trade partners that import the country‘s intermediary goods Share of different exporters in the country‘s imports of inputs and intermediary products Revealed Comparative Advantage (RCA) Average wage adjusted to PPP US$ Diesel retail price Gasoline retail price Preferential trade agreement Preference margin in key export markets Percentage of duty-free imports Relative market access conditions Distance from export markets Transit time to export markets Performance of the logistics sector Imported inputs divided by exported outputs

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1. Introduction

One of the major changes in the organisation of global production and trade that has taken place over the last two decades is the growing importance of global value chains (GVCs) in managing and coordinating production and trade linkages across countries. This included a shift towards increased fragmentation in production and, accordingly, increased trade in parts and components between countries. It also entailed a shift in the way that production and trade are governed on a global scale. Most importantly, the role of lead firms, the majority of whom come from the advanced economies, in shaping the conditions of production and trade in different parts of the world has grown considerably. In a number of sub-sectors that are highly relevant to developing countries (agro industry, food, textile and garments, electronics, etc.) the combination of growing retailing concentration in the advanced economies on the one hand and changes in the role of national governments in developing countries on the other hand resulted in a more active role for lead firms in governing production in developing countries and in determining the generation and distribution of value within and between different locations.

Three key issues were highlighted in the early research and policy work around global value chains. First, integration in GVCs is a key route to industrial development because it enables developing countries to gain higher value for their exports, to benefit from the economies of scale associated with exporting to larger markets, and to improve their production processes, often with the assistance of lead firms.

Second, to reap these benefits, developing countries should not only integrate into GVCs but they should upgrade their position in these chains by moving to higher value-added activities. Four key types of upgrading were distinguished in the GVC literature: Product, process, functional, and chain upgrading. Moreover, the GVC literature identified the type of chain governance as key determinant of the potential for upgrading within GVCs, with "lead firms" playing an important role in shaping this potential.

Third, upgrading through value chains is not limited to "narrower" economic upgrading but possibly also entails social and environmental upgrading. The policy implication here is that governments in the developing world, with the help of international development agencies, should focus on integrating their economic sectors into GVCs. Governments should also focus on helping local firms to upgrade their position in GVCs in order to capture larger shares of the value generated and, ultimately, to achieve a higher degree of economic and social upgrading. This argument was translated into a policy focus on "integration issues" (such as improving infrastructure, logistics, trade facilitation, and standards of production) as well as a focus on "upgrading issues", mostly through targeted sectoral programmes.

While important advances have been achieved in different countries using this agenda, several key patterns suggest that it is perhaps time to engage more critically with this issue, asking if this method of integration and upgrading in GVCs is the main viable economic and social developmental route for developing and low income countries in today's world. First, the focus on integration in GVCs as the key route to development has encouraged certain policies with questionable economic and social implications. One such implication is that developing country governments have granted financial and employment benefits to foreign firms with the hope of facilitating integration in GVCs. While these policies can be justified in some cases, many studies show that the notion that *any* integration in GVCs is positive for development is highly questionable. In some cases, foreign firms with a limited long-term strategy in a location benefitted from such policies just to establish very footloose production with no intention to build any long-term economic linkages with the host economy (supply linkages, training of local managers, transfer of technology, etc.).

Second, while earlier research has documented many cases of economic and social upgrading, the limits to upgrading in GVCs are becoming increasingly visible. Firms from developing countries face major obstacles to upgrade beyond a certain point in GVCs. Once these firms have reached

the high value-adding activities in these chains, they are often blocked by lead firms from the advanced economies or by contract manufacturers from newly industrialised economies/emerging economies that control the production. Assistance from lead firms, national governments and international agencies has helped producers in developing countries to improve productivity, quality of production, logistics, communications, etc. Beyond this point, developing country firms have found it significantly harder to upgrade.

Third, the shifts in growth poles in the global economy - with growing demand from emerging markets on the one hand and stagnation in demand from some traditional markets (like the EU or the US) on the other hand - have led to questions about the focus of earlier GVC research which had put emphasis on exports to the advanced economies. The emergence of GVCs centred on emerging markets will entail new dynamics with regard to locations of production, upgrading, standards, and the division of tasks between exporting and importing countries. This will create both opportunities and threats for developing countries. The potential for creating new regional value chains is another area that is receiving increasing attention recently.

Within this context, this tool will help the analyst develop a better understanding of the position of a country in GVCs, its position regarding the governance of these GVCs, and the implications this has for economic and social upgrading. This will be done through three sub-tools that focus on:

(1) GVC integration,

(2) GVC governance, and

(3) GVC upgrading/downgrading.

Each of these sub-tools will provide a list of questions and a discussion of the methodology and analytical steps needed to answer these questions. An empirical case will be discussed in each of these sub-tools. The key questions each sub-tool aims to address are as follows:

(1) GVC integration

- What are the key existing GVC sectors of a country?
- How can an analyst assess the position of a sector within a GVC?
- Who are the country's key downstream and upstream GVC partners?

(2) GVC governance and control

- What is the key driver or determinant of participation of a specific sector in a GVC and how sticky/footloose is this integration?
- Who controls the participation of a specific sector in a GVC?
- What is the trade/regulatory framework underpinning GVC integration?

(3) GVC upgrading and downgrading

- How to assess trajectories of economic upgrading in GVCs?
- What are attractive GVC segments and attractive markets, and how successful is the country tapping into these attractive markets?
- How to assess trajectories of social upgrading in GVCs?

2. Sub-Tool One: Integration in Global Value Chains

The first issue the analyst will look at is how to assess the position a country in global value chains. This focuses on the basic integration of a country in GVCs, including the identification of the key sectors integrated in GVCs and of the key backward and forward GVC partners. The key questions the analyst will be able to answer through the use of this sub-tool are the following:

- What are the key existing GVC sectors of a country?
- How to assess the position of a sector in a GVC?
- Who are the key downstream and upstream GVC partners of a country?

2.1 Methodology and Analytical Steps

This section provides guidance to the analyst of how to reach a better understanding of the key questions outlined above using a combination of qualitative and quantitative indicators. It should be noted that it is very difficult to provide generalised indicators that will lead to simple answers to such questions. As such, the methodology presented here should be seen as a way of helping the analyst to develop an understanding of the issue and thus to contribute layers of context for data interpretation. Another important issue to note is that there are serious limitations when using trade data in GVC analysis. While new GVC databases are being developed, their coverage is still limited, particularly for low-income countries. Therefore, the new datasets will not be the main source of data for the analysis presented here. However, references will be made to indicators that can be obtained from these datasets. To illustrate how this analysis can be applied, an empirical example will be provided.

3.1.1. What are the key existing GVC sectors of a country?

First the analyst must identify the sectors that constitute cases of GVC integration as opposed to "conventional trade" relationships (i.e. trade at arm's length, i.e. purely market-based transactions). This can be difficult to discern because GVC trade is not limited to trade in fragmented products (e.g. parts and components), but also includes trade in non-fragmented products that are governed by GVC arrangements. While it is possible to capture the fragmentation element quantitatively (a number of datasets cover this), the governance element is difficult to capture in a quantitative way. The indicators/questions listed in Table 2.1 can help the analyst to identify the country's key GVC sectors.

Table 2.1: Identifying Key GVC Sectors

Indicator	Variable	Source
Value of exports in a manufactured or agricultural sub-sector and their share in total manufactured or agricultural exports	Total sub-sector exports and their share in total manufactured exports or agricultural exports	UN Comtrade
Dependency on advanced markets	Share of advanced economies in total exports of a sub-sector	UN Comtrade
Trade in semi-processed goods	Share of semi-processed goods in total trade of a sector	UN Comtrade
Use of foreign value-added in exports	Share of foreign value-added in exports	OECD-WTO TiVA database
Governance and nature of market linkages	Type of actors involved in the sector	Qualitative

Value and Share of Exports

In developing countries, particularly least developed countries, sub-sectors that are integrated in GVCs are often touted as "success stories" in the manufacturing and agricultural sectors. This often translates into high shares of these sub-sectors in total manufactured and agricultural exports. Therefore, the first indicator to look for is manufactured and agricultural exports by sub-sector, and then the share of different sectors in total exports.

Dependency on Advanced Markets

Another key characteristic of GVC sub-sectors in developing countries is the high reliance on a small number of export markets, which are usually advanced economies. Therefore, the second indicator to analyse is the share of different export markets in the total exports of a sub-sector; the higher the share of a small number of advanced markets, the higher the probability that these exports are governed by a GVC relationship.

Trade in Semi-Processed Goods

In some cases GVC sub-sectors experience a higher percentage of trade in semi-processed goods. This might be reflected in a higher share of semi-processed goods in imports of that sub-sector, or it might be reflected in a higher share of semi-processed goods in the exports of that sub-sector. This data can be gathered by looking at input-output trade classifications in different sub-sectors. Some databases, such as the Multilateral Trade Negotiations (MTN) database available on UN Comtrade, provide such breakdowns and data points for a number of sub-sectors.

Use of Foreign Value-Added in Exports

A number of international organisations are working to develop new measures to capture trade in GVCs. One useful measure is tracking the share of foreign value-added in exports within a specific sub-sector. The higher this share is, the more likely a sector is integrated in globally fragmented

production networks.

Governance Nature of Market Linkages

GVC sub-sectors are often dominated by foreign producers, foreign buyers, larger national producers, or intermediary sourcing actors. Because there are so few of these dominating actors, their presence is often very obvious in many developing or least developed countries. Their presence can take the form of either large producing globalised firms in sub-sectors such as automobile, minerals, and electronics, or of large supermarkets/brand firms in agro-food and garments. Furthermore, in many cases, there is a relatively small number of large national producers, which are often located in export processing zones. In some cases, there might be a large number of local small- and medium-sized producers exporting through a supply chain intermediary or exporting directly to a few global buyers. However, in a few developing countries, especially larger ones, there might be a relatively large number of producers and buyers. Through relatively little investigation, the analyst should be able to determine the nature of key actors in the sector and map the nature of trade linkages.

2.1.2. Understanding the Position of a sector in a GVC

Once a key GVC sub-sector is identified, the second issue to look at is the position of this sub-sector in the GVC. Developing countries could be integrated in a GVC by feeding directly to the end market, exporting through an "assembly hub" (where parts and components and other types of intermediate goods are shipped for final assembly), which could be another developing country, or by being an assembly hub for other developing countries.

Assembly and Final Processing Hub in a Fragmented Network

This scenario describes a sub-sector in a developing country that is at the last stage of the production networks. Parts and components are shipped from different countries to be assembled in the final location, and then exported to the final market. The main impetus for the integration of a low-income country in this situation is usually trade preferences and/or proximity to final market.

By looking at fragmentation and the structures of exports and imports, trade data allows a simple way of detecting whether a country serves as assembly and final processing hub across several different sub-sectors. For this purpose, analysts can use the MTN database which is available through UN Comtrade.[1] This database provides a breakdown of products into raw materials, semi-processed, and processed as shown in Table 2.2. By comparing the structure of a country's exports and imports in a given sub-sector, the analyst can begin to develop an understanding of the overall position of a specific industry in GVCs.

1 As will be shown below, there are other data classification schemes that also allow distinguishing products according to their degree of processing.

Table 2.2: The MTN categorisation of raw material, semi-processed and processed goods

Product Group	Raw Material	Semi-Processed	Processed
Wood, pulp, paper & furniture	0101 (wood, pulp, paper & furniture), raw materials	0102 (wood, pulp, paper & furniture), semi-finished	0103 (wood, pulp, paper & furniture), finished
Textiles and clothing	0201 (textiles and clothing), raw materials	0202 (textiles and clothing)- semi-finished	0203 (textiles and clothing)- finished
Leather, rubber, footwear, and travel goods	0301 (leather, rubber, footwear, and travel goods), raw materials	0302 (leather, rubber, footwear, and travel goods), semi-finished	0303 (leather, rubber, footwear, and travel goods), finished
Metals	0401 (metals, ores and waste)	0402 (metals, semi-finished)	0402 (metals, finished)
Chemicals		0502 (chemicals and photographic supplies, semi-finished)	0503 (chemicals and photographic supplies, finished)
Transport equipment			0603 (transport equipment)
Non-electric machinery			0703 (non-electric machinery)
Electric machinery		0802 (electric machinery, semi- processed)	0803 (electric machinery, finished)
Minerals, precious stones and metals	0901 (minerals, precious stones, and metals), raw material	0902 (minerals, precious stones, and metals), semi-finished	0903 (minerals, precious stones, and metals), finished
Manufactured articles			1003 (manufactured articles), processed
Fish and fish products	1101 (fish and fish products), unprocessed	1102 (fish and fish products), semi-processed	1103 (fish and fish products), processed
Fruit and vegetables	1201 (fruit and vegetables), fresh or dried	1202 (fruit and vegetables), semi-processed	1203 (fruit and vegetables), processed
Coffee, tea, mate, and cocoa	1301 (coffee, tea, mate, and cocoa), unprocessed	1302 (coffee, tea, mate, and cocoa), semi-processed	1303 (coffee, tea, mate, and cocoa), processed
Sugars		1402 (sugars), semi-processed	1403 (sugars), processed
Spices, cereals, and other food preparations	1501 (spices, cereals, and other food preparations), unprocessed	1502 (spices, cereals, and other food preparations), semi-processed	1503 (spices, cereals, and other food preparations), processed
Grains	1601 (grains)		
Meat	1701 (live animals)		1703 (meat, prepared or preserved or other meat products)
Oil seeds, fats, and oils	1801 (oil seeds, fats, and oils), unprocessed or semi-processed		1803 (oil seeds, fats, and oils), processed
Flowers, plants, vegetable materials	1901 (flowers, plants, vegetable materials, etc.)		
Beverages			2003 (beverages and spirits)

Dairy products	2101 (dairy products), unprocessed and semi-processed		21013 (dairy products), processed
Tobacco	2201 (tobacco) unmanufactured		2203 (tobacco) manufactured
Other agricultural products	2301 (other agricultural products), unprocessed	2302 (other agricultural products), semi-processed	2303 (other agricultural products), processed

The MTN database can be used to analyse a number of industries, particularly those where products can be classified into raw, semi, and final, and in which processing is an important characteristic of the production (or manufacturing) process. Obviously, this is primarily true for resource-based industries. This includes many sub-sectors that are relevant for low-income countries such as food products, textiles and garments, leather, footwear, minerals, coffee, and meat products. Another attempt to develop such a classification can be found in Sturgeon and Memedovic (2010) who provide a breakdown of apparel, footwear, electronics, and automobiles/motorcycles into intermediate and final goods. Athukorala and Menon (2010) also provide a classification of parts and components for machinery and transport equipment, as well as for miscellaneous manufacturing. Another tool that is useful, albeit still limited in coverage, is the OECD-WTO *Trade in Value-Added* (TiVA) database. This database provides information on the share of foreign value-added in a given country's gross exports across a range of sub-sectors. The higher this share is, the more integrated a country is in the later stages of the GVC. The database offers data divided into key sub-sectors which enable the analyst to identify the key GVC sub-sectors of a country. Sub-sectors with large export values and high shares of foreign value added are important GVC sectors in these countries that rely on imported inputs.

Feeding into an Assembly Hub in a Fragmented Network

Another model of integration is when a developing country is integrated in the GVC through an assembly hub. In this model, the developing country is not exporting directly to the final market but its exports are processed and finished in a third country. This is very common in Asia where a lot of regional production sharing is taking place. Most importantly, China operates as an assembly hub for exports from the rest of the region before final products are shipped from China to final markets.

Capturing and analysing this model using trade data is more complex than for the previous model because it is difficult to separate the exports for industry and re-export from exports for local consumption. One of the solutions is to qualitatively identify regional and global assembly hubs, and then analyse the exports of a given country to these hubs. The OECD-WTO TiVA database can be useful for this, especially because data on most of the countries that perform this role of an assembly hub is available in the database. As mentioned, this database provides a measure of the foreign value-added share in a country's gross exports for different sub-sectors. The main shortcoming of this method of analyses is that the number of countries covered so far in the TiVA database is still relatively limited. Putting that aside, most countries that act as assembly hubs in GVCs are already covered and data coverage is expected to expand in the future. This makes this method a useful and easy way to understand the position of a country in a GVC, while also determining its key GVC partners.

Exporting Directly to the Final Market: Non-Fragmented GVCs

The two models presented above are cases where a country is integrated in fragmented GVCs. However, fragmentation is only one aspect of GVCs. The other, perhaps the more important aspect

for low-income countries, is that of governance. Governance relates to the role of large foreign buyers in determining the conditions of production and the distribution of value across actors in the GVC. The type of GVC governance has important economic and social implications for developing countries.

In any case, this model of non-fragmented GVCs is common in agro-industry or in countries with vertically integrated supply networks in textile and garments or footwear. In such cases, the trade exchange is only and directly between two countries, but it is governed and controlled by private firms often from the importing country. The identification of cases where this model applies typically has to involve qualitative research methods. Often, these sub-sectors are known to experts on industry and trade issues. The analyst can consult these experts to develop an understanding of specific industries. Some characteristics that one might find in such industries in low-income countries are:

- These sub-sectors account for a high percentage of total exports.
- High dependency on a small number of markets, often the "traditional GVC markets" (Europe and the United States), with limited sales to domestic and regional markets.
- In some cases, products from these sub-sectors are the only exports to such markets.
- Foreign firms often play a large role in production, purchasing, logistics, or other activities, including involvement in issues around health and safety and environmental standards.

Table 2.3 presents a number of indicators the analyst can use to assess the position of a country within a GVC.

Table 2.3: Determining the position of a sub-sector in a GVC

Type of GVC Position	Indicator	Source
Assembly and Final Processing Hub in a Fragmented Network	Ratio of imports of raw materials and semi-processed goods against exports of final goods	UN Comtrade
	Share of foreign value-added in exports	OECD-WTO TiVA database
Feeding into an Assembly and Processing Hub in a Fragmented Network	Value of raw and semi-processed exports to "non-final" markets	UN Comtrade
	Ratio of imports of raw materials against exports of semi-processed goods	
	Ratio of exports of semi-processed goods against exports of final goods	
	Share of top two importers of inputs and intermediary products	
Exporting Directly to the Final Market	Dominance of a small number of advanced markets in total sub-sectoral exports	UN Comtrade
	Dominance of a small number of lead firms in the sub-sector	Qualitative research

2.1.3. Who are the key downstream and upstream GVC partners?

By this stage, it should be clear to the analysts who the key backward and forward GVC partners are. The indicators in Table 2.4 can be used to confirm this.

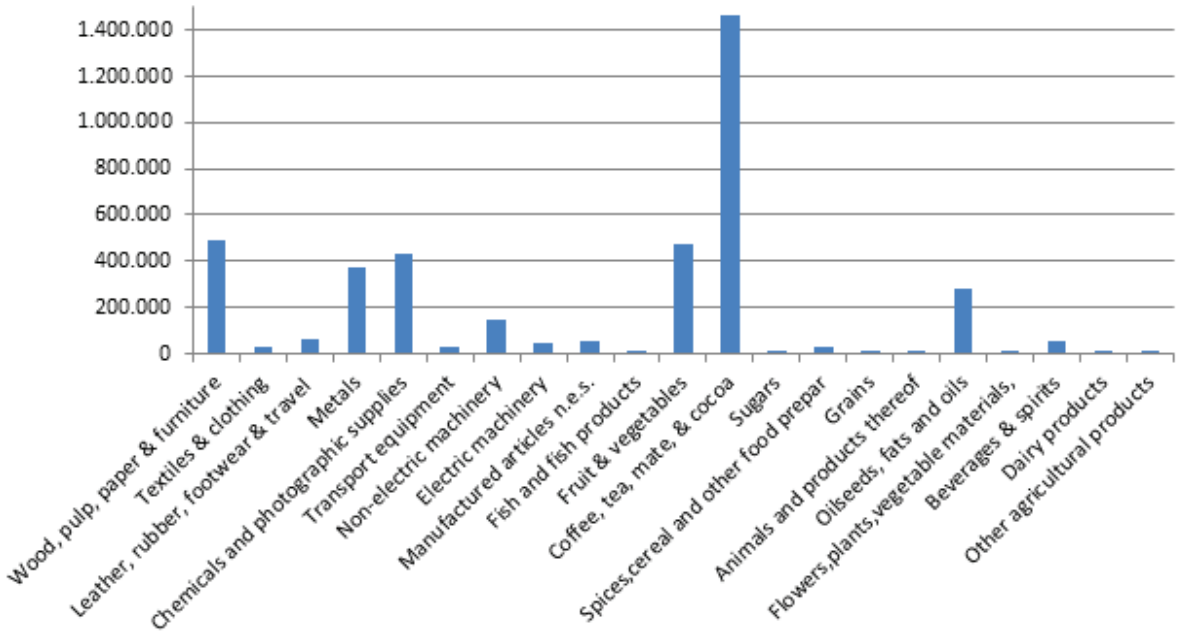
Table 2.4: Identifying Key GVC Partners

Indicator	Variable	Source
Exports of final goods to different markets	Share of different markets in total exports of final goods	UN Comtrade
Exports of intermediate goods to an assembly hub	Share of different markets in total exports of intermediary products	UN Comtrade
Exports of final goods by trade partners that import the country's intermediary goods	Share of different markets in the exports of trade partners that import the country's intermediary goods	UN Comtrade
Imports of inputs and intermediary products	Share of different exporters in the country's imports of inputs and intermediary products	UN Comtrade

2.2. Analysis and Interpretations of Findings

This section provides an example of how to conduct the previous analysis using the case of Ghana. As will be illustrated, how the exact analytical process to follow will look like is context-specific, as some questions are relevant for certain sub-sectors and GVCs while they are not applicable for others. As discussed above, the first step is to identify the main GVC sub-sectors of a country. The four quantitative indicators outlined in Table 2.1 can help us to identify these key sub-sectors. Figure 2.1 shows the top exports of Ghana by sub-sector (excluding minerals and petroleum).

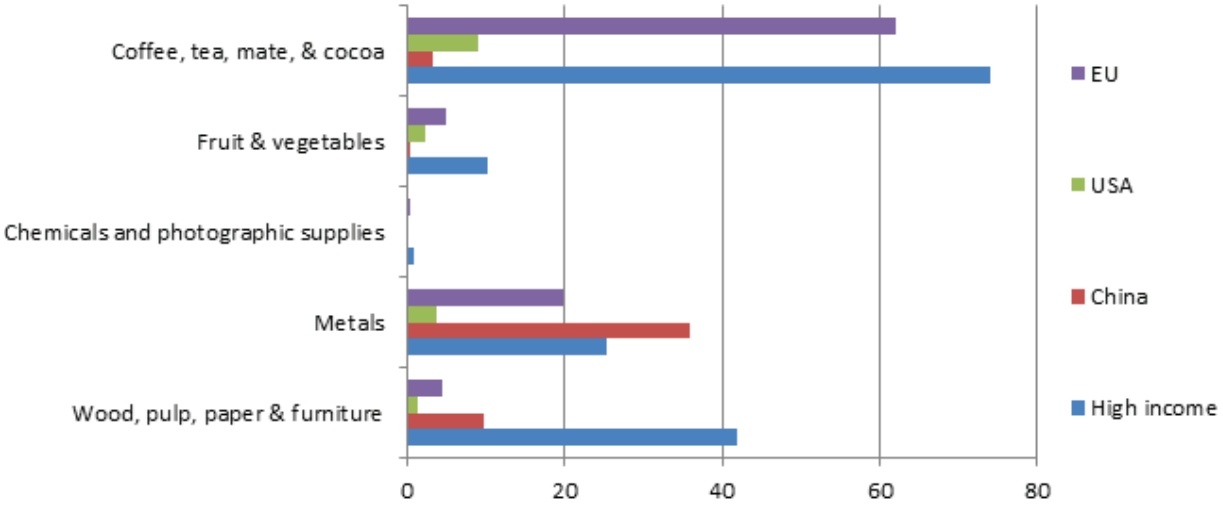
Figure 2.1: Ghana Exports by Sector, 2013, US$ million



Source: UN Comtrade

Figure 2.1 shows that the five most important product groups in Ghanaian exports are: (1) coffee, tea, mate and cocoa; (2) wood, pulp, paper and furniture; (3) fruit and vegetables; (4) chemicals and photographic supplies; and (5) metals. If we look at the main markets for these five product groups (see Figure 2.2), we find that coffee, tea, mate and cocoa is the product group with the highest dependency on high-income markets, particularly the EU (which in 2013 absorbed more than 60% of all Ghanaian exports in this sub-sector). The Ghanaian wood, pulp, paper and furniture sub-sector is also partially dependent on demand from high-income markets, while metal products have a high level of dependency on China (which is the destination of more than 35% of all Ghanaian metal product exports; see Figure 2.2). Although not necessarily fragmented from a trade perspective, Ghanaian exports of coffee, tea, mate, and cocoa should be considered GVC exports, given the dependency on demand from advanced markets and the well-known governance nature of the GVCs for these products.

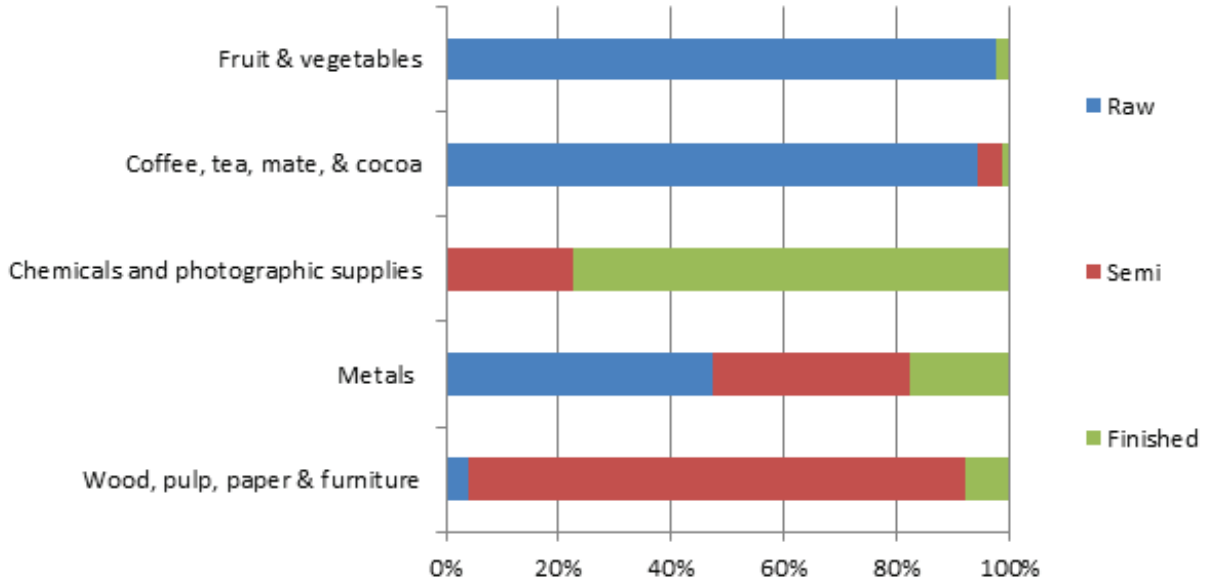
Figure 2.2: Ghana's exports by sub-sector and export market, 2013, share of total (in %)



Source: UN Comtrade

The next step for the analyst is to look into the identified sub-sectors to assess the degree of processing. Figure 2.3 shows the shares of, respectively, raw materials, semi-finished, and finished products in the total exports for each of the five sub-sectors which above were identified as key GVC sub-sectors for Ghana. It is important to note that the way of classifying product groups within a sub-sector differs across sub-sectors because in some subsectors the MTN classification scheme applied here only distinguishes between semi-finished and finished categories (see also Table 2.2). Furthermore, the analytical conclusions may differ across sectors. While, generally speaking, higher degrees of processing are advantageous (because they tend to imply higher levels of value addition), this is not applicable to many fruits and vegetables where fresh products often earn higher unit prices than prepared or preserved products. Overall, as can be seen in Figure 2.3, raw and semi-finished categories dominate Ghanaian exports with the exception of chemicals and photographic supplies.

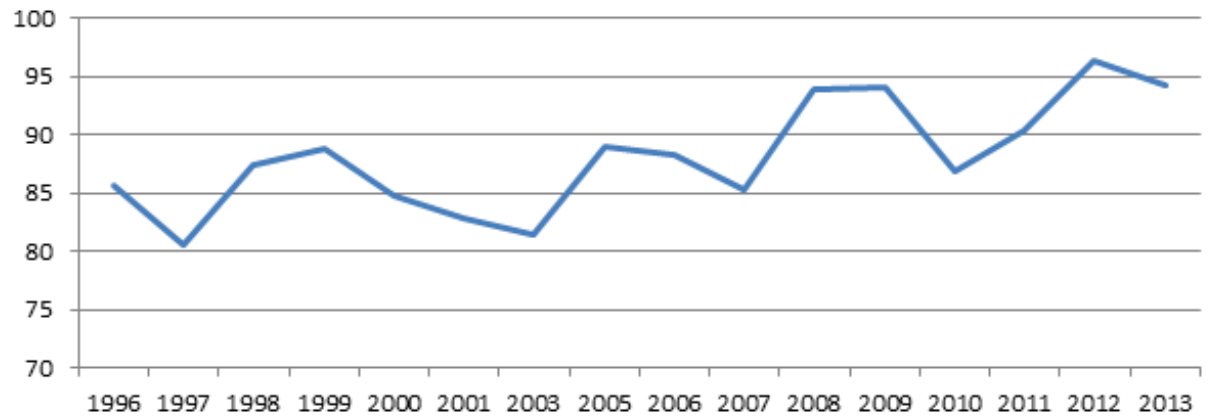
Figure 2.3: Share of raw or semi-finished products in total Ghanaian exports by sub-sector, 2013 (in %)



Source: UN Comtrade

At this stage, it is possible to start looking at specific sub-sectors in greater detail. From the above analysis it is clear that coffee, tea, mate and cocoa is the key GVC sub-sector in Ghana as evidenced by the size of exports, the high dependency on high-income markets (especially the EU), and also the high level of unprocessed or semi-finished products in sub-sectoral exorts. The share of unprocessed exports in this product category has, in fact, been increasing over time, pointing to a decline in local processing (Figure 2.4).

Figure 2.4: Share of unprocessed products in total Ghanaian exports of coffee, tea, mate, and cocoa

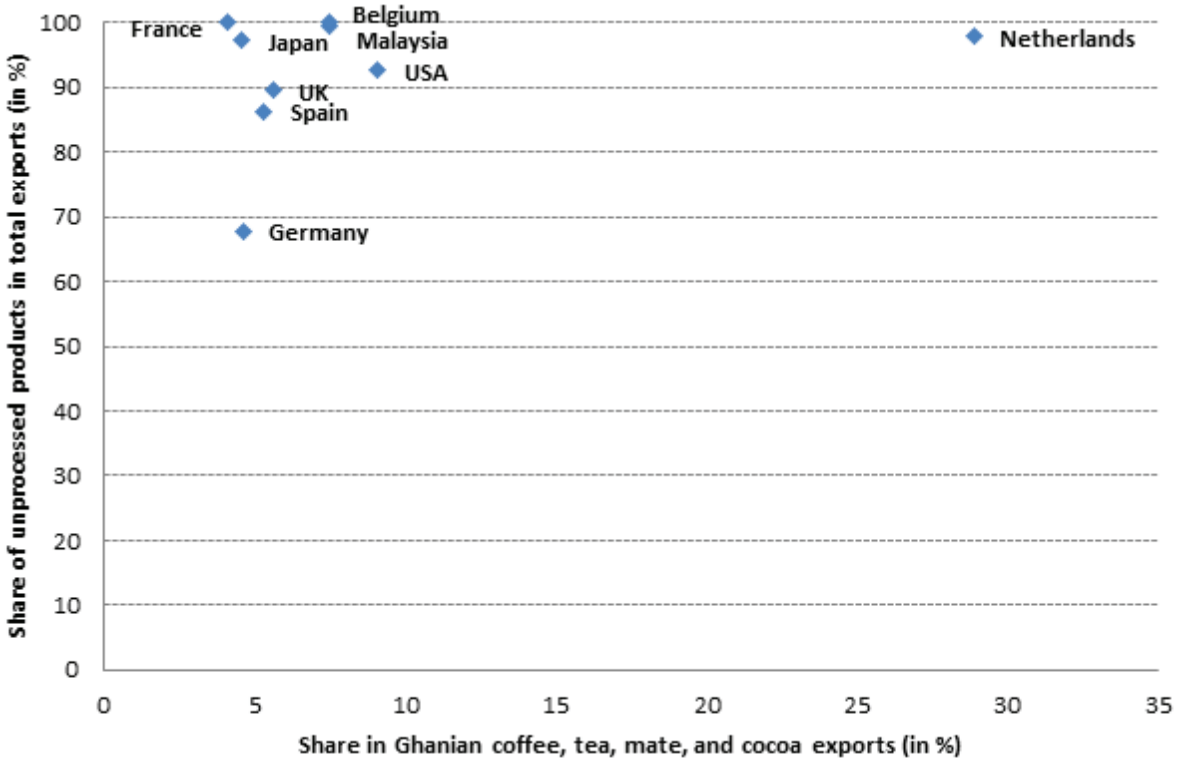


Source: UN Comtrade

The composition and size of a country's exports in a given sub-sector can also be compared across key markets or against key competitors in different markets as well as over time. Figure 2.5 shows the shares of the nine most important markets in Ghana's total exports of coffee, tea, mate, and cocoa as well as the share of unprocessed products in the total of sub-sector exports to each of these markets. The graph reveals that the Netherlands are the destination of close to 30% of Ghanaian coffee, tea, mate, and cocoa exports. It also shows that almost all of Ghana's exports of coffee, tea, mate, and cocoa to Belgium, France, Japan, Malaysia, the Netherlands and the USA

consist of unprocessed products. Only in the case of Germany is the share of unprocessed products in total sub-sector exports below 70%.

Figure 2.5: Market share and degree of processing of Ghanaian coffee, tea, mate, and cocoa exports in key markets, 2013

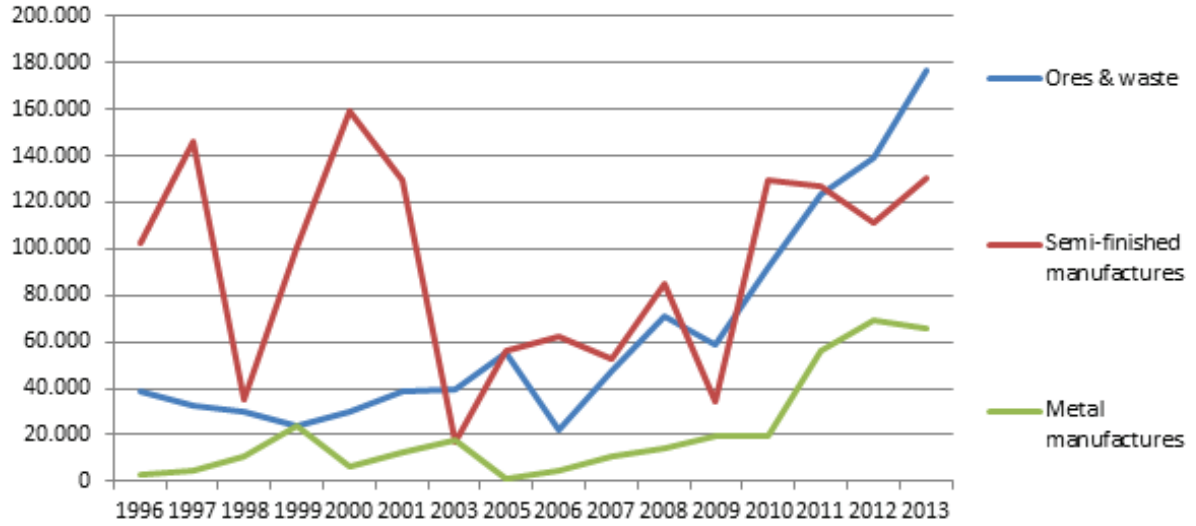


Source: UN Comtrade

Ghanaian exports of coffee, tea, mate and cocoa are, thus, a clear example of integration at the early stage of the GVC, as indicated by exports of mostly unprocessed products to advanced economies. The high share in total exports of a relatively small country such as the Netherlands indicates that the Netherlands is either the location of processing or that it acts as an intermediary/trader hub in the GVC.

As another example, we look at metal products. As demonstrated in Figure 2.6, Ghana's exports of semi-finished manufactures of metal products have fluctuated over time, while its exports of ore and waste and of final manufacture have increased.

Figure 2.6: Ghana's exports of metal products, US$ million



Source: UN Comtrade

The three product groups are exported to different markets. As can be seen in Table 2.5, the key difference is that China dominates in ores and waste, while Europe and Sub-Saharan Africa (SSA) lead in semi-finished, and Sub-Saharan Africa in finished products.

Table 2.5: Ghana's exports of metal products by degree of processing and market, share of total (in %)

	EU	USA	China	SSA	Rest
Ores and Waste	4.3	1.5	75.7	2.8	15.7
Semi-Finished	44.5	0.9	0.1	50.3	4.1
Finished	12.2	14.9	0.05	67	5.9

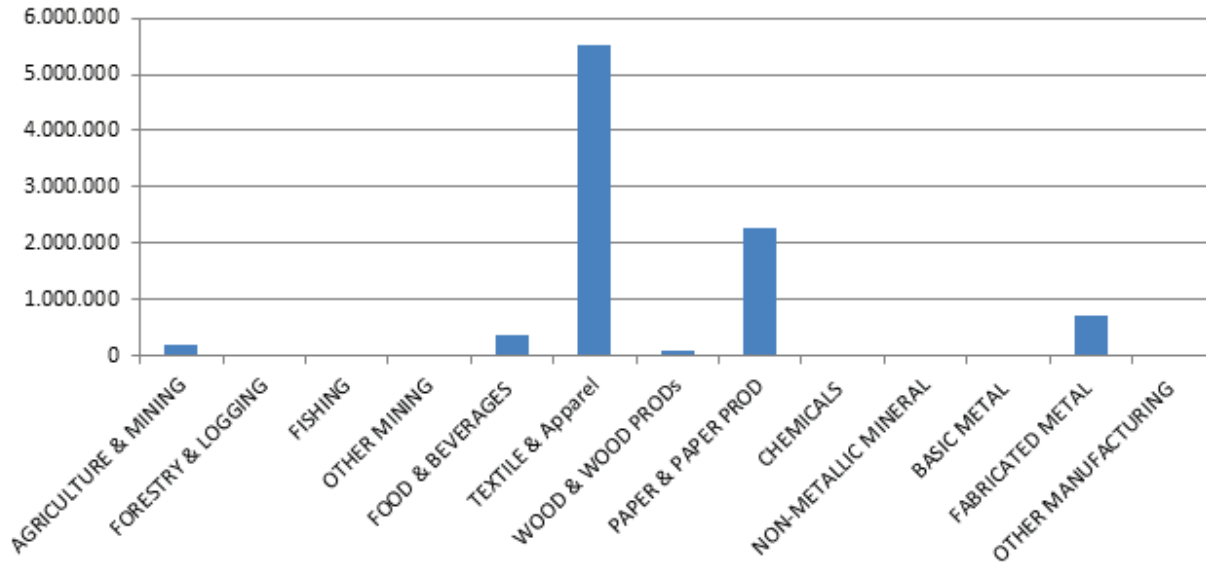
Note: EU stands for European Union while SSA stands for Sub-Saharan Africa

Source: UN Comtrade

In situations where the country exports significant amounts of finished or semi-finished products, the analyst should look more closely at the country's imports of unprocessed or semi-finished products as this points to a specific role of the country in the GVC as assembly or final processing hub. Apparel exports from Cambodia are used here as an example.

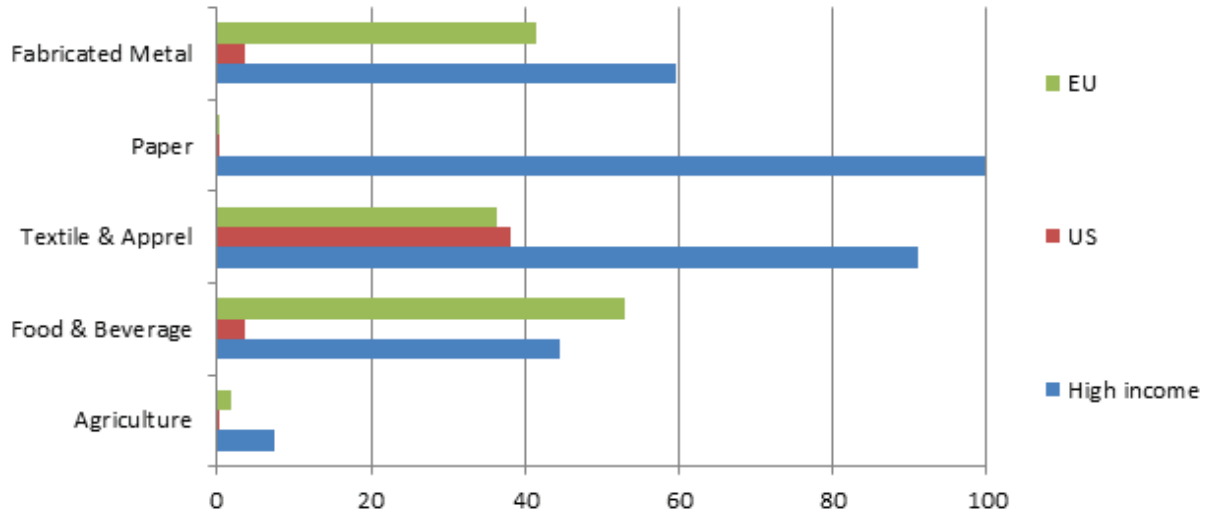
By looking at Cambodia's exports by sub-sector, it is clear that textile and apparel is by far the largest export industry accounting for more than half of total exports. Other sub-sectors with some exports are paper and paper products, fabricated metals, food and beverages, and agriculture and mining (see Figure 2.7). These exports are also highly concentrated in the advanced markets (see Figure 2.8).

Figure 2.7: Cambodia's exports by sub-sector, 2013, US$ million



Source: UN Comtrade

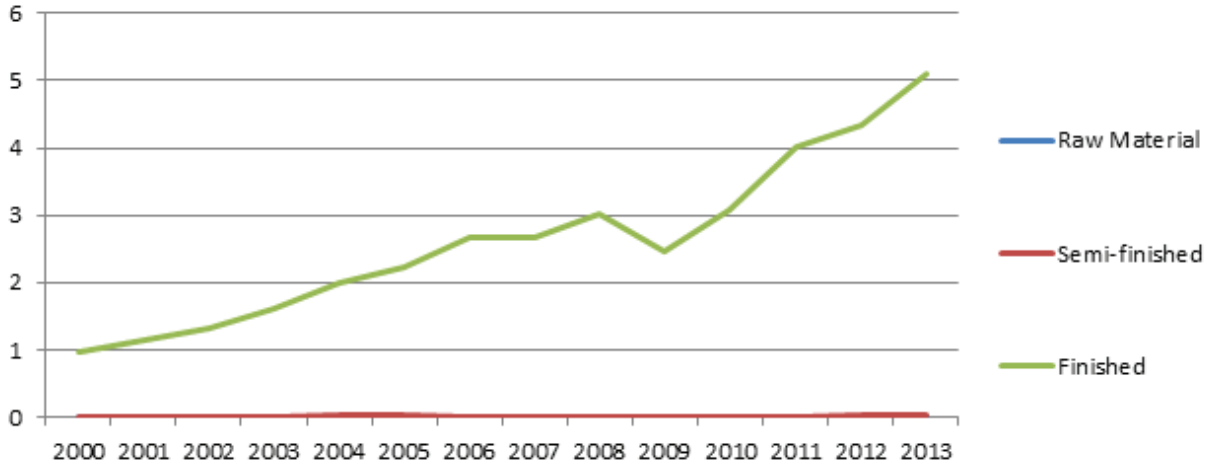
Figure 2.8: Cambodia's exports by sub-sector and market, 2013, share of total (in %)



Source: UN Comtrade

When looking at the degree of processing, we find that almost all textile and garments exports from Cambodia are finished products with almost no raw or semi-finished exports (see Figure 2.9).

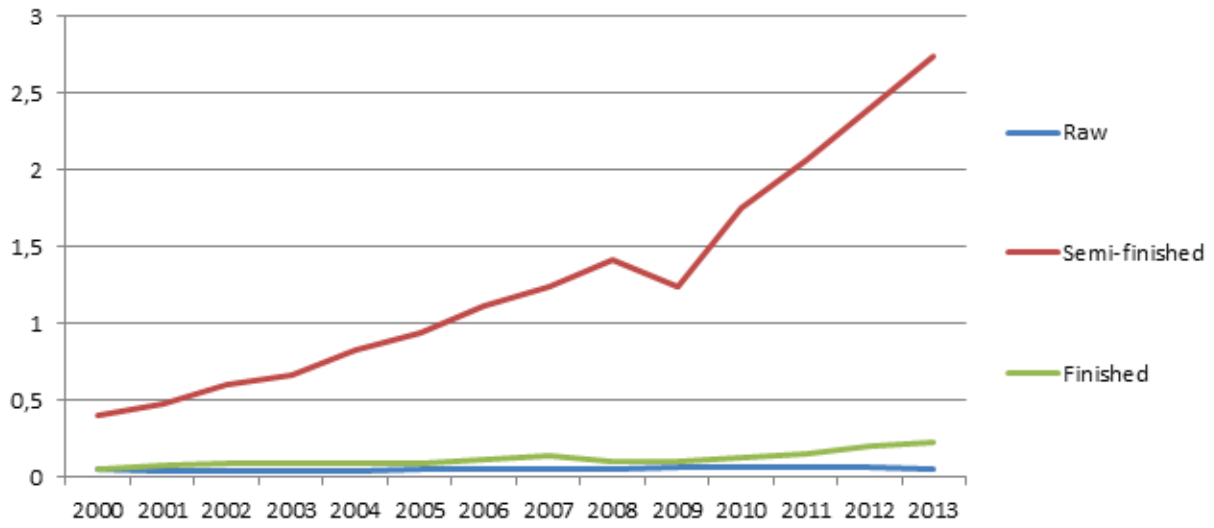
Figure 2.9: Cambodia's textile and apparel exports by degree of processing, US$ billion



Source: UN Comtrade

This leads to an analysis of Cambodian imports of the textile and apparel sub-sector. As Figure 2.10 shows, Cambodia imports a substantial amount of textile and apparel products and, contrary to the export side, semi-finished products dominate these imports.

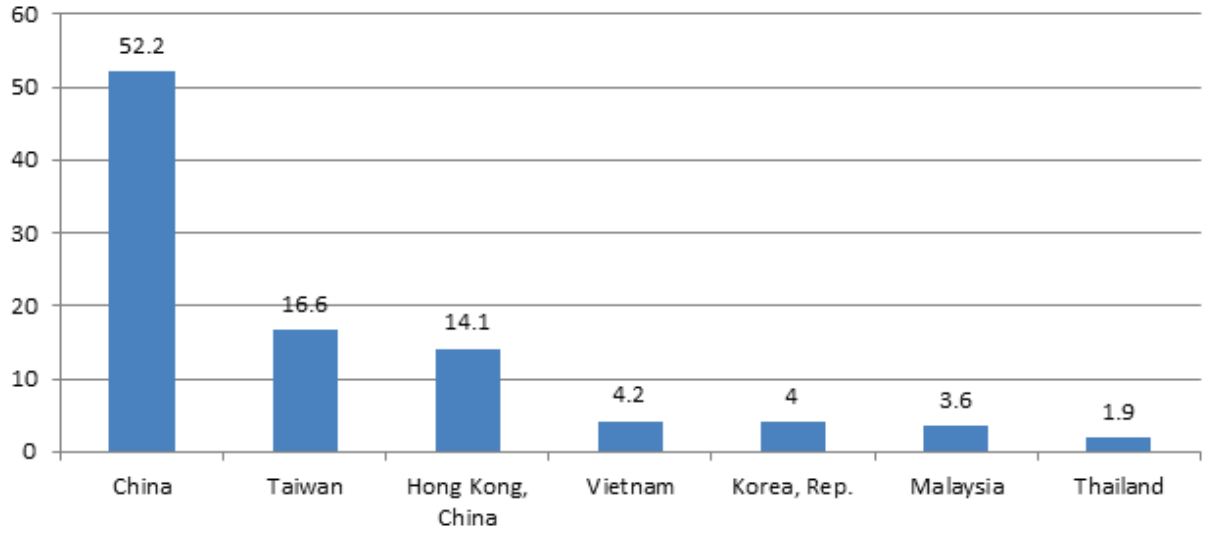
Figure 2.10: Cambodia Textile and Apparel Imports by Degree of Processing, US$ billion



Source: UN Comtrade

This suggests that Cambodia is a processing hub in the textile and apparel industry with semi-finished products being imported from other countries to be processed and then exported to final markets, primarily the US and the EU. As can be seen in Figure 2.11, China, Hong Kong, and Taiwan Province of China dominate Cambodian imports of semi-finished products with a combined share of 83%.

Figure 2.11: Cambodia's imports of semi-finished textile and apparel products by country of origin, share in total imports (in %)



Source: UN Comtrade

Another indicator that can be used is the share of foreign value-added in the country's exports. As indicated earlier, the coverage of this TiVA data is limited. Fortunately, Cambodia is one of the countries where data is available. Table 2.6 shows the value of gross exports as well as the share of foreign value-added for Cambodian key export sectors. The textile, leather, and footwear sub-sector is the only industry with both a substantial amount of exports and a high share of foreign value added, confirming our earlier analysis. Electrical/optical equipment also has a high foreign value-added component, suggesting Cambodia has a similar position in this GVC, although the scale of exports is significantly smaller.

Table 2.6: Cambodia's key exports - gross value and share of foreign value-added

	Food products, beverages and tobacco	Textiles, leather and footwear	Electrical/optical equipment	Transport equipment
Gross exports (US$ million)	646	1,026	158.5	38.4
Share of foreign value-added	33%	62%	64%	55.4%

Source: OECD-WTO Trade in Value Added (TiVA) database

2.3. Possible Extensions for Sub-Tool One

Through the use of the MTN data classification, the analyst can apply the methodology outlined above to identify the key existing GVC sub-sectors of a country, to analyse the position of a sub-sector in a GVC, and to identify key downstream and upstream GVC partners. The applicability of this methodology and also the analytical and policy implications of the analysis will, however, differ across sectors. Nonetheless, the basic framework is relevant to the majority of the sub-

sectors of most relevance for low-income countries. Supplementing this quantitative investigation with qualitative analyses of the structure of the sub-sector, major GVC partners, key lead firms, and essential governance mechanisms will allow the analyst to develop a more complete understanding of the issue. An area that easily can be developed further and that was not fully explored here due to space limitation is how to use this information to benchmark over time and against key competitors. Many of the above indicators can be compared over time to assess the changes in the position of the country and in the type of activities performed. For example, the structure of exports between raw, processed, and finished products can be easily compared across time. The analyst might also compare the performance between different export markets as well as shifts in markets over time. As could be seen in the example of Ghana above, the analyst can easily compare the degree of processing of Ghanaian coffee, tea, mate and cocoa exports between different markets over time, and assess overall trends in market share and processing. Finally, as another possible extension of the analysis presented here, the analyst could also benchmark the country's performance against that of other competitors in the market. For example, one might compare the share of processed products in Ghana's total coffee, tea, mate and cocoa exports in relation to other suppliers for the Dutch market. Unit value analysis could supplement this as well.

3. Sub-Tool Two: GVC Governance and Control

The analysis described above provides information on the position of a country's sub-sector within a given GVC as well as the country's key GVC partners. However, it does not offer a qualitative explanation for the reasons behind this integration, the type of governance in the GVC, and issues concerning power and control within the GVC. In fact, power and control have been highlighted in the GVC literature as crucial factors in understanding value distribution and upgrading. Unfortunately, the debates around power are still mainly theoretical and the links with policy research are under-developed. This sub-tool aims at providing indicators that can capture these concepts and link them to the upgrading potential that will be discussed in sub-tool three. This sub-tool allows the analyst to answer three key questions:

- What are the factors driving the integration of a specific location/sub-sector in a GVC?
- How "sticky" (i.e. stable or persistent) or, conversely, how "footloose" (i.e. unstable or uncertain) is this integration?
- What is the trade/regulatory framework underpinning GVC integration?
- Who controls the participation of alocal sector in a GVC?

3.1. Methodology and Analytical Steps

This section provides guidance to the analyst of how to use a combination of quantitative and qualitative indicators to address the key questions listed above in order to reach a better understanding of issues related to GVC governance and control. Again, as above, it is important to emphasise that it is difficult to provide generalised and quantitative indicators that truly and adequately capture the concepts of interest here. This is even more true here than it was in sub-tool one as issues of GVC governance and power are even more complex and multi-faceted and, thus, much more difficult to measure.

3.1.1. What are the factors behind the integration of a specific location/sub-sector in a GVC?

In the first step of this sub-tool, the analyst is to develop an understanding of the reasons behind the integration of a specific sub-sector in a certain GVC. The key question here is why do GVC actors source from this location? Obviously, there will never be just one single reason for this and in most cases there will be a combination of factors driving this decision. Often, however, and especially in the context of developing countries, one or two factors emerge as key explanatory factors. Table 3.1. offers an overview of possible factors driving GVC integration. In agro-business, for instance, the ability to produce a higher quality product (thanks to, for example, climatic or geological conditions) can be a main factor for lead firms to decide to source from a specific location. Transportation and the logistics behind the ability to ship fresh produce to final markets can be another key factor in the decision-making process. Meanwhile, in footwear, apparel and simple electronics, production costs, trade preferences, and proximity to key markets are amongst the key factors. The availability of certain types of skills can also be a factor in some cases. Scale of production capacities could be another factor. Through a quick review of these issues, the analyst is able to identify the key factors that attract a specific GVC to a location. This can be achieved by comparing the country to other key global or regional competitors in the final market which can be identified using export data from UN Comtrade.

Table 3.1: Possible factors behind integration in a GVC

Factor	Indicator	Source
Sub-sectoral Comparative Advantage	Revealed Comparative Advantage (RCA)	UN Comtrade
Production costs	Average wage adjusted to PPP US$	ILO Global Wage Database
	Diesel retail price	GIZ International Fuel Prices Database
	Gasoline retail price	
Preferential market access	Preferential trade agreement	WTO regional trade agreements database
	Preference margin in key export markets	
	Percentage of duty-free imports	
	Relative market access conditions	UNCTAD
Logistics and proximity to markets	Distance from export markets	A number of shipping websites
	Transit time to export markets	
	Performance of the logistics sector	World Bank Logistics Performance Index (LPI)
Availability of certain factors of production (skills, production capacity, climate, materials, etc.)	Qualitative assessment	Local industry data, industry experts, and published studies

Note: PPP stands for Purchasing Power Parity

Sub-sectoral Comparative Advantage

Measuring sub-sectoral comparative advantage has received significant attention in economics. One of the indicators presented to capture this is the revealed comparative advantage (RCA) index briefly discussed in Tool 3 of the EQuIP toolkit. The index compares the share of a specific sub-sector in the country's exports to the share of this sub-sector in world exports. The RCA of country *i* in sub-sector *j* can be calculated using the following formula:

$$RCA_{ij} = (E_{ij} / E_{i}) / (E_{wj} / E_{w})$$

where E_{ij} represents country *i*'s exports in sub-sector *j*, E_{i} denotes country *i*'s total exports, E_{wj} stands for world exports in sub-sector *j*, while E_{w} represents total world exports. A country is said t have a comparative advantage in a given sub-sector if the RCA value exceeds one. That is, a comparative advantage is "revealed" if RCA>1. By contrast, if the RCA value is less than unity, the country is said to have a comparative disadvantage in that sub-sector or product group.

This measure can be used as the starting point for our investigation of which factors drive a

country's integration into a certain GVC.[2] In any case, as other studies have argued (see Leromain and Orefice 2013, for example), the RCA index is useful as a basic indicator and to compare a given country against benchmark countries. However, this analysis does not show the impact of other factors that shape export performance such as trade barriers, historical trade relationships, trade preferences, etc.

Production Costs

Comparing production costs across countries is extremely difficult. The data available for developing countries is patchy an in most cases insufficient. Furthermore, where data is available, it is often only available in national currencies and does not factor productivity into the analysis. Similarly, internationally comparable and easily-accessible data to compare other costs of production (energy, water, transportation, etc.) is very limited. Nonetheless, some comparisons between a country and its key regional or international competitors are possible, either through referring to published studies on the issue, or through the use of the data that is available. The International Labour Organization (ILO), for example, provides a global wage database that covers most countries and allows analysts to compare average wages (which are provided in national currencies) across countries. Similarly, the German Corporation for International Cooperation (GIZ) provides energy prices for more than 170 countries through the GIZ internal fuel prices database.

Preferential Market Access

Another important advantage that often leads to the integration of low-income countries into GVCs is preferential market access. A list of all preferential trade agreements that a country has signed can be found in the WTO regional trade agreements database. The country tariff profile available on that same database also provides a measure of preference margin in key export markets, which is the difference between the duty rate a given country is facing and the "most favoured nation" (MFN) tariff rate of the importing country. If this difference is large, then the preference margin is substantial. This can be compared to regional and international competitions to determine if a country enjoys favourable or unfavourable market access conditions. Another useful measure is the relative market access conditions measure provided by the United Nations Conference on Trade and Development (UNCTAD) which shows the overall tariff faced by exports from a given country relative to that faced by competitors.

Logistics and Proximity to Markets

Recent studies have highlighted the importance of logistics and proximity to markets in shaping the map of GVCs and integrating different locations into these GVCs. Several shipping websites (e.g. www.ports.com or www.searates.com) provide estimations of transit time between two different ports based on average container ship speed. The analyst can easily calculate this information and compare it to other regional or international competitors to determine if proximity and time-to-market provides an advantage to a country or not. If significant shares of the materials used in production are imported, this should be factored into the analysis as well. Another useful tool to compare logistics capacities and capabilities across countries is the World Bank's Logistics

2 It can, in fact, also be adapted and calculated for just one final market (as opposed to the world as a whole) for products of a given sub-sector. In that case, the RCA index is computed by dividing the share of sub-sector exports in the country's total exports to that specific final market by the share of the sub-sector in total imports of the final market country. This allows the analysis of a country's performance in a specific final market.

Performance Index (LPI) which compares 160 countries on issues such as efficiency of customs, trade infrastructure, shipping, quality of logistics services (trucking, forwarding, and customs brokerage), the ability to track consignments, and on-time delivery.

Availability of Certain Factors (skills, production capacity, climate, materials, etc.)

Whether in agro-industries or in many resource-based sectors, the availability of certain factors of production such as specific climate conditions or specific inputs explains the participation of a country or region in GVCs. These factors could be assessed relatively easily by the analyst by consulting industry experts or government officials working in the area.

3.1.2. How sticky or fragile is the integration of a sector in a GVC?

While the previous step should allow the analyst to develop a better understanding of the factors underlying the integration of a location in a certain GVC, this step aims at exploring how sticky or fragile this integration is. As will be discussed in the subsequent section, this has important implications for strategic industrial policy. Generally speaking, the more difficult it is for lead firms in GVCs to find alternative sourcing locations with little switching costs, the *stickier* is the integration of a location in a GVC. Conversely, if a country can easily be replaced as a supplier, its integration into the GVC is *fragile*. A number of indicators and questions could be used to assess this (see Table 3.2).

Table 3.2: How sticky or fragile is the integration of a sub-sector in a GVC

Indicator	Variable	Source
Reliance on imported inputs	Imported inputs divided by exported outputs	UN Comtrade
Importance in the export market	Share of the country in the imports of the final market Duration of exports	UN Comtrade
Capital Intensity and Ownership of Production	How capital intensive are the activities performed in the location and by whom are these activities performed	Local industry data, industry experts, and published studies

Reliance on Imported Inputs

A high degree of reliance on imported inputs suggests that the integration of the country in the GVC is more *fragile* as it indicates a relatively low density of interlinkages between the GVC and the economy of the host country (i.e. a rather shallow integration of the GVC in the host country). UN Comtrade data can be used to measure this by calculating the ratio of imported inputs against exported outputs. However, consumption in the domestic market needs to be taken into account, especially in large developing countries.

Importance in the Export Market

The more important a country is as a supplier to a key export market, the *stickier* is its integration in the GVC. This can be assessed by comparing the market share of a country in an export market to that of regional and international competitors. The larger a country's market share, the harder it is to be replaced as a supplier - hence, the *stickier* its GVC integration. Another useful indicator for the importance of a country as a GVC supplier is the duration (or survival rate) of exports. The longer a country has been exporting to a specific market, the more likely it is that the country's position in this market is quite stable (i.e. its integration in the GVC is *sticky*).

Capital Intensity of Production

Two other variables that can be used to assess how sticky or, conversely, how fragile a given location's integration into a certain GVC is are the capital intensity and the ownership of the production activities that are performed in the location. If the activities are capital intensive and if they are owned by "lead firms" in the GVC, this indicates a higher degree of stickiness.

3.1.3. What is the trade/regulatory framework underpinning GVC integration?

Preferential market access is a key factor in integrating developing countries in GVCs. A large number of studies have shown how preferential access often leads to the creation of export sectors. However, and equally important, the removal of such preferences can lead to the decline of export industries. The nature of preferential market access conditions, therefore, has important implications for the exporting countries that rely on this preferential treatment. For instance, a country that exports to the EU through a *unilateral* EU initiative has very weak power in influencing the EU's decisions on whether to continue or to remove this market access or to change what products are included in this programme and under what conditions. By contrast, a country exporting through a *binding* free trade agreement (FTA) will be in a significantly stronger position. This also affects the strategy of GVC actors. Foreign investors locating production in a country with a temporary preferential market access will aim to limit their investments in the location if there is no certainty about future market access. This will have important implications for upgrading and industrial policy. One of the key issues in understanding the governance and control of a country's integration in a GVC, therefore, is to appreciate the trade framework under which exports are taking place, the stability of this framework, and the specific incentives it provides to local and foreign firms.

Table 3.3: The Trade Regime of GVC Integration

Indicator	Variable	Source
Stability of market access	Type of market access (preferential, MFN, GSP, bilateral, unilateral, etc.)	WTO regional trade agreements database
	Duration of preferential market access	Industry/trade experts
Trade dependence	Share of an importing country in overall exports of the exporting country (trade dependence)	UN Comtrade
Political Trade Dependence (PTD)	Share of a country's total exports that enter one market under special unilateral programmes (political trade dependence)	International Trade Commission (USITC), Eurostat
Rules of Origin (RoO)	What are the RoO under which exports are taking place and are they permanent or temporary?	Industry/trade experts

Note: MFN stands for Most Favoured Nation; GSP stands for Generalized System of Preferences

Stability of Market Access

The type of market access a country has to an export market is an important factor to consider. If this access is through a multilateral (WTO) or bilateral (FTA) agreement, this can be deemed relatively stable. If it is through a unilateral preference programme (e.g. Generalized System of Preferences - GSP or GSP-related, etc.), it is considered to be less stable (see Figure 3.1). This is mainly because the exporting country has limited power in determining what products are included, the amount of exports, the conditions of preferential access, and any changes to the preferential access. Preferential market access is particularly fragile when a country is exporting through a trade programme with a limited period of time that requires renewals. Information on this can be found on the WTO regional trade agreements database and also by consulting trade and industry officials and experts.

Figure 3.1: Stability of Access to Export Markets

Trade and Political Trade Dependence

The traditional measure of trade dependence is the share of an importing country in the total exports of the exporting country; high shares signal high dependence. Here, we additionally

suggest using Magner and Shadlen's (2014) concept of "political trade dependence" to capture the political power in preferential market access. Political trade dependence is the share of a country's total exports that enter a given developed country under the latter's non-bound concessionary preference schemes[3]. A high level of trade and political trade dependence on a single developed market indicate weak stability and predictability of market access.

Rules of Origin

A final element that needs to be looked at in the context of the trade regime is the rules of origin (RoOs) that underpin the preferential market access. In unilateral or bilateral agreements, RoOs are an important element in determining the eligibility of products to preferential access. Some FTAs or unilateral GSP-related programmes have temporary RoOs that are subject to renewals or expire a few years after the preferential programme enters into force. This could have serious impacts on the exporting industry and also on the strategies of GVC actors.

3.1.4. Who controls the participation of a local sub-sector in a GVC?

Another important issue from an industrial development perspective is who controls the participation of a location in a specific global value chain. What is meant by this is the degree to which local actors exercise control over their position in the GVC but also the sophistication level of the GVC functions and capacities that are located within the location (see Table 3.4). For instance, in some sectors such as electronics, apparel, and footwear, "contract manufacturers" or "trans-national producers", which are mainly Asian firms, are very active in investing in lower income locations. However, they maintain strategic and control activities in their headquarters, while very limited strategic activities are transferred to other countries or locations. This issue is highly important from a development and policy perspective. Higher degrees of local control and capacities not only entail higher share of value-added in the chain but also allow a range of active policies such as market diversification, moving into new GVCs, and upgrading to more strategic functions. Many of these positive shifts in GVC integration will not be possible if the participation of the GVC is completely controlled by external actors.

3 A non-bound concessionary preference scheme is when preferential market access is granted unilaterally by one country to another country or a group of other country. Such a preference scheme is not based on reciprocity so that its continuation is dependent on the grantor's political will.

Table 3.4: Control of GVC Participation

Indicator	Variable	Source
Concentration, nationality, and degree of globalisation of exporting firms	Nationality of leading exporting firms Share of foreign-owned firms in production and in exports Level of globalisation of exporting firms	Local industry data, industry experts, and published studies
Localisation of strategic activities in the location	Degree to which middle and upper management activities are performed in the location	Local industry data, industry experts, and published studies
Link with lead firms and brands	Direct connection (or lack thereof) of the location with lead firms in the GVC	Local industry data, industry experts, and published studies
Share of foreign senior managers and supervisors in firms	Degree of domination of foreign workers in supervisory and managerial positions in the industry	Local industry data, industry experts, and published studies

Concentration, Nationality/Ownership, and Degree of Globalisation of Exporting Firms

In an era of globalisation, we are often told that the nationality of firms does not matter. However, from a control perspective it most certainly does. Most firms remain rooted in their home country and their headquarters often keep the most strategic decisions that govern the operation of firms globally while controlling the distribution of activities between different locations. It is also relevant for issues of capturing value in GVCs. Foreign firms are more likely to transfer their surpluses to the headquarters or to other countries from the production location, leading to low value capture in the location. Therefore, the nationality of firms that are integrated in a GVC is a first useful indicator of control and power. If foreign firms own the largest portion of the industry, this indicates a low degree of control in the hands of actors from the host country. This judgement should not be based on the number of firms but on the share of these firms in production and exports.

If the industry is indeed dominated by foreign firms, another useful indicator is to look at how globalised these firms are. Are they foreign firms who moved to this location and concentrated their production there? Or are they firms that run global production networks in different countries with the country under study being only one of these locations? If foreign firms are working with limited global presence, this possibly indicates a higher degree of control by local actors, while if most firms are globalised with operations in many countries, this indicates a lower degree of local control.

Localisation of Some Strategic Activities in the Location

Another indicator is the degree of localisation of strategic activities. In fact, in some cases the nationality of firms on its own could be misleading as some foreign firms might have become

"localised", meaning they have moved their entire operations to the new country. It is, therefore, useful to assess the type of activities performed in the location and the degree to which more strategic functions are performed. Strategic functions include activities such as sourcing of materials, design activities, overall management of logistics, and other middle to top management functions.

Link with Lead Firms and Brands

Another simple indicator to look for is how the location is linked to the GVC. Are the firms in the location connected directly to the lead firms and final brands in the GVC, or are they connected through a third location? The latter could be either through contract manufacturers (which are common in electronics, apparel, and footwear, and some agro industries) or through supply chain management firms (such as the Hong Kong based Li & Fung). A direct link with lead firms indicates a higher degree of control while an indirect link indicates a lower degree.

Share of Foreign Senior Managers and Supervisors in Firms

One of the indicators of the degree of local control could be the share of foreign employees in senior and middle management positions and in supervisory roles. In a number of GVCs, it is common for either lead firms or contract manufacturers to send foreign staff to occupy those positions and link the location with the rest of the GVC. If this is the case, this indicates a low degree of local control of GVC participation. In GVCs managed by Asian contract manufacturers in different low-income locations in Asia, Africa, and Latin America, the employment of Asian managers and supervisors in key position is very common, for example.

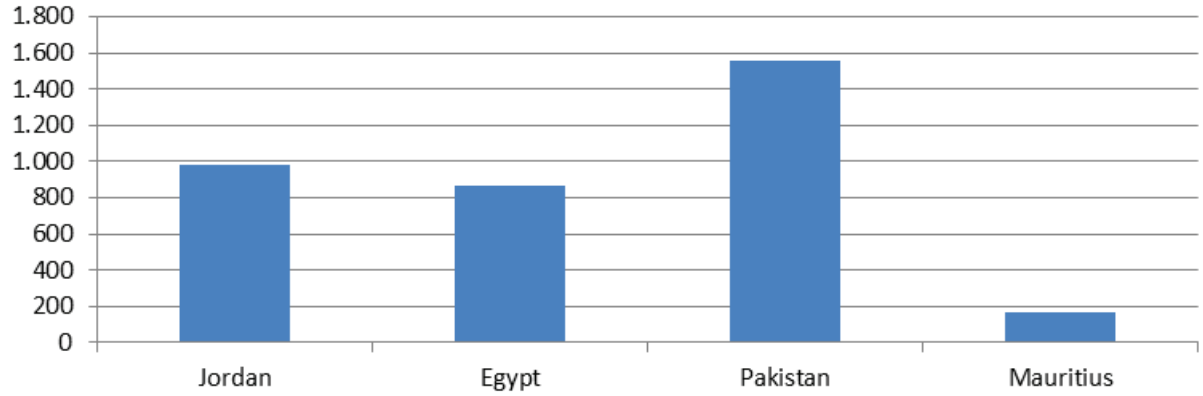
3.2. Analysis and Interpretations of Findings

This section will illustrate how the above methodology can be applied in practice. It also describes the possible conclusions and policy implications that can be derived from an analysis based on this methodology. The garments sector in Jordan will be used as an example.

The garments industry stands out as the clear GVC case in the Jordanian economy. Garment exports stood at more than US$ 1 billion in 2012 and accounted for more than 16% of all Jordanian exports in 2012. Garment exports are defined here as comprising chapters 61 and 62 of the Harmonised Commodity Description and Coding System, also known as the Harmonised System (HS) of tariff nomenclature, which is an internationally standardised system of names and numbers to classify traded products. The Jordanian garment sub-sector is highly dependent on exports to the advanced economies, with the United States alone accounting for more than 90% of total Jordanian apparel exports. The sub-sector is also highly dependent on imported inputs with imports of fabrics (HS chapter 60) standing at around US$ 400 million in 2012, with the majority of these imports coming from China and Taiwan Province of China. This combination of relatively large amounts of exports, reliance on imported inputs, and high dependency on the markets of the advanced economies indicate that the industry represents a classic case of low-income areas integrated in the GVCs of advanced economies with regard to both governance and fragmentation patterns. The high share of imported fabrics in relation to exported final products, and the dominance of China and Taiwan Province of China in imports and the dominance of the US in exports demonstrate that Jordan is being used as a processing and assembly location in the garments sub-sector.

To assess the factors driving Jordan's integration in the US garments GVC, we compare Jordan to three other leading exporters of garments to the US: Egypt, Pakistan, and Mauritius. Figure 3.2 shows the total garments exports of these countries to the US.

Figure 3.2: Garment exports of Egypt, Pakistan, Mauritius and Jordan to the US, 2012, US$ million



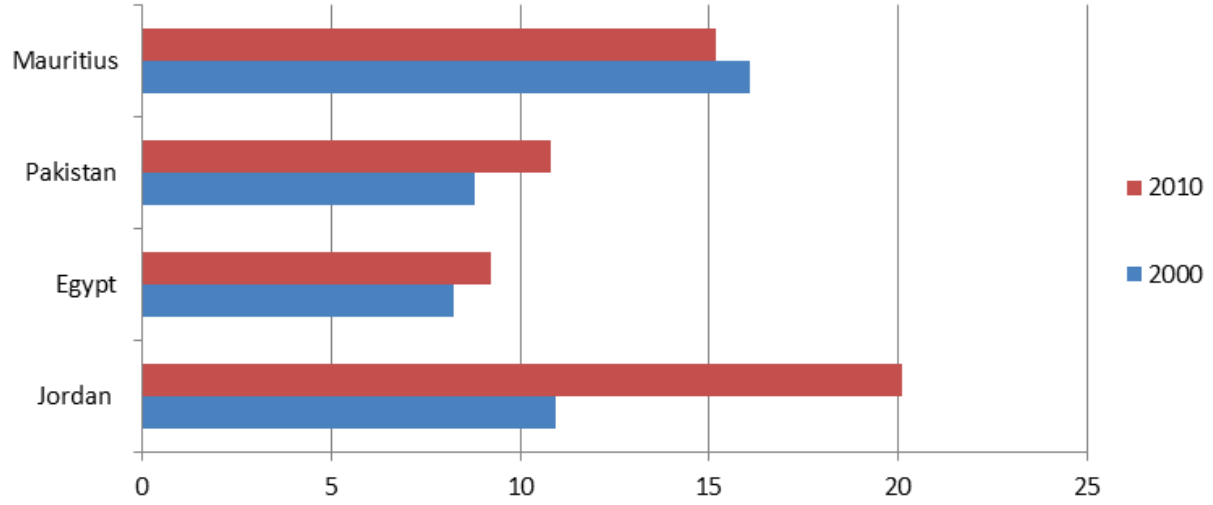
Source: USITC

3.2.1. What are the factors behind the integration of Jordan's garment industry in US garment GVCs?

Revealed Comparative Advantage (RCA)

Figure 3.3 shows the share of Jordan's garment exports to the US in Jordan's total exports to the US, divided by the share of garments imports in total US imports at two different points in time (2000 and 2010). From above we know that this calculation yields the RCA value for Jordan's garment exports to the US, which is compared to three other countries. Figure 3.3 shows that over the 2000s, Jordan has substantially increased its revealed comparative advantage in the US garments market.

Figure 3.3: Revealed Comparative Advantage in garments in the US market, 2000-2010

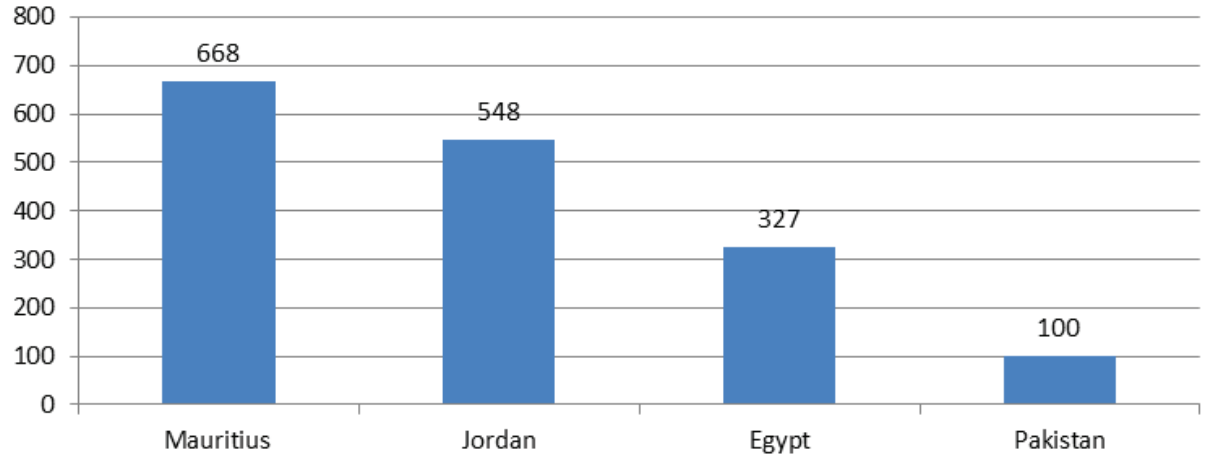


Source: USITC

Production Costs

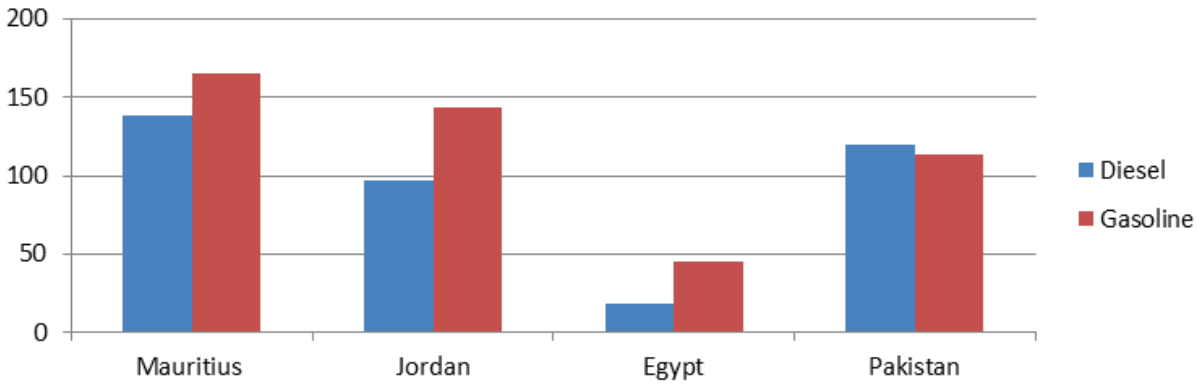
Figure 3.4 shows the average wages in the four countries using the ILO global wage database, converting them into US$ by using the exchange rates from the corresponding years. The figure shows that Jordan and Mauritius have high labour costs compared to Egypt and Pakistan. Meanwhile, Figure 3.5 provides a comparison of the prices of energy, another important factor of production, between the four countries. Again we see that prices in Jordan and Mauritius exceed those in Egypt and Pakistan.

Figure 3.4: Average wages in Jordan and selected GVC competitors, 2012, US$



Source: ILO global wage database

Figure 3.5: Diesel and gasoline prices, US cents per litre, 2012



Source: GIZ international fuel prices database

Preferential Market Access

Table 3.5 shows how trade links between the four countries and the United States are governed through trade agreements and preferential market access concessions, based on information from

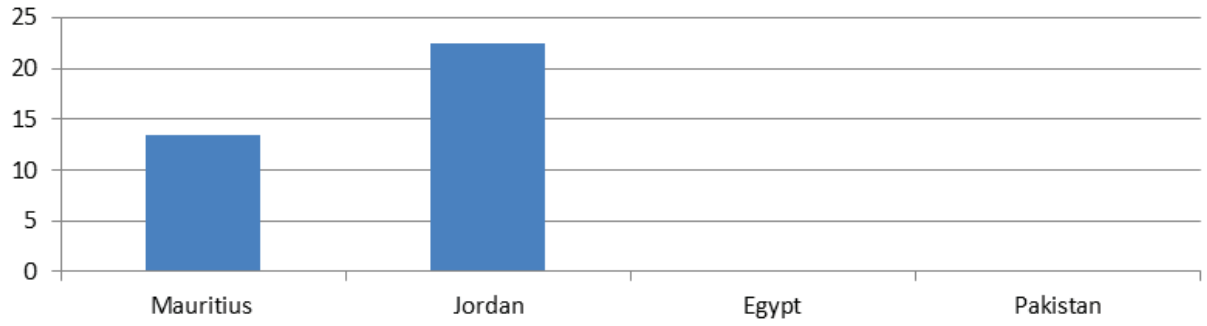
the WTO database and from the United States International Trade Commission (USITC). It reveals that the conditions of Jordan's access to the US market is quite stable because the two countries have signed an FTA. Mauritius' market access, by contrast, is shaped by the African Growth and Opportunity Act (AGOA) through which the US unilaterally confer trade preferences to selected African countries. However, AGOA stipulations require regular renewals by US Congress, making it a less stable framework than Jordan's FTA with the US.

Table 3.5: Access to the US market of Jordan and selected competitor countries

	Jordan	Egypt	Mauritius	Pakistan
Market Access to the United States	Free trade agreement (FTA)	The Qualifying Industrial Zone (QIZ) protocol	African Growth and Opportunity Act (AGOA)	Most Favoured Nation (MFN) status / Generalized System of Preferences (GSP)

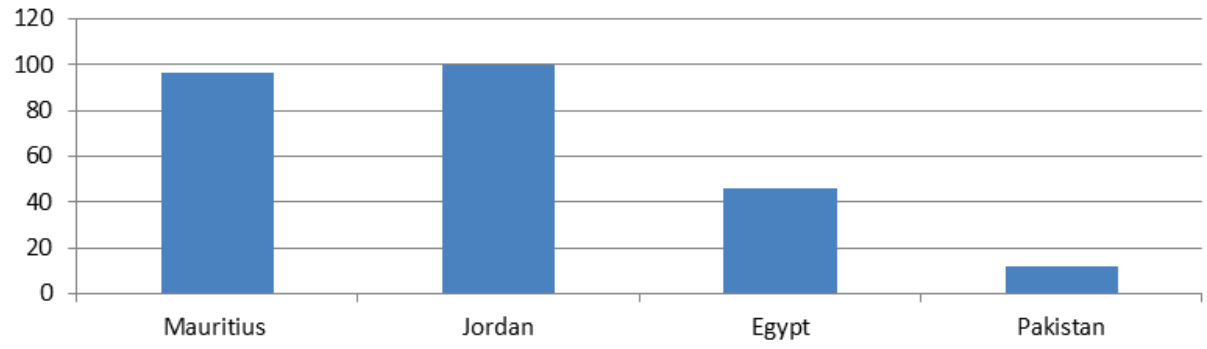
Figures 3.6 shows the preference margin of the non-agricultural exports of the four countries to the US while figure 3.7 shows the percentage of duty-free exports of non-agricultural products as a value of overall exports to the US. The two figures collectively demonstrate that Jordan and Mauritius have very favourable positions in the US market in terms of market access.

Figure 3.6: Preference margin for the US market, %, 2012



Source: WTO regional trade agreements database

Figure 3.7: Duty-free exports to the US, % of trade value, 2012



Source: WTO regional trade agreements database

Logistics and Proximity to markets

Table 3.6 shows the transit time (in days) between the four countries and the US market (for both the East Coast and the West Coast). It reveals that Jordan does better than Mauritius and Pakistan on that front. Only for Egypt is transit time shorter.

Table 36: Transit time to the US from Jordan and selected competitor countries (in days)

Market	Jordan	Egypt	Mauritius	Pakistan
US East Coast (New York)	24	22	34	33
US West Coast (Los Angeles)	37	35	40	40

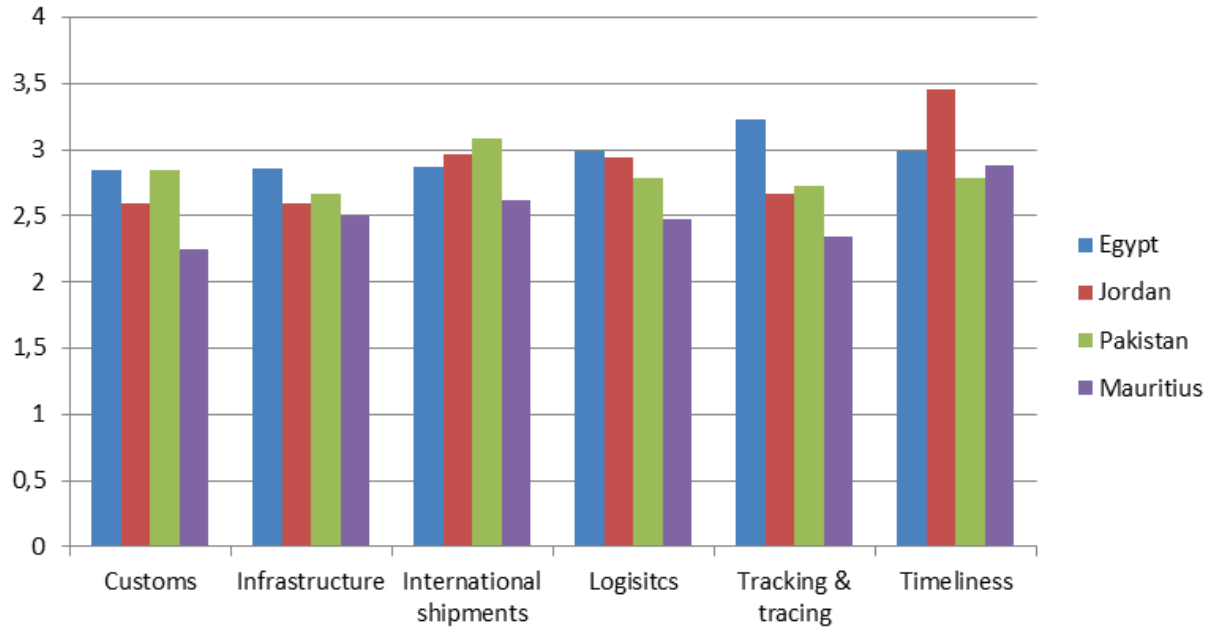
Source: www.searates.com

Figure 3.8 compares the four countries according to the World Bank's Logistics Performance Index (LPI). It shows that in terms of logistics infrastructure, Jordan does better than Pakistan and Mauritius but slightly worse than Egypt. Taking a global perspective, the picture is less rosy with Jordan ranking only 62nd among all countries for which the LPI is calculated. Meanwhile, Figure 3.9 provides details on the performance of each country in the core areas of the index. It shows that Jordan does particularly well in terms of timeliness but that it somewhat lags behind in terms of customs procedures and infrastructure.

Figure 3.8: Logistics Performance Index (LPI) Score and Ranking, 2014

Source: World Bank

Figure 3.9: Scores in the core areas of the LPI, 2014



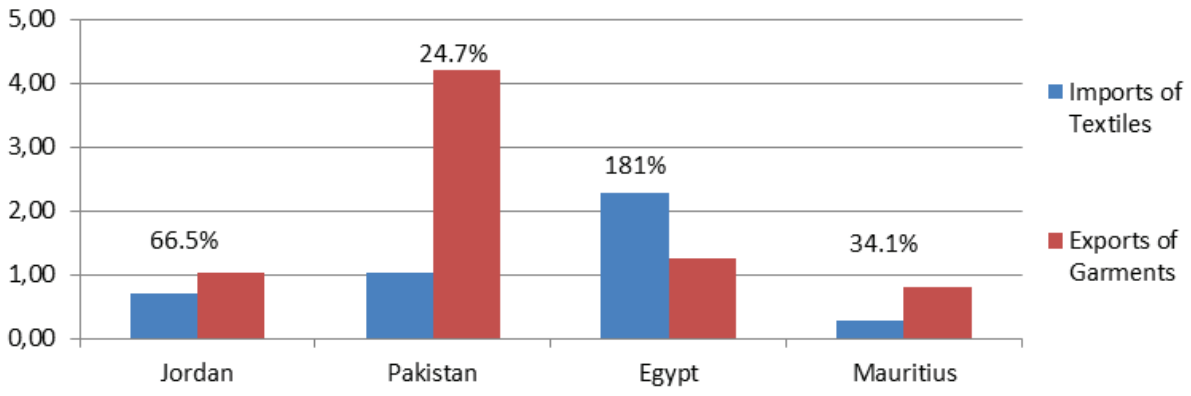
Source: World Bank

3.2.2. How sticky/footloose is the integration of Jordan in US garments GVCs?

Reliance on imported inputs

Figure 3.10 shows the ratio of imported textile products to garment exports where textile products are defined as comprising chapter 65 of the Standard International Trade Classification (SITC) scheme, which is an internationally standardised system of names and numbers to classify traded products, while garment products are defined as comprising SITC chapter 84. Egypt is the only country in the graph that imports more textiles than the garment products it exports, as reflected in a ratio higher than 100%. Among the other three countries, Jordan has the highest share of imported fabrics to exported garments.

Figure 3.10: Reliance on imported inputs, US$ billion, 2012

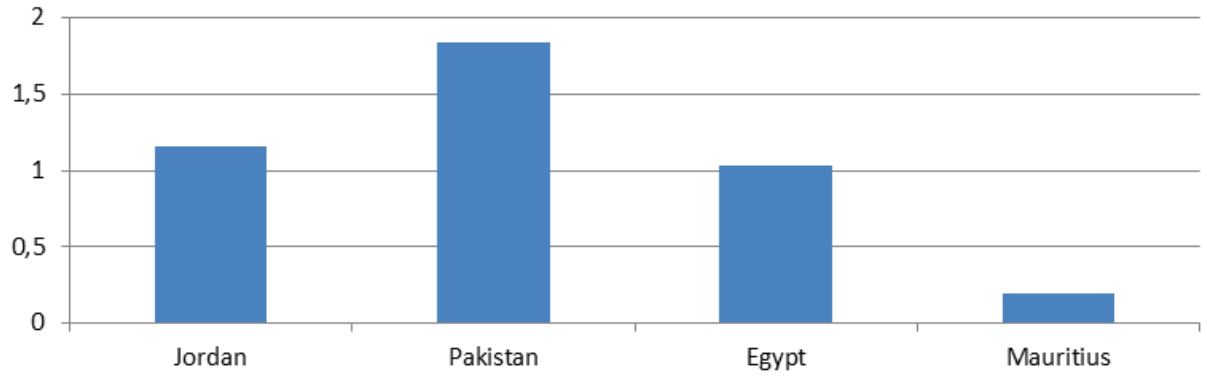


Source: UN Comtrade

Importance in the export market

Figure 3.11 shows the share of the four countries in the US market. It shows that none of the four countries can be considered a core exporter to the US. Pakistan is the largest exporter to the US among the four countries, accounting for roughly 1.8% of all US garment imports. Export data also shows that Jordan became an exporter of garments to the US only in the 2000s while it exported almost no garments to the US before.

Figure 3.11: Share in the US market, 2012 (in %)



Source: USITC

Capital Intensity

As very limited data is available on capital intensity of production, the analyst can consult industry experts or the ministry of industry to form an opinion on this. Published studies can also be used. In Jordan, garment firms typically specialise in labour-intensive activities with little investments in factories or equipment.

3.2.3. What is the trade/regulatory framework underpinning GVC integration?

Stability of market access

In Table 3.5 above we have already identified the type of US market access for each of the four countries in our sample. Among the different types, a free trade agreement (FTA) is the most stable trade regime because it is binding and reciprocal. This means that Jordan has the most stable market access between the four countries. The Qualifying Industrial Zones (QIZ) of Egypt are special free trade zones established in collaboration with Israel to take advantage of the FTA between the US and Israel. Under US-Jordanian trade agreements, goods produced in QIZ-notified areas can directly access US markets without any tariff or quota restrictions, subject to certain conditions. Market access through QIZ is relatively stable although it is less stable than an FTA. AGOA is not very stable as it is a unilateral US initiative that can be changed or abolished easily by US legislature. For Pakistan, the exports that go under the GSP are not very stable because conditions can be changed by the US, while the MFN exports are stable because these are governed by WTO rules. However, different sub-sectors exports under different programmes. Table 3.7 shows the programmes under which each country of the four countries exports its apparel products to the US. For each country and each programme, it also details the share it takes in total apparel exports as well as the stability it provides and whether or not the duration of the programme is limited or unlimited.

Table 3.7: Exports to the US by Trade Programme, 2012

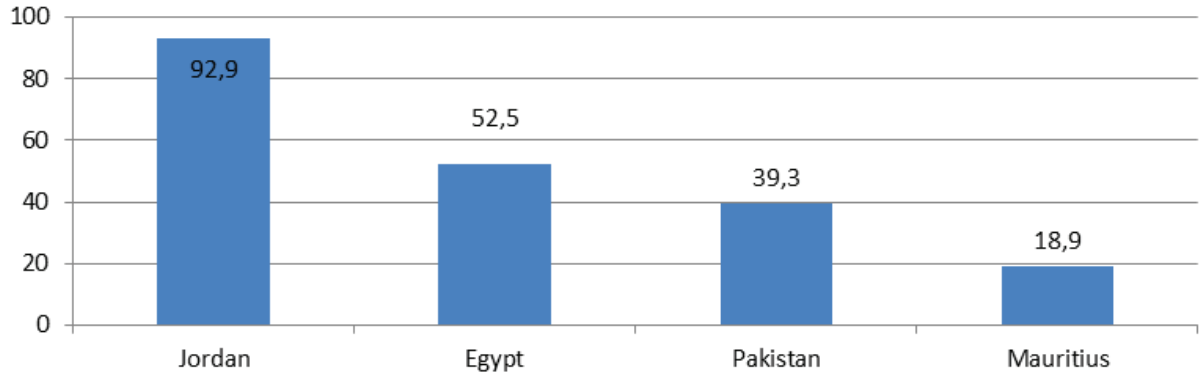
Country	Trade Programme	Share in total exports	Stability	Duration
Egypt	GSP	0	Low	Limited
	MFN (no programme)	1.5%	High	Unlimited
	QIZ	98.5%	Medium/high	Unlimited
Mauritius	AGOA	97.2%	Low	Limited
	GSP	0	Low	Limited
	MFN (no programme)	2.8%	High	Unlimited
Pakistan	GSP	0.3%	Low	Limited
	MFN (no programme)	99.7%	High	Unlimited
Jordan	GSP	0	Low	Limited
	MFN (no programme)	0.5%	High	Unlimited
	QIZ	5.53%	Medium/high	Unlimited
	FTA	93.9%	High	Unlimited

Source: USITC Database

Trade and political trade dependence

Figure 3.12 shows four each of the four countries the share of their total garment exports that goes to the US. It reveals that Jordan has a very high trade dependency on the US for its garment sales as 93% of all exports are destined for the US market. Mauritius, by contrast, is much less dependent on the US market which absorbs only 19% of its garment exports.

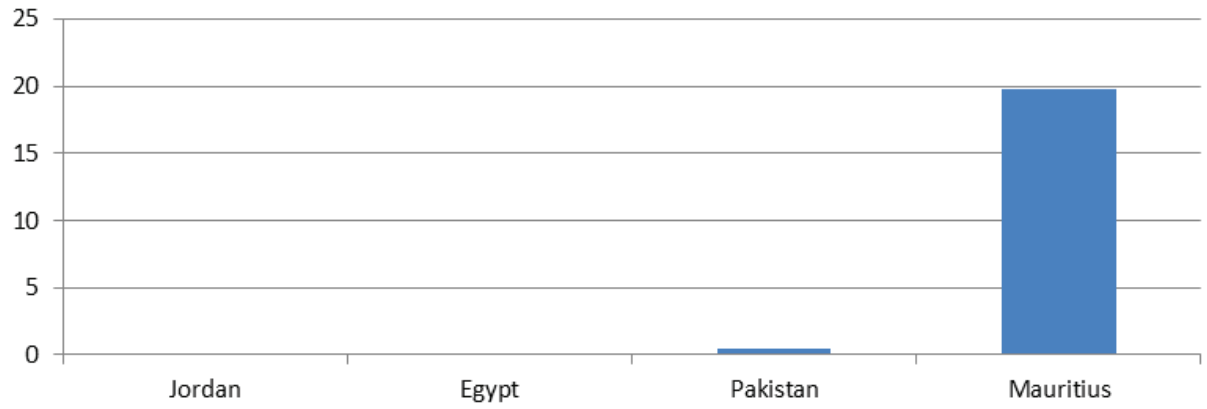
Figure 3.12: Trade Dependency on the US market for garment exports, 2011 (in %)



Source: UN Comtrade

Figure 3.13 shows the political trade dependence (PTD) for the four countries on the US market. This is the share of their total garment exports that enter the US under unilaterally non-binding trade programmes. Mauritius is the only country with high political dependence in its garments exports on the US, due to the important share of AGOA.

Figure 3.13: Political Trade Dependency on the US market for garment exports, 2012 (in %)



Source: UN Comtrade and USITC

Rules of Origin (RoO)

A qualitative study of trade regulations will reveal that Jordan is subject to value-added rules in its garments exports to the US. This is similar to Egypt. Mauritius benefits from the same system, but only on a temporary basis (subject to renewal by the congress) through the third-country provision. Pakistan exports through WTO RoO.

3.2.4. Who controls the participation of a local sector in a GVC?

This section requires some qualitative research from the analyst. The information can be collected either by discussion with officials and industry experts, or through using published studies.

In the case of Jordan, the majority of producing firms are foreign-owned, with many of them producing in a number of other developing countries (i.e., they are highly globalised). Minimal top and middle management strategic activities are conducted in Jordan, with the majority of these activities taking place in the headquarters of these firms. The connection with the GVC is also through the headquarters of these companies. Foreign managers and supervisors are dominant in most export firms. As a result, we can see that Jordan has a very weak organisational control of its GVC participation.

Using this tool the analyst can begin to make several conclusions. Jordan is a relatively small supplier with limited economic comparative advantage in garments and it is highly dependent on preferential market access to the US. The sector is very dependent on imported fabrics. Jordan's preferential market access to the US is substantial, secure, and stable through a binding reciprocal FTA. Although this preferential access is secure and stable, the weak economic comparative advantage suggests that Jordan has a fragile integration in the GVC. Foreign firms play a major role in the sector with little local control over GVC activities. The above analysis, thus, shows that

Jordan's integration in the US apparel GVC is the result of preferential market access, is fragile, and is externally controlled. The question now is how to interpret this and how to link it to industrial policy conclusions. A useful device to reach an overall policy approach with regard to GVCs is to combine the two above discussed elements of stickiness/fragility of GVC participation on the one hand and local control and capacities of this participation on the other hand. The four possible combinations are briefly summarised in Table 3.8.

Table 3.8: Control and Stickiness Matrix

	Low Local Control	High Local Control
Low Stickiness in GVC	This is a case of externally controlled production in a location that has a fragile position in the GVC. Firms perform low-level activities here while control activities are performed elsewhere. Lead firms or contract manufacturers see the location as a short-term production location, limiting capital investments, training of local workers, and the establishment of local supply linkages. In some cases, this has the positive impact of creating jobs, although generally low quality jobs. In other cases, the economic and social disruption brought by such GVCs could be very negative and its positive job impact could be negligible. *Example: The garments industry in Jordan is dominated by Asian firms who see the location as a short-term investment location.*	Local firms or foreign firms have located more strategic activities in the location from which they export. However, the stickiness of the GVC is not strong. Buyers have alternative sourcing options and can move their sourcing elsewhere easily. This is common in industries where production is carried out by local firms, but the position of those firms in the GVC is fragile. Integration in the GVC of such firms offers more upgrading potential in terms of functional and chain upgrading, in building a local base of skills and also in terms of value capture. The low stickiness limits the expansion of the industry. *Example: Light manufactures from North Africa exported to the EU market are often produced by local firms, which offers them upgrading and value capture potentials. However the position of many of these sub-sectors in EU GVCs is fragile.*
High Stickiness in GVC	This is a location that has a high level of stickiness to the GVC due to important key factors that cannot be easily replicated elsewhere. However the integration of the location in GVCs is dominated by external actors. The GVC brings process and limited functional upgrading potential, but less potential of moving to high value added functions or generating enough skills to move into such activities for other markets. *Example: A number of resource-based and agricultural products from Sub-Saharan Africa are exported to the EU through European and other foreign firms. These GVC are sticky as the locations tend to offer "structural" advantages, however local control is low.*	In this scenario, local control over production is high. Either local firms are more active in exporting or foreign firms conduct strategic activities in the location. Potential for value capture is high. The location also has key advantages for the GVC that makes it difficult for lead firms to abandon it. This could be related to limited alternative sourcing locations, specific types of skills, good geographical location to serve key markets, specific types of products that are not available elsewhere easily, etc. This allows expansion of production with more potential to upgrade and to move to higher value-added activities. *Example: Turkey is a key exporter of clothing to the EU with a scale and location that are difficult to imitate. This is mostly by Turkish firms that are increasingly active in more strategic activities in their GVCs with European buyers.*

Source: Own elaboration

Linking this with the upgrading discussion (see sub-tool three) could have important implications for the strategic industrial policies that a country needs to adopt. A detailed discussion of this is beyond the scope of this toolbox, but some issues can be highlighted briefly.

Low stickiness/Low control combination: The combination of control by external actors and a fragile position in the GVC means that the GVC is essentially exploiting a specific advantage, most likely low wages, low labour standards, or trade preferences, without any long-term engagement with the location. This could have positive impacts mainly though job creation, but could potentially also have negative social and economic effects. A key question that emerges from this is whether such activities should be encouraged or not. At a strategic level, the answer depends on the ability to transform these activities into more a developmental trajectory by first moving from the low-stickiness to the high-stickiness category, then by encouraging movement from low control to high control. The economic and social upgrading analysis (see sub-tool three) can provide relevant insights into this. If the sector is showing positive trends in either form of upgrading, a targeted policy approach can be adopted. General policies such as financial and tax incentives should not be offered to these activities. Policies to impose tariffs on imported inputs, for instance, or to impose quotas on foreign senior managers and supervisors in these companies could help filter out those companies with a very narrow short-term strategy and identify those who may be interested in developing some linkages with the local economy. Policies that could create a more permanent comparative advantage in the GVC should also be considered. This could include policies to encourage some foreign firms to move more strategic level activities to the location. If trade preferences are important, policy-makers could try to move from the non-stable trade preferences category to the stable trade preferences category by seeking bilateral trade agreements with key trade partners or by demanding more stable preferential access.

Low stickiness/high control combination: This is a potentially positive place to be from a developmental perspective. The high degree of internal control and capacities suggests high potential for value capture. This success, however, is being limited by the low stickiness in the GVC which hampers investment in technologies, productive capacities, training, etc., due to questions about the long-term prospects of the industry. The strategic policy decision at this level is to attempt to improve stability in existing GVCs, and to target new GVCs either in the same markets or in new markets. If the position in the existing GVC is fragile, policies to increase value capture through higher wages, for example, can be risky at this stage. The policy focus should be on maintaining cost of production and improving the speed of production through process upgrading and improvements in logistics. This should be done concurrently with targeting alternative GVCs. The fact that there is a relatively high level of local capacities and control should help in this.

High stickiness/low control combination: This combination is common in many low-income countries, especially in resource-based sub-sectors. In many cases, these products are sourced from a small number of places due to either climate or production factors, which indicates a high degree of GVC stickiness with limited alternatives. Nonetheless, the integration of the location in the GVC is often controlled completely by external actors, leading to very low value capture in the location as low wages are common and most of the financial surpluses are shipped to the headquarters of buyers and foreign producers. In these scenarios, the key strategic policy focus should be on increasing local control and capturing a higher share of the value. Efforts to increase wages and other local value capturing methods should be pursued. Tax incentives should not be granted to this type of production. A key priority also should be to increase local control by encouraging foreign firms to relocate more strategic functions to the location and also by encouraging local firms to enter the industry.

High stickiness/high control combination: Here, the sub-sector is deemed to be in the best position among the four scenarios outlined. This suggests that more policy attention should be offered to this industry as it has potential to increase its economic and social benefits. Strong focus should be on promoting both economic and social upgrading. Chain and product upgrading should be encouraged. Furthermore, the strength of the sector allows more policies that aim at capturing higher share of value to be instated such as higher wages, better social and environmental standards, etc. These policies are unlikely to drive the GVC away.

3.3. Possible Extensions for Sub-Tool Two

The above analysis focused on basic GVC factors related to motives and types of integration in GVCs and discussed issues surrounding the control and fragility of this integration. It must be noted that such issues are not easy to capture through specific indicators. Nonetheless, there is value in attempting to develop an understanding of these issues. This sub-tool has suggested a number of quantitative and qualitative indicators and devices that can be used to answer these questions. More work can be done to refine these indicators and to develop additional ones that can provide better and more comparable analysis across countries.

4. Sub-Tool Three: Upgrading and Downgrading in Global Value Chains

This sub-tool aims at developing a better understanding of the economic and social upgrading trajectories of GVC integration. It also aims at helping analysts to identify attractive GVC segments and attractive markets. More specifically, the sub-tool will allow the analyst to answer the three following questions:

- How to assess trajectories of economic upgrading in GVCs?
- What are attractive GVC segments and attractive markets, and how successful is the country tapping into these attractive markets?
- How to assess trajectories of social upgrading in GVCs?

4.1. Methodology and Analytical Steps

4.1.1. How to assess trajectories of economic upgrading/downgrading in GVCs?

Economic upgrading can be divided into different types. The common distinction is between (1) process upgrading, which involves improving the efficiency of existing production processes and functions, (2) functional upgrading, which involves capturing more activities along the value chain, (3) product upgrading by moving to new and better (e.g. higher-quality) products, and (4) chain upgrading by entering new chains. Not all types of upgrading can be measured and captured easily through simple indicators as some of them require more detailed and qualitative research. However, some types of economic upgrading can be measured relatively easily. Table 4.1 gives an overview of possible quantitative indicators while Table 4.2 outlines how they can be interpreted when applied in combination.

Table 4.1: Economic Upgrading/Downgrading in GVCs

Indicators	Variable	Source
Economic Upgrading/ Downgrading	Change in shares in world (or regional or key) export markets Change in unit value of exports (compared to world)	UN Comtrade

A number of upgrading indicators have been highlighted in GVC literature. The most common approach is the one suggested by Kaplinsky and Readman (2005) to link changes in export unit values (relative to the world price) to changes in (world) export market shares, in order to classify sub-sectors into the four combinations that are shown in Table 4.2.

Table 4.2: Interpreting Economic Upgrading/Downgrading Indicators

Failed Product Upgrading Unit value increases, market share declines	**Product Upgrading** Unit value increase, market share increases
Product and Process Downgrading Unit value decreases, market share declines	**Process Competitiveness** Unit value decreases, market share increases

Export unit values are commonly used as surrogates for prices and, consequently, as proxies for product quality. Export unit values are calculated by dividing the total value of a country's exports (of a certain commodity or product group) in a given period by the quantity or volume of these exports. Here it is suggested to look at the growth differential between a country's export unit values and the global industry average as one indicator. This gives a better idea of performance relative to the world average and, in a sense, allows us to take account of sub-sectoral inflation (e.g., price increases of inputs that affect producers worldwide). This is because export unit values are a nominal concept so they can be driven by increases in input factor and other production costs. Increases could, thus, be misinterpreted as "economic upgrading". To avoid such a measurement bias and to adjust for sector-wide inflation, it is suggested to "deflate" a country's export unit value growth by the world average growth rate.

In principle, however, an increase in (relative) export unit values can be the result of rising production costs rather than successful upgrading (reflecting, for example, inefficiencies in production or an increase in the technology gap relative to the frontier). For this reason, Kaplinsky and Readman (2005) propose to use the change in world export market shares as a complementary indicator for the upgrading analysis. Moreover, in order to capture the dynamic nature of upgrading (or downgrading) as a *process*, it is essential to look at changes in these complementary indicators over time.

4.1.2. Identifying attractive GVC segments and attractive markets

The capacity of producers to target (and move into) attractive GVC segments and their capacity to tap into attractive markets by shifting business models and increasing sales to dynamic buyers can also be understood as part of economic upgrading. The former often involves "functional upgrading" while the latter is sometimes called "channel upgrading" in the GVC literature. In the following, a methodology and some indicators to identify such attractive GVC segments and attractive markets will be presented.

Table 4.3 presents three indicators that can be used to assess the attractiveness of different segments of a value chain. The first is the average price that can be earned by unit sold on the world market. The world market price that prevails in a certain GVC segment, product group or sub-sector can be gauged by looking at the average world export unit value; as we have seen above, export unit values are calculated by dividing the total value of a country's exports of a certain product or product group (measured in US$) in a given period by the volume of these exports (measured in kg, litres, number of items, etc.). As a second indicator we take the share of the value chain segment in the world exports of the corresponding sub-sector which gives an idea about the importance of the value chain segment in the world market. Third, it is important to look at the dynamism of the value chain segment in world markets, which we capture by calculating the growth rate of world exports in the value chain segment.

Table 4.3: Indicators for assessing attractiveness of GVC segments

Indicators	Variables	Source
Average price on the world market	Average world export unit value (in the GVC segment, product group or sub-sector)	UN Comtrade database
Importance of the value chain segment in the world market	Share of the value chain in world exports of the sub-sector	UN Comtrade database
Dynamism of the value chain segment in world markets	Growth rate of world exports in the value chain segment	UN Comtrade database

Countries may have specialized and developed strengths and productive capacities in certain segments of a given value chain but not in other segments. Table 4.4 presents three indicators that can be used to assess the performance of countries in different segments of a given value chain. A first indicator is simply to look at the total value of a country's exports in a certain GVC segment. This gives an idea of how important the country is as a supplier of certain (raw, intermediate or final) products to global markets and value chains. However, not only the level of exports matters but also their dynamics. A second indicator to assess the performance of a country in a certain GVC segment is the average annual growth rate of its exports. Thirdly, to evaluate how competitive a country is in a certain value chain segment, it is suggested to also monitor changes in the country's world market share of the value chain segment.

Table 4.4: Indicators for assessing performance of countries in GVC segments

Indicators	Variables	Source
Export value	Value of exports in the GVC segment	UN Comtrade database
Export dynamics	Average annual growth rate of exports in the GVC segment	UN Comtrade database
Export competitiveness	Change in world market share of the value chain segment	UN Comtrade database

In a final step, it is useful for the analyst to assess the attractiveness of different possible export markets which may be targeted through integration into GVCs. One measure is the average price for a certain product or product group that is paid in the market. This can be proxied by the average import unit value which is calculated by dividing the total value of a market's imports of a certain product or product group (measured in US$) in a given period by the volume of these imports (measured in kg, litres, number of items, etc.). A second indicator for the attractiveness of a market is its size as measured by the volume of it imports (see Table 4.5).

Table 4.5: Indicators for assessing attractiveness of markets

Indicators	Variables	Source
Average price in the market	Average import unit value	UN Comtrade database
Market size	Volume of imports	UN Comtrade database

4.1.3 How to assess trajectories of social upgrading in GVCs?

As recent GVC studies have illustrated, the earlier assumption of an almost automatic translation of economic upgrading into social upgrading is questionable because economic gains do not always lead to social gains. A separate analysis of social upgrading is therefore desirable. However, social upgrading is a very complex and multi-faceted process. It involves a lot of qualitative aspects related to working conditions and labour rights. As a consequence, measuring social upgrading through quantitative indicators is not an easy task - and results should be interpreted with caution. Nonetheless, Table 4.6 suggests a list of indicators that analysts can use to measure social upgrading in a country's sub-sector that is integrated in a GVC.

Table 4.6: Social Upgrading/Downgrading in GVCs

Indicators	Variables	Source
Social Upgrading/Downgrading	Employment in the sub-sector Change in employment Change in real wages Employment of women, youth, and migrant workers in the sub-sector	UNIDO INDSTAT database ILOSTAT database National data

The intuition of these indicators is as follows: Through the creation of jobs, labour is given the possibility to earn an income. Moreover, if jobs are formal, they may provide social insurance and certain employee benefits. Therefore, if employment in a given sub-sector is growing, this is a first

sign of social upgrading. However, such a quantitative treatment of social upgrading in terms of employment generation alone is not enough. What also matters is the quality of jobs (created or retained). This is to be captured by including real wages into the analysis. In a sense, their remuneration is a measure of how much workers benefit economically from the value created by GVC-related production in their country. That is, real wages give an idea of how much of the (sub-sectoral) value added generated is appropriated by workers.

This is clearly an oversimplification of the concept of social upgrading as it looks at only two of a long list of possible indicators for measuring it, and while real wages may be associated with quality of employment, they are too weak an indicator to draw any wider conclusions about improvements in overall working conditions (such as hours of work, freedom of association, safety at work, etc.). An even more nuanced picture of social upgrading would, hence, require the inclusion of working conditions and labour standards into the analysis. In an even broader sense, social upgrading can also be understood as improving circumstances for disadvantaged social groups; an indicator could, thus, be the creation of employment for women, youth, and migrant workers through GVC production in a certain sub-sector. However, published data on these issues are hardly available (particularly at the sub-sectoral level).

By contrast, the data on employment and wages are more widely available (and in an internationally comparable manner) and, therefore, allow for cross-country comparisons. An important caveat which needs to be emphasized is that these data typically do not cover the informal sector and do not sufficiently account for irregular employment like temporary or contractual work (where working conditions and pay are usually worse than in regular jobs). Given this lack of reliable data on irregular employment, we do not know whether social upgrading/downgrading is accompanied by a rise or fall of precarious jobs. As a result, these indicators exclude a large segment of workers, particularly in developing countries.

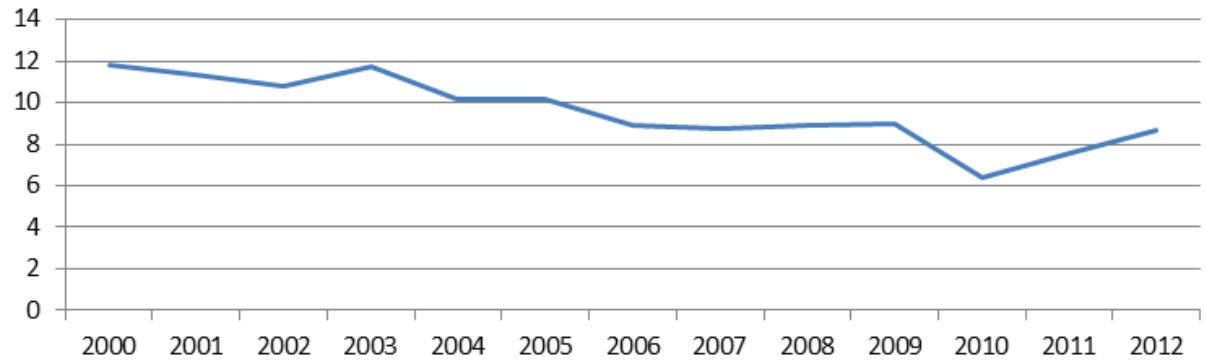
4.2. Analysis and Interpretations of Findings

This section presents examples of how to apply the methodologies discussed in the previous section using different countries and sub-sectors as case studies.

4.2.1. Economic Upgrading/Downgrading in GVCs

The example we look at here is Guatemala's participation in the coffee GVC serving the US market. Coffee is one of the main exports from Guatemala to the United States with the US importing around US$ 300 million of coffee from Guatemala in 2010. Figure 4.1 shows the share of Guatemala in US coffee imports.

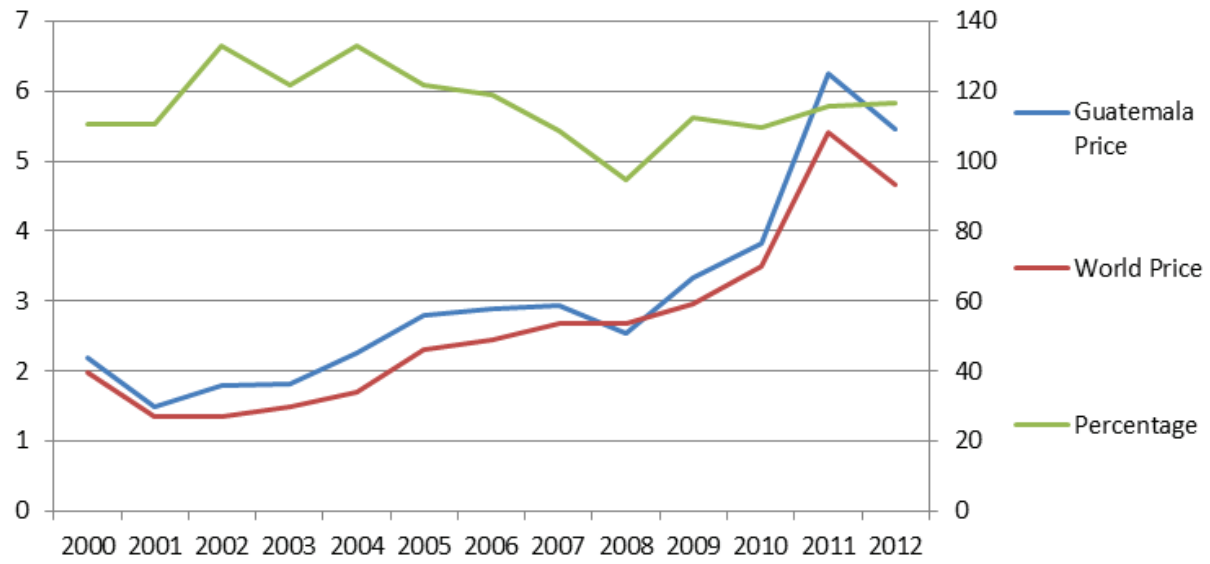
Figure 4.1: Share of Guatemala in US coffee imports (SITC 0711), in %



Source: UN Comtrade

Figure 4.2 shows Guatemala's unit price in the US market in comparison to the world price. The green line, which is measured on the secondary axis on the right, shows the ratio of Guatemala's export unit value against the average world price as a percentage (i.e. this is Guatemala's export unit value divided by the average world export unit value).

Figure 4.2: Guatemala vs. World Price in US market, US$ per kilo



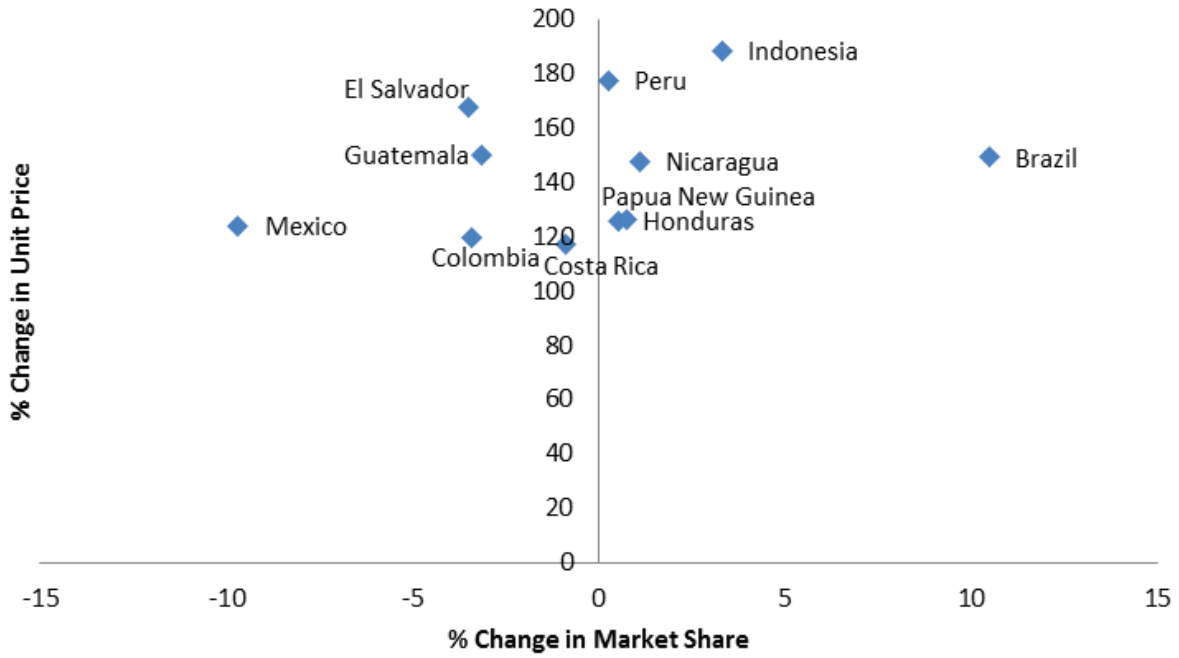
Source: UN Comtrade

The two graphs reveal that Guatemala has experienced a decline in its market share in the US, accompanied by a decline in its export price relative to the market price for a few years in the early 2000s. According to the categorisation of performance presented in Table 4.2 above, this reflects product and process downgrading of Guatemalan coffee producers supplying to the GVC. However, both Guatemala's market share and its relative export unit price improved in the last few years, indicating a process of product upgrading.

Figure 4.3 presents both indicators together in a 2x2 matrix (scatter chart) where the %-change in market shares is plotted on the horizontal axis while the %-change in export unit values is plotted on the vertical axis. It compares Guatemala's performance with that of other key coffee exporters to the US in the years 2000 to 2012. The location of countries in the different quadrants of this 2x2 matrix reflect their upgrading performance; Table 4.2 offers possible interpretations.

Guatemala shows up in the upper left-hand quadrant. It, thus, represents a case of "failed product upgrading" whereby export unit value have increased in this time period but market shares have declined. Figure 4.3 shows that Colombia, Costa Rica, El Salvador and Mexico have followed a similar trajectory. By contrast, Brazil, Honduras, Nicaragua, Papua New Guinea and Peru are positioned in the upper right-hand quadrant - indicating that they have succeeded in product upgrading for the US market between 2000 and 2012.

Figure 4.3: Guatemala vs. Competitors in the US market, 2000-2012



Source: UN Comtrade

4.2.2. Identifying attractive GVC segments and attractive markets

To illustrate how to apply the methodology presented in section 4.1.2 in practice, we will look at the beef and mackerel value chains as case studies with a focus on Namibia. In a first step, we have to identify the product groups that make up each segment of these value chains. In both cases, the different segments of the value chain can be distinguished according to the different stages of processing from raw material to the final, processed product.

This links to what was discussed in section 2.1.2 which was dedicated to help analysts develop an understanding of their country's position within a certain GVC. As was mentioned there, trade data allows to distinguish between different products according to their degree of processing. In section 2.1.2, we introduced the Multilateral Trade Negotiations (MTN) categorisation scheme which explicitly aims at breaking down product groups into raw materials, semi-processed, and processed goods as was shown in Table 2.2 above. However, in principle, it is possible to do something similar with other data categorisation schemes such as the Standard International Trade Classification (SITC) or the Harmonised Commodity Description and Coding System (HS). In order to find the right chapters or codes in these data classification schemes, analysts can simply use the search functions of trade databases such as UN Comtrade or related data platforms such as the World Integrated Trade Solution (WITS) which also offers access to UN Comtrade data.

Table 4.6 reports the product groups (including the corresponding SITC chapters) that make up the beef value chain and the mackerel value chain, respectively. It distinguishes three segments of these value chains: raw materials, semi-processed goods, and processed goods.

Table 4.6: Products in the different segments of the beef and mackerel GVCs (SITC rev. 3 codes)

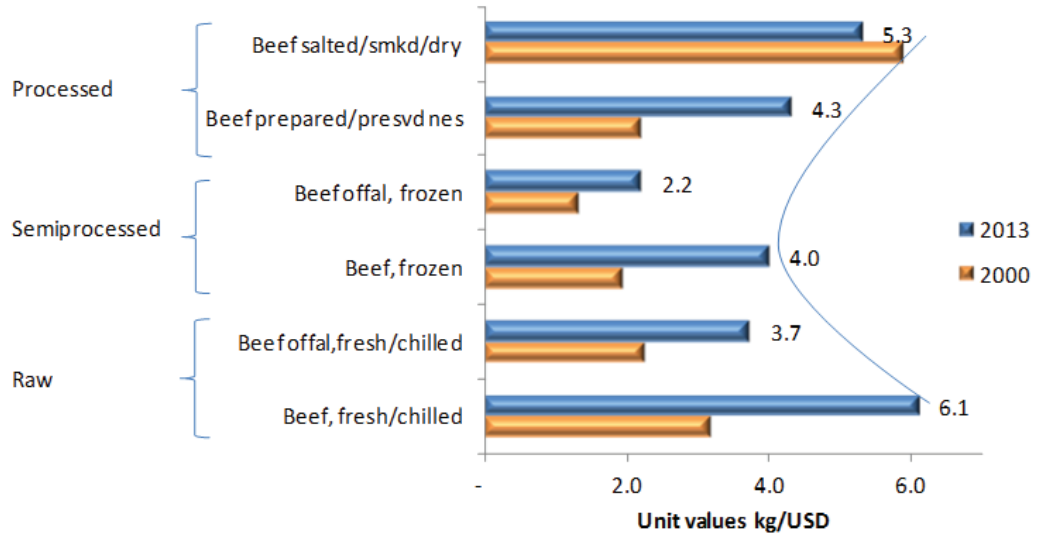
Category	Raw	Semi-processed	Processed
Beef	Beef, fresh/chilled (0111); Beef offal, fresh/chilled (01251)	Beef, frozen (0112); Beef offal, frozen (01252)	Beef, salted/smoked/dry (01681); Beef prepared/ preserved n.e.s. (0176)
Mackerel	Mackerel, fresh/chilled (03417)	Mackerel, frozen, except roe, (03426)	Mackerel prepared/ preserved (03714)

Note: The numbers in brackets refer to SITC chapters; "n.e.s." stands for not elsewhere specified

Figures 4.4 and 4.5 show the average unit prices that are paid on world markets for products belonging to the different segments of the beef value chain and the mackerel value chain, respectively. Above it was said that, typically, more processed products earn a higher price - which is often given as the rationale for why "moving up the value chain" towards assuming more processing functions is beneficial from an economic development perspective. In other words, processing is often equated with value addition. This verdict is true for the mackerel value chain, as can be seen in Figure 4.5 which shows that (at US$ 3.69) prepared and preserved mackerel earns a much higher unit value on world export markets than frozen mackerel (US$ 1.54) or fresh and chilled mackerel (US$ 1.49).

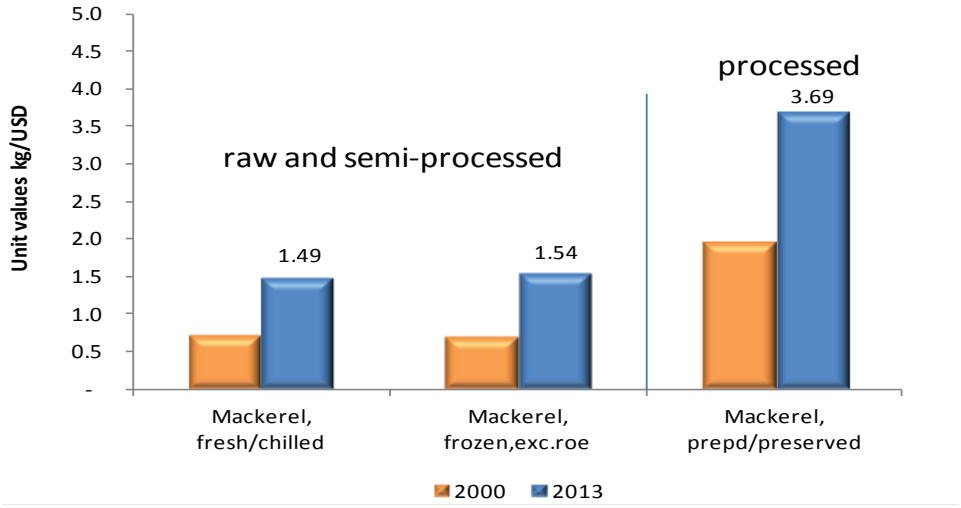
In the case of the beef GVC, however, prices do not increase linearly with the degree of processing. In fact, as Figure 4.4 reveals, the highest unit prices can be earned at the raw material stage where currently US$ 6.1 are paid per kilogramme of fresh and chilled beef. This is because exporting fresh and chilled beef requires the existence of sophisticated capabilities and infrastructures such as a functioning cold chain, testing laboratories, traceability functions, etc. Average world export unit values for processed products in the beef value chain are somewhat lower (between US$ 4.3 for prepared or preserved beef and US$ 5.3 for salted, smoked or dry beef), as can be seen in Figure 4.4. The least lucrative segment in the beef value chain (in terms of average world export unit values) are semi-processed products.

Figure 4.4: Average world export unit values in the beef GVC, 2000 and 2013



Source: UN Comtrade

Figure 4.5: Average world export unit values in the mackerel GVC, 2000 and 2013

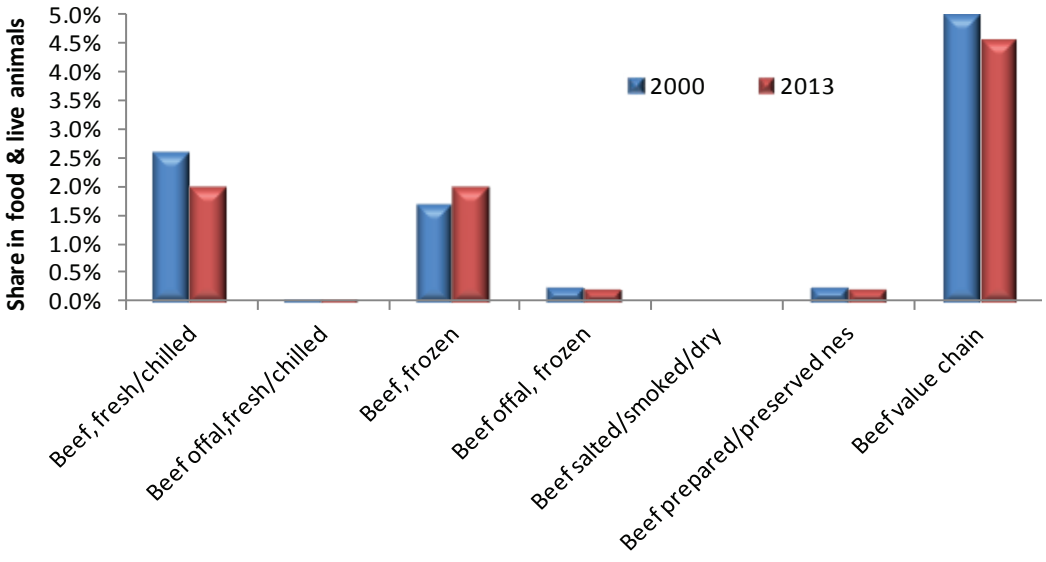


Source: UN Comtrade

In a next step, we look at how important the different value chain segments are in the world export market of the wider sub-sector of which the two value chains are part. In our example, we look at the world market for food and live animals which is the broader sub-sector to which both the beef value chain and the mackerel value chain belong.

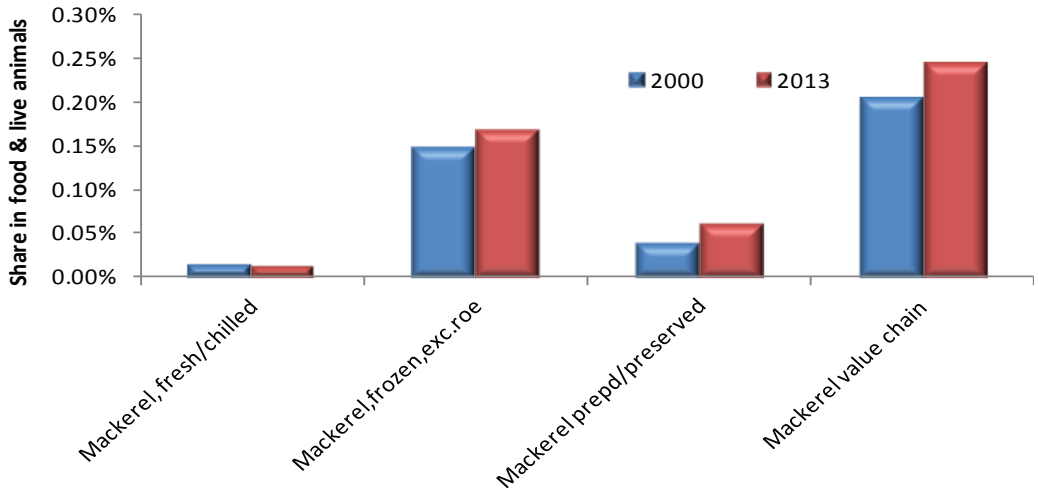
Figures 4.6 and 4.7 indicate that the beef value chain makes up around 4.5% of the world exports of food and live animals while the mackerel value chain accounts for a bit more than 0.25%. The beef value chain is, thus, more important in terms of world market size than the mackerel value chain. However, while the beef value chain has lost some shares in the world export market for food and live animals between 2000 and 2013, the mackerel value chain has gained some shares. Looking at the different value chain segments, we can see that frozen beef and fresh and chilled beef are the most traded on world markets. In the mackerel value chain, frozen mackerel is the most important value chain segment. Thus, in both value chains the semi-processed segment is where most world trade happens.

Figure 4.6: Importance of the beef GVC in world markets for food and live animals, 2000 and 2013



Source: UN Comtrade

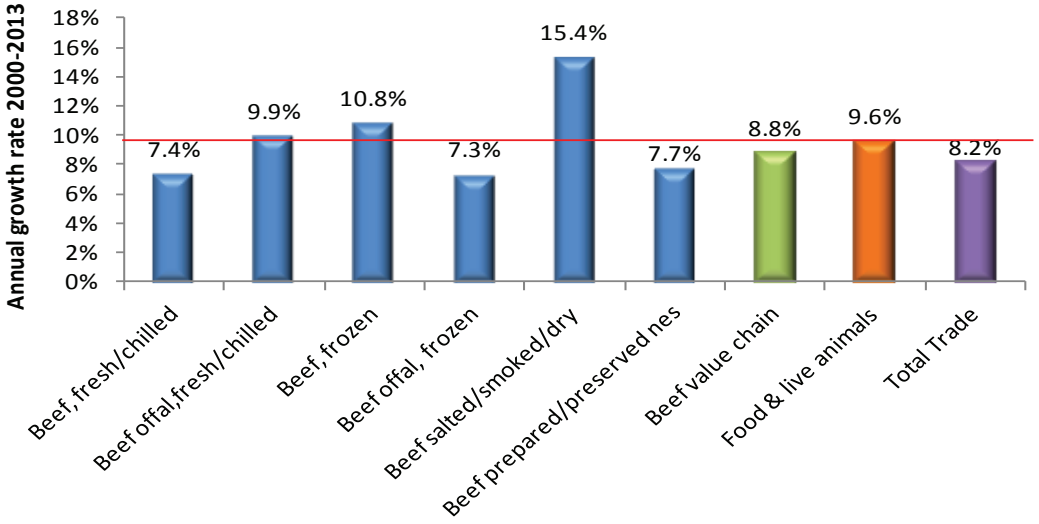
Figure 4.7: Importance of the mackerel GVC in world markets for food and live animals, 2000 and 2013



Source: UN Comtrade

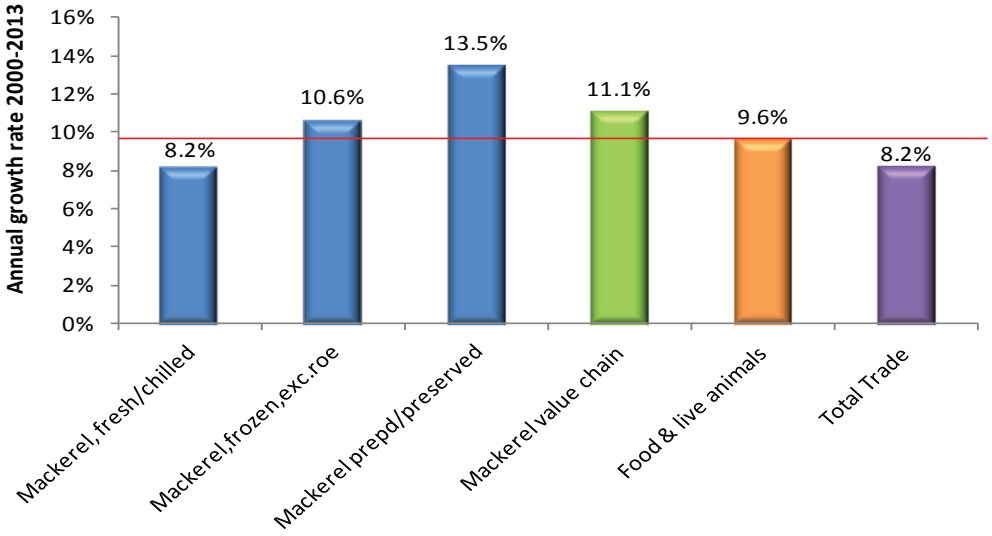
In terms of dynamism of export growth, Figures 4.8 and 4.9 reveal that between 2000 and 2013 the mackerel value chain has seen faster export growth (at an annual average of 11.1%) than the beef value chain (on average just 8.8% per year). In fact, world exports in the mackerel GVC have grown faster than world trade overall (8.2%) and faster than in the food and live animals sub-sector (which is represented in Figures 4.8 and 4.9 by the horizontal line at 9.6%). By contrast, exports in the beef GVC have grown more rapidly than world trade but more slowly than exports of food and live animals. The most dynamic value chain segment, however, was salted, smoked and dry beef where exports have grown by 15.4% between 2000 and 2013. Meanwhile, world exports of prepared and preserved have grown by 13.5%. That is, the two fastest-growing segments in these two value chains have been in processed goods. By contrast, raw materials such as fresh and chilled beef as well as fresh and chilled mackerel have seen considerably less dynamic world export growth (see Figures 4.8 and 4.9).

Figure 4.8: Dynamism of the beef GVC in world export markets, 2000-2013



Source: UN Comtrade

Figure 4.9: Dynamism of the mackerel GVC in world export markets, 2000-2013



Source: UN Comtrade

Let us now look at the case of Namibia and how it has performed in the different segments of the two GVCs. Figures 4.10 and 4.11 display three indicators, respectively, that help to get an understanding of the performance of Namibia and comparator countries; panels (A) to (C) show the different segments of the beef and mackerel value chains. On the horizontal axis, both graphs show changes in world export market shares (in %) while the average annual growth rate of exports between 2000 and 2013 is plotted on the vertical axis. In all graphs, each country is represented by a bubble whereby the size of the bubble reflects exports per capita of that country in the given value chain segment.[4]

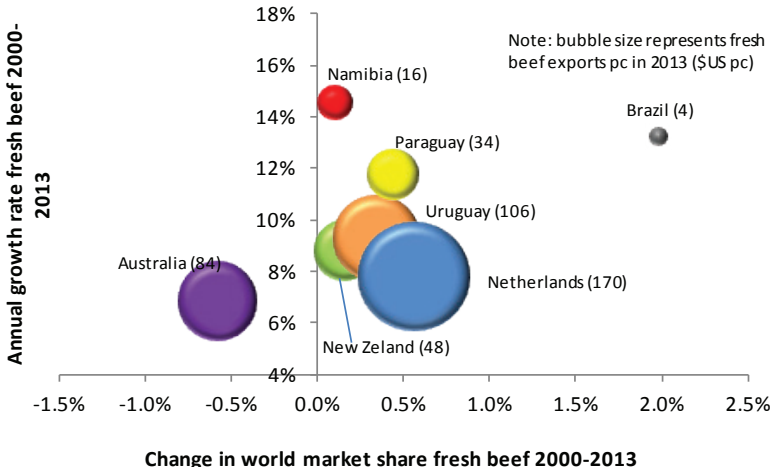
As can be seen in Figure 4.10, Namibia's exports in all three segments of the beef GVC have grown quite fast - but did not translate into massive world export market share gains. What stands out in the three panels of Figure 4.10 is that, among the sample countries, Brazil has recorded the largest increases in world export market shares in all segments except for processed beef (where it ranks second after the Netherlands in terms of market share gains). By contrast, Australia has lost market shares in all three segments. What can also be observed from Figure 4.10 is that Namibia is a comparatively large exporter of processed beef (with its exports of salted, smoked and dry beef standing at US$ 1.699 per capita) while it is a rather small exporter of fresh and frozen beef. From Figures 4.6 and 4.8 above we know that this GVC segment is currently rather small in terms of world market size but has grown very dynamically over the last decade.

In the mackerel value chain, the situation is the reverse. As Figure 4.11 reveals, Namibia is quite a small exporter of processed mackerel (with exports worth US$ 0.1 per capita) while it is a comparatively large exporter of semi-processed (i.e. frozen) mackerel (with per capita exports of US$ 52 - a value that is only second to Norway in our sample). It is also in the frozen mackerel segment that Namibia has gained most world export market shares (+7%). This is not a bad place to be since we have seen in Figures 4.7 and 4.9 above that frozen mackerel is the largest GVC segment where exports have grown by almost 11% annually since 2000. Interestingly, Namibia's exports of fresh mackerel and prepared mackerel have even grown faster (by 118% and 123%, respectively), however, leading to just minor world market share gains.

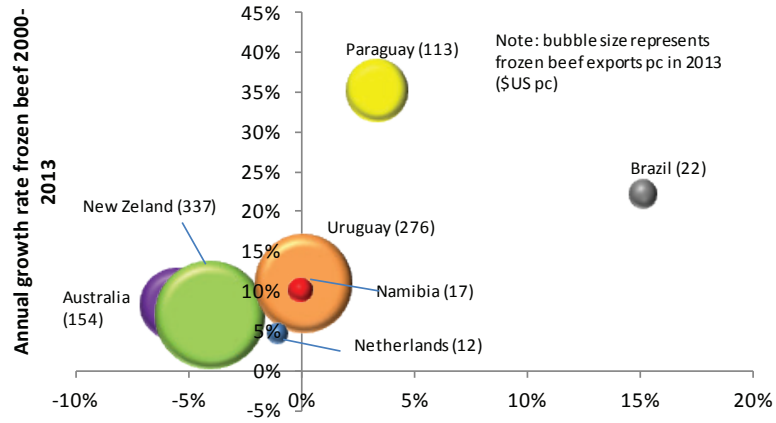
4 Note that this corresponds to the "export capacity" indicators discussed in EQuIP tools 1 and 2.

Figure 4.10: Performance of Namibia and comparator countries in the beef GVC, 2000-2013

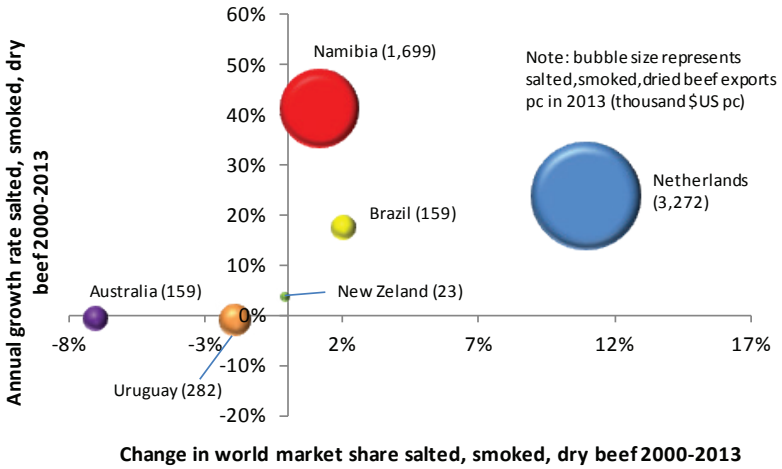
(A) Fresh beef



(B) Frozen beef



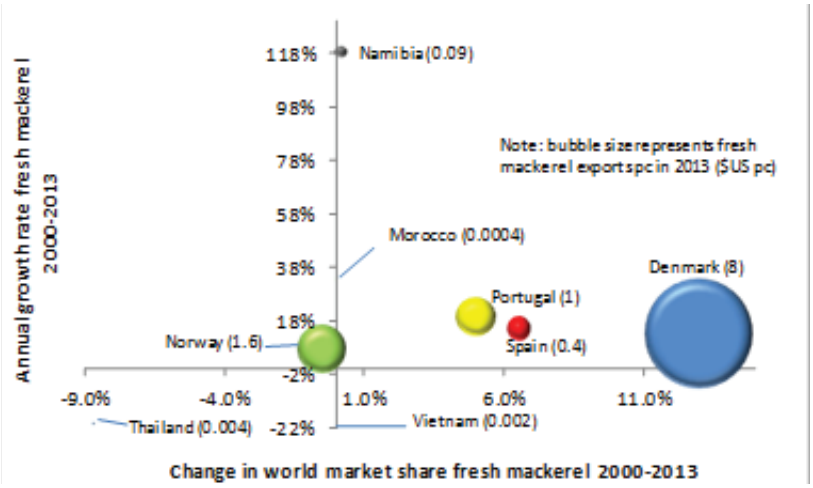
(C) Salted, smoked, dry beef



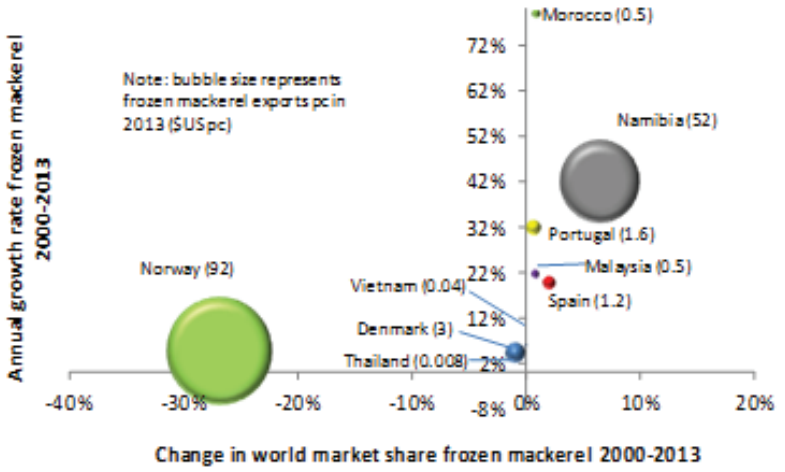
Source: UN Comtrade; Note: "pc" stands for "per capita"

Figure 4.11: Performance of Namibia and comparator countries in the mackerel GVC, 2000-2013

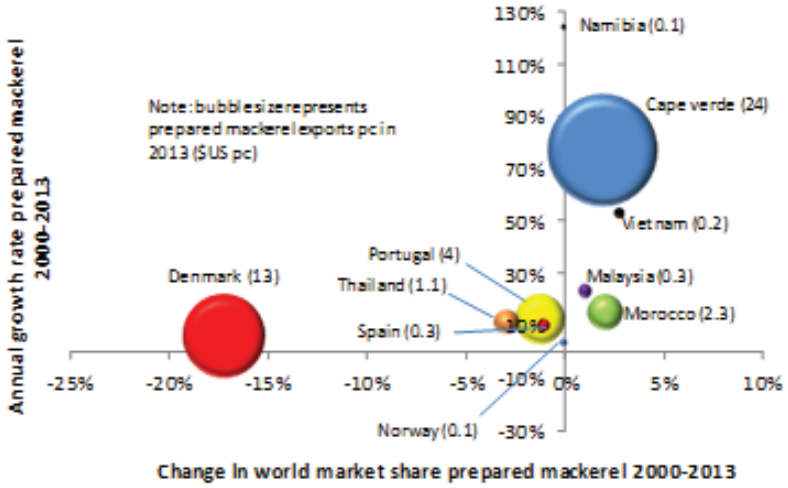
(A) Fresh mackerel



(B) Frozen mackerel



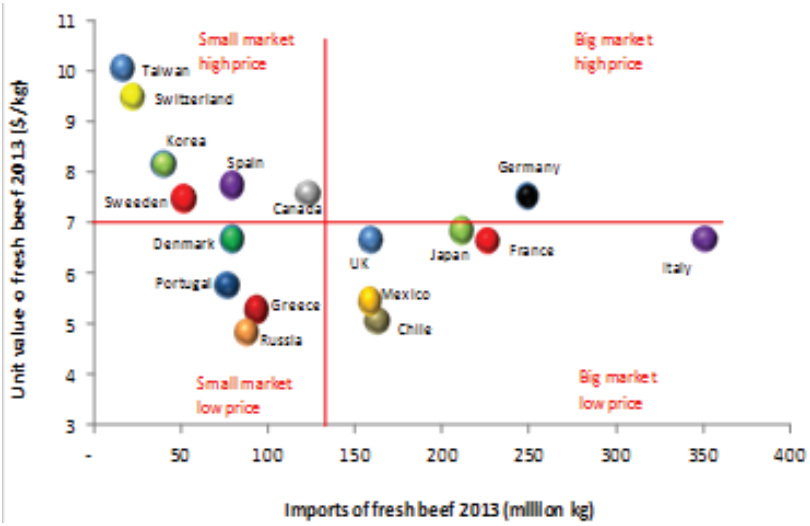
(C) Prepared mackerel



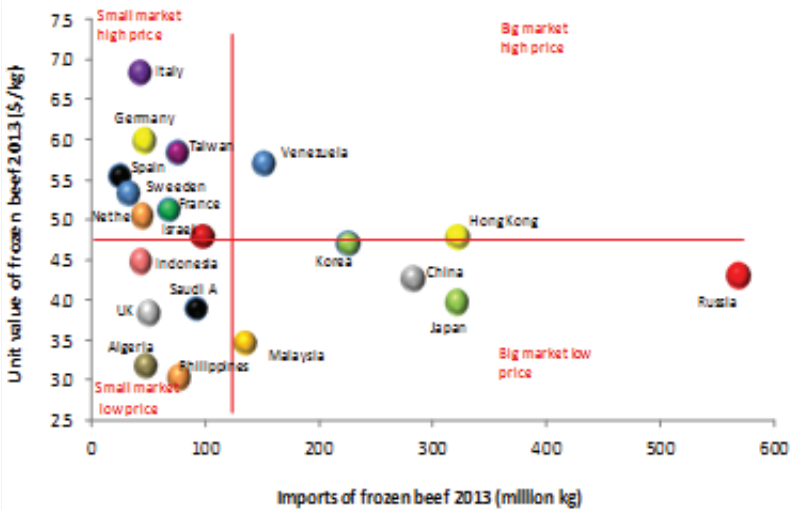
Source: UN Comtrade; Note: "pc" stands for "per capita"

Figure 4.12: Attractive markets for beef, 2013

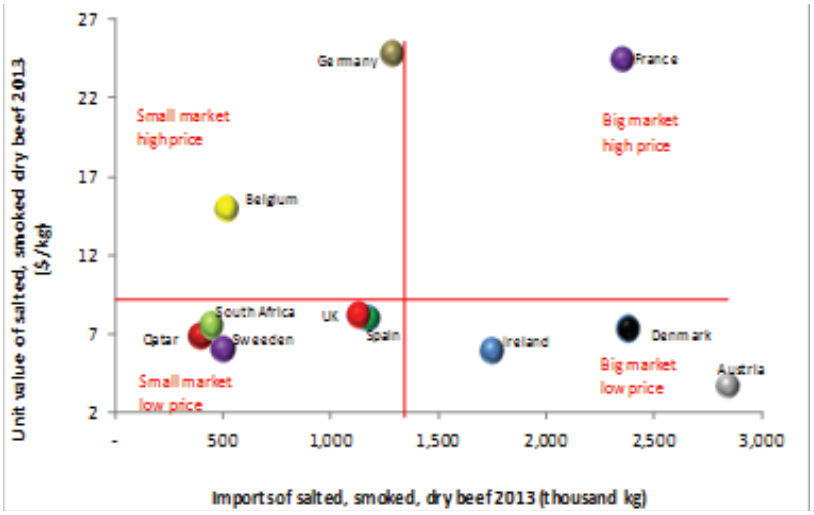
(A) Fresh beef



(B) Frozen beef



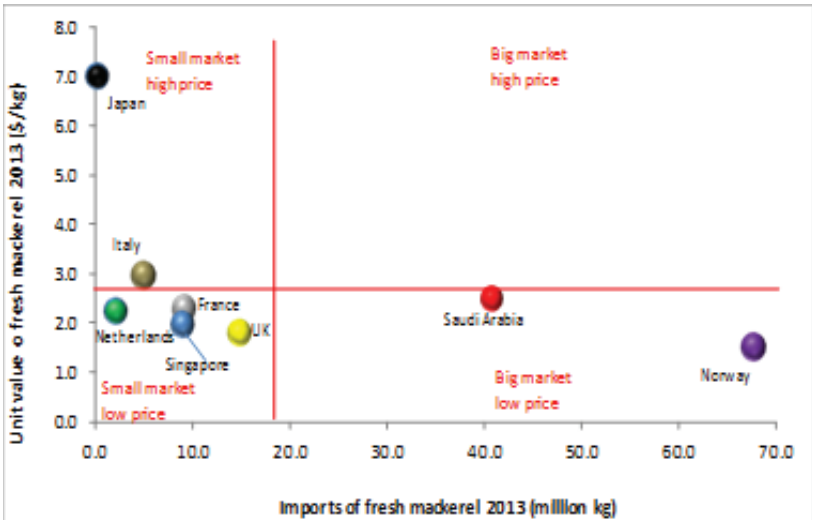
(C) Salted, smoked, dry beef



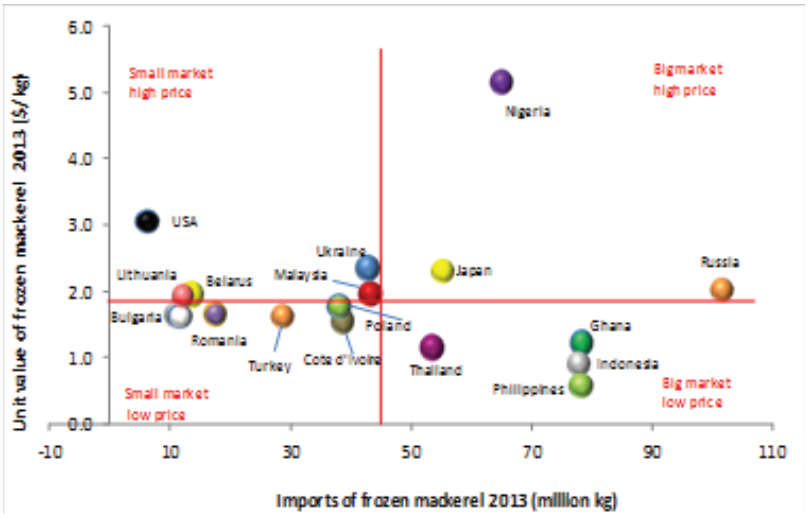
Source: UN Comtrade

Figure 4.11: Attractive markets for mackerel, 2013

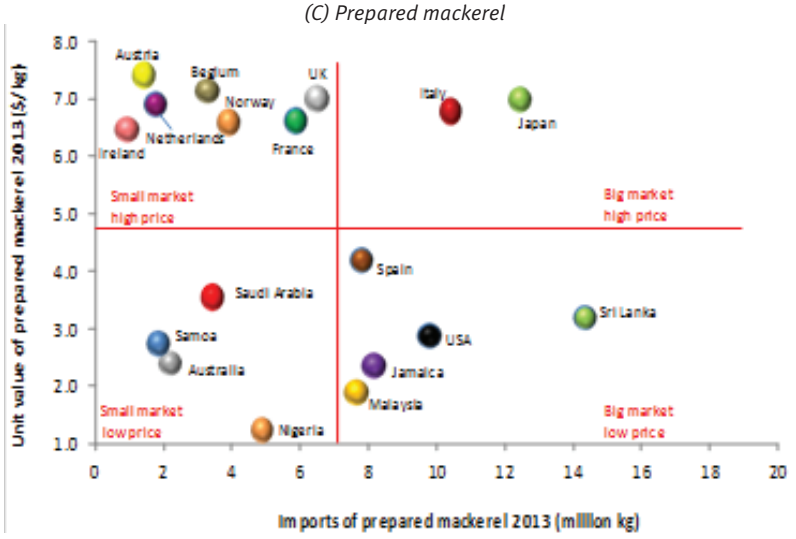
(A) Fresh mackerel



(B) Frozen mackerel



(C) Prepared mackerel



Source: UN Comtrade

In a final step, we will now identify the most attractive export markets that are served by the beef and mackerel GVCs. As discussed above, we use two indicators to assess the attractiveness of a market: First, the average price for a certain product or product group that is paid in the market and, second, the size of the market. Accordingly, Figures 4.12 and 4.13 give an idea about the attractiveness of different important markets for beef and mackerel products using these two indicators. In each graph, the volume of the market's imports (which is a measure of its size) is plotted on the horizontal axis while the average import unit value of that market (which is a proxy for price) is plotted on the vertical axis. Moreover, for each GVC segment (which are presented in separate panels of Figures 4.12 and 4.13) sample averages for market size and market prices are calculated and displayed by a horizontal red line and a vertical red line, respectively. This allows to divide each graph into four quadrants which, in turn, allow distinguishing four types of markets: (1) small market with high price, (2) small market with low price, (3) big market with low price, and (4) big market with high price. Obviously, big markets with high prices are a prime target but they might not always be easy to enter or to serve due to stiff competition.

In the case of fresh beef, for example, Germany is the only large market where high prices are paid (see panel (A) of Figure 4.12). There are, however, several smaller markets that in some case even pay higher prices for fresh beef, including Taiwan Province of China, Switzerland and South Korea. Moreover, some markets do not pay very high prices but absorb large volumes; this is true for Italy, France and Japan, for example. When looking at additional trade data (not reported here), one can see that in 2013 Namibia exported fresh beef to four of the markets displayed in Figure 4.12: Switzerland, Germany, Denmark, and the UK.

Germany is, in fact, also a high-price market for frozen and processed beef (see panels (B) and (C) of Figure 4.12). However, it is a comparatively small market for these products (as measure by import volume), which possibly points to the fact that Germany imports a lot of raw beef which is then processed within the country itself. Additional trade data (again not reported here) reveals that the only market to which Namibia exported salted, smoked and dry beef in 2013 was South Africa. Meanwhile, it exported frozen beef to Germany, the UK, Italy and the Netherlands. That is, in two of the three segments of the beef GVC Namibia is successfully serving what can be deemed attractive markets.

Panels (A) to (C) of Figure 4.13 help to identify attractive markets for different types of mackerel products. Interestingly, there is not a single big market that pays high prices for fresh mackerel. As we have seen above in Figure 4.9 and 4.11, this is anyway not a GVC segment that is of particular importance for Namibia nor one that has grown very fast in recent years. There are , in fact, just two small high-price markets (Japan and Italy) and two big low-price markets (Saudi Arabia and Norway) but Namibia is exporting to none of them. Frozen mackerel is the GVC segment where, as we know from Figure 4.11, Namibia has both a significant export capacity and quite an important world export market share. There are three big high-price markets for frozen mackerel as well as a number of small high-price and big low-price markets but, as additional trade data (not reported here) shows, Namibia is not exporting to any of the markets shown in panel (B) of Figure 4.13. Supporting entry in attractive markets in this GVC segment might, thus, be a strategic objective for industrial policy. Finally, trade data (not reported here) shows that Namibia exports prepared mackerel to Norway and the UK which show up in panel (C) of Figure 4.13 as high-price but small markets. However, it does not export any prepared mackerel to any of the large markets (whether high-price or low-price) that are identified in that graph. Overall, there is quite some room for improvement for Namibia in terms of serving attractive markets of the mackerel GVC.

4.2.3 Social upgrading/downgrading in GVCs

Data on employment, wages, and the sub-sectoral composition of the labour force at a disaggregated level is not easily available. UNIDO INDSTAT databases provide such statistics but this data is mostly at a two-digit disaggregation level, limiting its use in the case of some products. Only for

a few countries is data at the more disaggregated four-digit level available. In some countries, more detailed national data could be provided by ministries, government agencies, statistics offices or industry associations. For instance, ideally the economic and social upgrading analysis should follow the same breakdown of sectors/products in order to link the final conclusions. We, however, cannot continue with the Guatemala coffee case as no data on employment in the sector is available. We will therefore use tobacco products (ISIC 16) from Malawi as an example.

Figure 4.14 shows employment and wages for Malawi tobacco production for the period 2003-2010. The example shows a decline in employment in the sub-sector accompanied by higher wages. Linking this to an economic upgrading analysis along the lines of what was presented above for Guatemala would allow the analyst to produce interesting insights.

Figure 4.14: Employment and Wages in Malawi's Tobacco Industry

Source: UNIDO INDSTAT

This can be combined by data on the composition of the workforce in an industry and its changes overtime. This can include employment by age group, gender, migration status, etc. Such data is often available in annual national statistical books issued by statistics agencies in different countries. While some indicators are included in UNIDO or ILO data, their coverage is generally limited.

4.3. Possible Extensions

The definitions of economic and social upgrading and the link between the two are two issues that can be developed further in the future. In particular, a more refined measurement of social upgrading including aspects of working conditions and labour rights is warranted. As mentioned, the choice of the indicators presented here has been largely determined by the limited data availability in this field but future work should focus on attempting to come up with more fine-tuned and accurate indicators and also a stronger link between the economic and social sides. Data availability and the quality of the data available is a major issue here (compared to trade data for instance) which also should encourage the use of national data when available.

5. Possible Data Sources

UN Comtrade through World Integrated Trade Solutions (WITS): http://wits.worldbank.org/

OECD-WTO TiVA database: https://stats.oecd.org/index.aspx?queryid=47807

UNIDO INDSTAT databases: available on CD-ROM and https://stat.unido.org/ (registration required)

ILOSTAT database: http://www.ilo.org/ilostat/

ILO Global Wage Database: http://www.ilo.org/ilostat/GWR

GIZ International Fuel Prices Database:
www.giz.de/expertise/downloads/giz2014-en-international-fuel-prices-2013.pdf

WTO regional trade agreements database: www.wto.org/english/tratop_e/region_e/region_e.htm

UNCTAD - Market access indicators:
http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx

UNCTAD - Maritime transport indicators:
http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx

World Bank's Logistics Performance Index (LPI): http://lpi.worldbank.org/ or
http://databank.worldbank.org/data/views/reports/tableview.aspx

Shipping websites: www.ports.com or www.searates.com

EUROSTAT: http://ec.europa.eu/eurostat/web/international-trade/

USITC Interactive Tariff and Trade DataWeb: http://dataweb.usitc.gov/

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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
E-mail: policy@unido.org

DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT (GIZ) GMBH
Friedrich-Ebert-Allee 40, 53113 Bonn, Germany
E-mail: sv-nawi@giz.de

Website: **www.equip-project.org**