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Identifying Intra-Commonwealth Value Chains

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Abstract

Understanding the global/regional value chain interface remains an important research endeavour including within the Commonwealth. This paper uses mixed research methods and presents some preliminary results on the nature of intra-commonwealth value chains. Trade intensity measures are analysed across specific product lines, followed by the identification of trade shifts for intermediate goods sourcing on an intra-Commonwealth basis. Finally, firm-level GVC indicators linked to specific product lines traded on an intra- and extra-Commonwealth basis are explored. Overall, the results presented in this paper suggest that Commonwealth members tend to trade more intensely on an intra-regional basis within more additive types of value chains (e.g. natural resource based, agro-processing). There have been some shifts in intermediate goods sourcing, with increased intra-Commonwealth sourcing of industrial goods. Small Island Developing States are more likely than other groups of member countries to export on an intra-Commonwealth basis. These preliminary results call for more nuanced approaches regarding entering and upgrading within GVCs, particularly for Commonwealth small states.

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1. Introduction

There are limited studies that specifically measure intra-regional as opposed to global value chains (GVCs). However, there is an emerging theoretical literature regarding the posited upgrading effects for firms trading on an intra- as opposed to within some types of GVCs. This paper explores the nature and type of intra-Commonwealth value chains.¹ We first define GVCs and some of the terms referred to in the current literature. We then compare and contrast these approaches with those that measure participation in intra-regional value chains.

Since the current mainstream definition of GVCs refers to vertically fragmented trade, intermediate or final goods which utilise imported inputs, we try to identify specific instances of where intermediate inputs have been sourced on an intra-regional basis from within the Commonwealth. We do this using a

mixed-methods approach. This includes disaggregated trade data analysis necessary to capture aspects of intra-Commonwealth trade. We also make the link between intra-Commonwealth trade and firm-level performance.

Overall, the results presented in this paper suggest that Commonwealth members tend to trade more intensely on an intra-regional basis within more additive types of value chains (e.g. natural resource based, agro-processing). There have been some shifts in intermediate goods sourcing, with increased intra-Commonwealth sourcing of industrial goods. Small Island Developing States are more likely than other groups of member countries to export on an intra-Commonwealth basis. These preliminary results call for more nuanced approaches regarding entering and upgrading within GVCs, particularly for Commonwealth small states.

2. The global/regional value chain interface

Since the 1980s, a major unbundling (the first being the industrial revolution) of production processes has occurred. At the centre of this process has been Asia. The rise of Asia within global trade patterns was characterised by the notion of a flying geese pattern of shifting dynamic comparative advantage. As functions from lead firms were disbursed to neighbouring countries, this process subsequently released resources to enable the upgrading of production processes within lead firms and hub countries.

This fragmentation process has resulted in three major hubs of global economic activity: Factory Asia, within which China plays a major role, Factory Europe and Factory US (Baldwin 2013; Baldwin and Lopez-Gonzalez 2013). Clearly, these developments are suggestive of an intra-regional underpinning of effective GVC integration. Moreover, as discussed by Gasiorek and Lopez-Gonzalez

(2013), despite the ‘momentous’ changes linked to globalisation, when considered at the aggregate level and across all sectors, the internationalisation of economic activity still remains in its infancy.

Some of the more recent empirical findings discussed by Kowalski *et al.* (2015), with reference to the United Nations Conference on Trade and Development (UNCTAD)-Eora the major quantitative GVC database, include:²

- As in the case of gross trade, market size is expected to be a strong determinant of the volume of GVC trade.
- Countries with large markets tend to source a relatively low share of foreign inputs for their production of exports. This is because the larger the domestic market, the larger the pool of domestic intermediates to source from.

1 Prepared by Jodie Keane, based on background analysis including Engel (2015).

2 See Kowalski *et al.* (2015).

- Trade policy may also have a regional dimension that is highly relevant for GVC participation. However, it is not entirely clear whether signing of new regional agreements facilitates the formation of new value chains or actually follows and cements the already-formed value chains³.
- The relationship between GVC participation and levels of development can be complex⁴ (Kowalski *et al.* 2015).

There is increasing interest in the expansion of intra-regional value chains compared with GVCs in view of governance aspects and firm-level upgrading opportunities. Because regional markets may be less tightly controlled than global markets, greater upgrading opportunities may be available to firms trading on an intra-regional basis (e.g. trade in final branded products as compared with specialisation in a narrow range of tasks). Despite this hypothesis, which has been proven in a few country case studies⁵, generally the study of intra-regional value chains remains an important research endeavour. The empirical evidence is sparse and limited to specific country and sector examples; this is part of a general absence of robust empirical evidence over time, which effectively charts upgrading processes within GVCs; however, these are defined.

2.1 Regional value chains

Where reference is made to building local and regional value chains in Africa and within a GVC context, the implied logic seems to be to prepare firms so that they subsequently export globally. For example, UNCTAD (2013) notes that 'local and regional value chains have vital roles to play in broadening the manufacturing base of African economies, expanding productive capacity and boosting intra-African trade' (UNCTAD 2013: 92) and, furthermore, that:

Regional value chains present opportunities for improving productivity ... both for domestic firms with export potential and

those that produce goods predominantly demanded at the national and regional levels. For domestic firms ... regional value chains give them the opportunity to upgrade and achieve international competitiveness, thereby making it easier to connect with GVCs.

Hence, from this perspective, regional markets are understood to provide the environment through which producers may learn and develop their productive capabilities and capacity *before* integrating with GVCs. Demand factors as well as competitiveness considerations are emphasised by UNCTAD (2013) and UNECA (2015). It is recognised within the GVC literature that some upgrading processes may be easier to achieve within intra-regional value chains, precisely because these markets are less dominated by a few lead firms. Hence, supplying processed and branded chocolate may be more likely for firms orientated towards intra-regional markets than more tightly controlled global markets.

Domestic firms may have more opportunities to launch their own manufactured and branded products on domestic or neighbouring markets, with similar levels of development. This literature draws on the experience of producers in the textiles and clothing industry in Kenya (Kamau 2009) and furniture and footwear industry in Brazil (Navas-Alemán 2011).

A focus on domestic markets leads manufacturing firms to broaden the scope of their activities (i.e. functional upgrading) into design, marketing and branding. This may be because firms have a better understanding of home markets than foreign markets or it may be because domestic customers are not as powerful or as concentrated as their counterparts in GVCs (Brandt and Thun 2010). There may simply be greater learning opportunities available to firms serving multiple markets, including domestic, regional and global. Participation in multiple value chains provides the possibility of 'leveraging competencies': different value chains create

3 It is noted by Kowalski *et al.* (2015) that whether trade agreements are a result of increasing trade (or wider GVC participation) or the causation runs the other way is a hotly debated issue in the empirical literature (see Baldwin and Jaimovich 2013).

4 For instance, on the one hand, it may reflect differences in labour productivity, labour costs or, indeed, in domestic capacity and purchasing power. On the other hand, the relationship may equally reflect correlations with other factors such as the quality of human capital, access to finance (or capital costs), the quality of institutions and the business climate, which are all related to the level of development while also being important drivers of GVC participation individually.

5 See Navas-Alemán (2011).

Box 1. Relationships with lead firms

The more recent additions to the case-study GVC literature draw particular attention to the concept of social embeddedness, and why firm ownership matters (Kaplinsky and Wamae 2010, Staritz and Morris 2013, Morris *et al.*, 2014).

This perspective on the motivations of investors and their embeddedness, the destination end markets and subsequent influence on upgrading trajectories is also shared by Goto *et al.* (2009). Generally, the emerging literature on the motivations of investors relates these to potential upgrading trajectories, either at the node of or across production.

For example, depending on the relationship developed with investors and lead firms, there may be greater learning opportunities and possibilities for technology transfer.

However, this depends on investors' motivations and the extent to which these have progressed from merely efficiency or resource seeking towards relationship building.

different possibilities for learning, and what is learned in one value chain can be applied in others (Lee and Chen 2000).

Despite this optimism, it must be recognised that some countries (in particular the least developed) may have such limited domestic capabilities that attracting regional foreign direct investment (FDI) and situating this within an investment-led development strategy might in practice be the most viable strategy

during the initial stages of economic development⁶. FDI can be an effective substitute for domestic capabilities, if managed carefully⁷. Overall, the main messages arising from the emerging literature on intra-regional value chains are that governance types vary according to end markets and the nature of relationships developed with customers and lead firms. This can affect firm-level productivity, and hence subsequent upgrading processes.

3. Results from empirical studies

Kowalski et al. (2015) note that while there are still comparatively fewer regional chains than global chains in operation, two types of regional value chains are highlighted:

1. **Value chains emerging focused on regional production for regional markets:** now organised largely through regional value chains, the automotive sector has relatively coherent production systems in North America, East Asia, Southern Africa and Europe (Sturgeon and Biesebroek 2011). Humphrey and Memedovic (2003) found that the emergence of regional production systems in the automotive industry itself *resulted in* regional integration with reference to the triad regions: North America, the European Union (EU) and Japan. As demand for
2. **Functionally interconnected regional operations that supply global markets:** Asian electronic value chains offer an example of regionalisation of supply for a global market (IDE-JETRO/WTO 2011). These operations leverage labour costs, skills, trade agreements, shipping routes and economic incentives, among other factors, to distribute the manufacture and assembly of components and final goods across the region – but the final goods are predominantly destined for markets in Europe and the USA. The success of the Asian electronic model has led to some

⁶ See Keane and Kennan (2015).

⁷ For countries with extremely limited productive capabilities, attracting FDI and entering into GVCs at a particular stage of production in order to begin capital accumulation and assimilation processes remains an important new trade opportunity.

policymakers suggesting that developing countries outside of Asia need to integrate regional supply chains to leverage economies of scale in trade with other regions.

Some of the main findings arising from the emerging literature on regional value chains with particular regards to Africa are summarised below.

- There is a growing trend of regional trade agreements and evidence to suggest the expansion of regional value chains; South Africa and Kenya have been identified as host countries for emerging regional lead firms across the horticulture, apparel and tourism sectors⁸.
- The restructuring of the textiles and clothing value chain in South Africa has led to new relationships being developed with Lesotho by lead firms in South Africa. This is posited to have resulted in a more relational rather than captive or hierarchical structure of value chain governance in South Africa, with reference to sectors that are already well covered by the literature, such as textiles and clothing (Staritz and Morris 2013, Morris *et al.* 2014).
- Descriptive trade data analysis by Stevens *et al.* (2013) was matched with firm-level data from Keane and Kennan (2015) in order to confirm intra-regional trade in products ranging from plastics, soup and detergents to manufactured metal products, which relate to the automotive value chain that operates within Southern Africa and amongst Southern African Customs Union members. Apparel was also identified as an intra-regional value chain – a clear example of a vertically fragmented

type of value chain, compared with the more additive type characteristic of the agro-processing sector (Kaplinsky and Morris 2014).

3.1 Implications for the identification of Commonwealth value chains

The identification of intra-Commonwealth value chains requires initial exploratory research, based primarily on an analysis of qualitative data and descriptive statistics. Given the span of GVCs from production to consumption, and interaction with regional value chains, the range of tools needed to get a handle on patterns obviously becomes complicated. In view of this, a pragmatic research approach is necessary.

The ability to distinguish between import partners for specific intermediate goods subsequently used in exports has only recently been made available through extensions to the UNCTAD-Eora database. However, this remains a rather laborious research endeavour and it has not been possible to complete this exercise for intra-Commonwealth traders at this stage.

Since we already know from Chapter 2 of the Trade Flagship report that trade costs are lower between Commonwealth members, this invariably leads to the hypothesis that certain types of trade amongst members within specific sectors may be more likely. We try to identify these sectors and, subsequently, the main chain drivers and types of actors in the next subsection. This paper therefore provides a limited – as one small piece of research – contribution to a much larger, important and worthy research endeavour which remains on-going within the Trade Division of the Commonwealth Secretariat.

4. Identification of intra-Commonwealth value chains

We use a combination of methods to explore intra-Commonwealth value chains in the following subsections. Hence, we identify

intra-Commonwealth value chain participation using the following indicators and research approaches: intra-regional trade intensity indices

⁸ See Goger *et al.* (2014).

Table 1. Intra-Commonwealth export/import intensity

Sector	Exports		Imports	
	2011–13	2001–03	2011–13	2001–03
Food and live animals	1.1	1.2	1.5	1.7
Beverages and tobacco	1.4	1.4	1.6	2.1
Crude materials, excl. food/fuel	0.5	0.7	1.6	1.8
Mineral fuel/lubricants	1.2	0.9	1.4	1.0
Animal/veg. oil/fat/wax	1.3	0.2	1.8	0.2
Chemicals/products n.e.s.	0.8	1.0	0.8	0.9
Manufactured goods	1.0	1.1	1.0	1.2
Machinery/transport equipment	0.9	1.0	0.7	0.8
Miscellaneous manuf. arts	0.9	1.1	0.8	0.9
Commodities n.e.s.	1.0	0.9	1.2	1.2

Source: UNComtrade; S3 aggregation; value terms.

Table 2. Share of intra- and extra-Commonwealth trade within sectors

Sector	Exports			Imports		
	2001–03	2011–13	% change	2001–03	2011–13	% change
Food and live animals	7.73	7.34	–0.39	9.03	7.82	–1.22
Beverages and tobacco	1.66	1.30	–0.36	2.11	1.43	–0.68
Crude materials, excl. food/fuel	3.40	4.39	0.99	4.32	4.50	0.19
Mineral fuel/lubricants	11.29	28.47	17.18	10.11	28.98	18.87
Animal/veg. oil/fat/wax	0.13	1.54	1.41	0.13	1.64	1.51
Chemicals/products n.e.s.	8.33	7.90	–0.43	8.26	8.21	–0.05
Manufactured goods	14.80	11.79	–3.01	14.01	11.10	–2.91
Machinery/transport equipment	36.40	22.36	–14.04	34.26	21.26	–12.99
Miscellaneous manuf. arts	10.19	6.99	–3.20	10.53	7.37	–3.16
Commodities n.e.s.	6.08	7.93	1.85	7.24	7.68	0.45
Total	100.00	100		100.00	100	

Source: UNComtrade; S3 aggregation; value terms.

across sectors; intermediate goods analysis; and firm-level analysis of intra-Commonwealth compared with extra-Commonwealth exporters.

4.1 Intra-regional trade intensity

In order to gain an understanding of the types of sectors which tend to trade more on an intra- as opposed to an extra-Commonwealth basis, we first looked at intra-regional trade intensity measures. These are fairly standard measures which indicate those sectors traded more intensely within a region than with the rest of

the world⁹. The results for intra-Commonwealth imports and exports are presented in Table 1. A value of greater than one indicates those products which are imported (exported) by the region more intensely than the average in the world. We present the results of regional trade intensity for two periods, 2001–03 and 2011–13, so that shifts in intra-Commonwealth regional trade intensity within specific sectors can be seen clearly across the two time periods.

These results suggest that Commonwealth members trade more intensely on an intra-regional basis within more additive types of

9 Calculated by dividing the import (export) share of a given product category in a given region's total imports (exports) by the corresponding share in trade of all regions.

Table 3. Intra-Commonwealth trade by sector (US\$ 000)

Sector	Imports		Exports	
	3-year average, 2001–03	3-year average, 2011–13	3-year average, 2001–03	3-year average, 2011–13
Food and live animals	13,737,437.51	31,846,667.12	11,253,732.80	32,919,769.34
Beverages and tobacco	3,206,179.39	5,826,810.90	2,414,826.73	5,812,823.95
Crude materials, excl. food/fuel	6,567,181.51	18,354,346.59	4,959,674.28	19,701,044.35
Mineral fuel/lubricants	15,378,479.12	118,073,567.16	16,445,276.98	127,747,055.42
Animal/veg. oil/fat/wax	195,276.44	6,669,384.61	182,097.04	6,907,730.17
Chemicals/products n.e.s.	12,568,001.52	33,463,850.94	12,141,350.73	35,459,008.33
Manufactured goods	21,307,791.19	45,243,355.08	21,560,348.11	52,920,074.88
Machinery/transport equipment	52,096,575.08	86,639,489.73	53,019,396.92	100,341,635.23
Miscellaneous manuf. arts	16,013,361.56	30,025,929.82	14,846,121.39	31,354,194.20
Commodities n.e.s.	11,004,022.45	31,307,810.05	8,853,682.24	35,590,971.42
Total	152,074,305.76	407,451,212.00	145,676,507.21	448,754,307.30

Source: UNComtrade; S3 aggregation; value terms.

value chain (natural resource based, agro-processing, etc.) and these types of value chains have experienced an increase in trade intensity over the two periods analysed. Overall results suggest that the Commonwealth trades more intensely on the import than the export side.

4.2 Trade shifts

Further to the identification of the intensity of trade between Commonwealth members within specific sectors we then explored how intra-Commonwealth export and import trade shares have changed over time. Table 2 shows that, as a proportion of total value, the composition of intra-regional exports amongst members is largely composed of mineral fuels, followed by machinery and, subsequently, manufactured goods.

Some caution is urged in the interpretation of these data, however, since the increase in share of intra-regional export consisting of mineral fuels/lubricants may have been driven by recent increases in commodity prices (and this may also be the case on the import side). In view of these concerns, we proceeded to look at the absolute value of intra-Commonwealth trade on the import and export side (Table 3).

Looking at the absolute value of intra-Commonwealth trade across specific sectors, we can

see that whilst the manufacturing sectors experienced a decline in terms of their value share within the overall intra-Commonwealth export and import basket, in absolute terms there has been an increase over the two periods analysed in Table 3. This increase is particularly pronounced for the machinery/transport equipment sector. Finally, compared with trade with the world, intra-regional exports of this category of goods have expanded more rapidly¹⁰.

4.3 Intermediate goods analysis

Because the concept of foreign value added (FVA) referred to within the mainstream GVC literature refers to intermediate goods used in exports, we explored recent trends in intra-Commonwealth intermediates¹¹. We therefore make use of this data source and explore the results for the Commonwealth; this is a similar approach to that adopted by Kowalski *et al.* (2015).

We first looked at sourcing on an intra-regional basis. The results from Table 4 suggest that the share of intra-group exports in total exports, which includes intermediate and other goods, has increased mostly for South Asia (9.9 per cent between 2000 and 2012), followed by sub-Saharan Africa (7.7 per cent) and then Small Island Developing States (SIDS) excluding

¹⁰ Machinery and transport equipment grew by 14 per cent between 2011–13 and 2001–03 (3-year average) on an intra-Commonwealth basis compared with 12.4 per cent with the world by Commonwealth members.

¹¹ Exports which subsequently feature within another country's exports.

Table 4. Share of intra-group total exports and intermediate exports, 2000 and 2012

	Share of intra-group exports in total, 2000 (%)	Share of intra-group exports in total, 2012 (%)	% change	Share of intra-group intermediate exports in total intermediate exports, 2000 (%)	Share of intra-group intermediate exports in total intermediate exports, 2012 (%)	% change
Commonwealth	14.58	18.90	4.3	15.66	17.91	2.2
Least Developed Countries	6.21	12.47	6.3	7.62	10.82	3.2
SVEs	4.32	6.34	2.0	4.76	8.24	3.5
SIDS	1.19	2.51	1.3	0.53	0.86	0.3
SIDS (without Singapore)	7.42	12.90	5.5	5.64	14.85	9.2
Caribbean	9.67	15.09	5.4	5.54	18.83	13.2
South Asia	4.52	6.45	1.9	5.75	8.53	2.8
South Asia (without India)	4.56	13.53	9.0	6.98	22.99	16.0
East Asia	29.26	34.48	5.2	36.55	41.94	5.4
Sub-Saharan Africa	13.33	21.06	7.7	11.43	16.33	4.9
Sub-Saharan Africa (without South Africa)	12.54	18.14	5.6	11.01	15.58	4.6

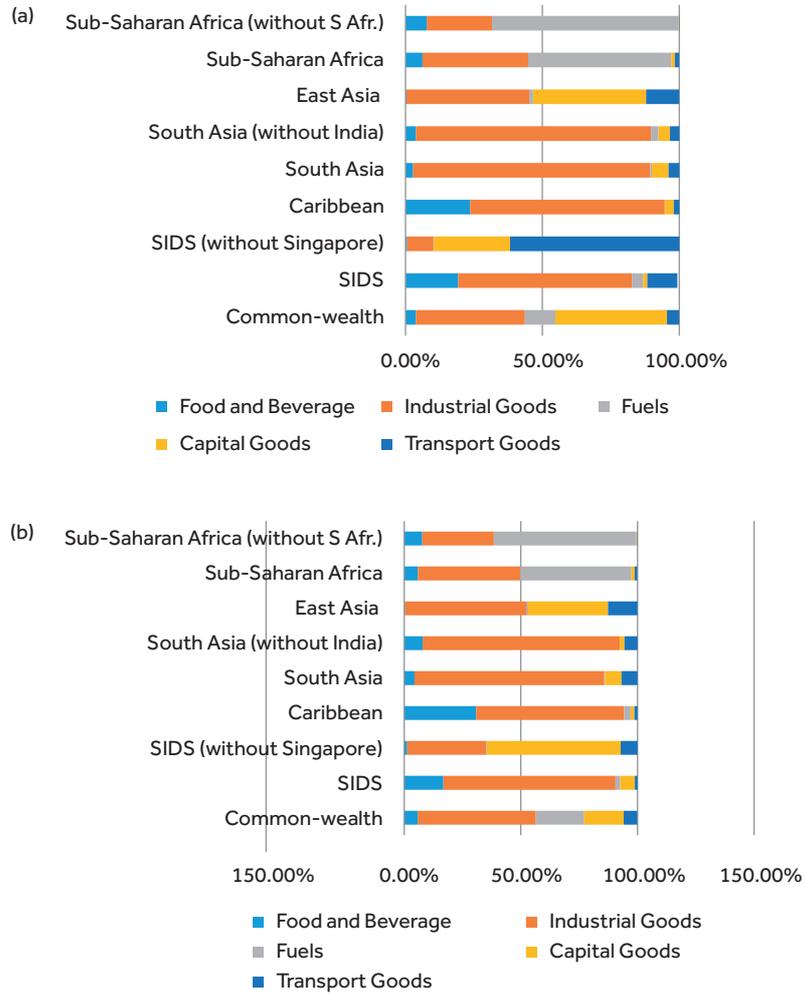
Source: Engel (2015), based on UNComtrade database.

Table 5. Share of intra-group intermediate exports by category, 2000 and 2012

	Food and beverage		Industrial goods		Fuels		Capital goods		Transport goods	
	2000 (%)	2012 (%)	2000 (%)	2012 (%)	2000 (%)	2012 (%)	2000 (%)	2012 (%)	2000 (%)	2012 (%)
Commonwealth	3.8	5.8	39.8	50.6	11.1	20.8	40.8	16.9	4.4	5.8
SIDS	19.2	16.8	63.5	73.8	4.1	2.0	1.5	6.3	11.8	1.1
SIDS (without Singapore)	0.6	1.3	9.6	33.8	0.2	0.3	27.8	57.4	61.8	7.2
Caribbean	23.6	30.8	71.1	63.5	0.1	2.8	3.2	1.6	2.0	1.3
South Asia	2.8	4.4	86.6	81.4	0.6	0.3	6.1	7.0	3.9	6.9
South Asia (without India)	3.8	7.9	85.9	84.6	2.7	0.0	4.2	1.9	3.4	5.6
East Asia	0.3	0.3	44.9	52.3	1.4	0.6	41.3	34.2	12.0	12.6
Sub-Saharan Africa	6.2	5.9	38.6	43.9	52.3	47.6	1.3	1.4	1.5	1.1
Sub-Saharan Africa (without South Africa)	7.8	7.7	23.8	30.7	68.2	61.1	0.1	0.3	0.1	0.2

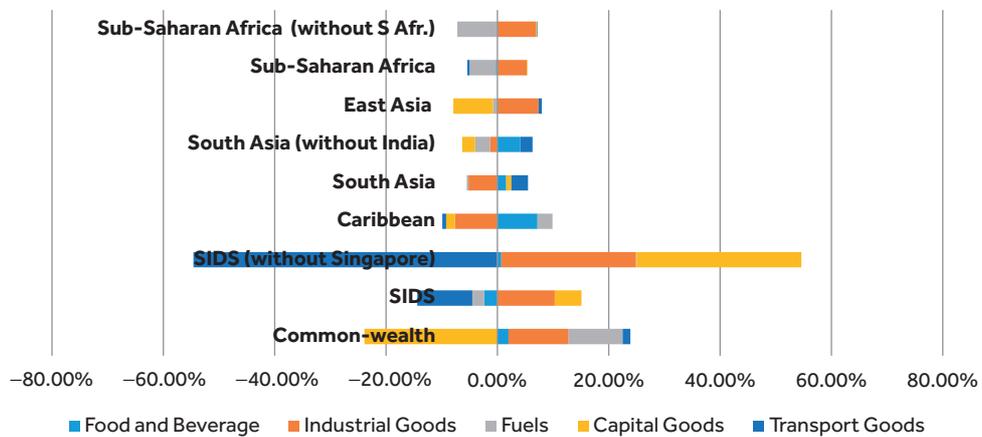
Source: Engel (2015), based on UNComtrade database; comparator regional groups include both Commonwealth and non-Commonwealth countries.

Figure 1. Share of intra-group intermediate goods, by category, (a) 2000 compared with (b) 2012



Source: Engel (2015), based on UNComtrade database; comparator regional groups include both Commonwealth and non-Commonwealth countries.

Figure 2. Shifts in intermediate goods sourcing



Source: Engel (2015), based on UNComtrade database; comparator regional groups include both Commonwealth and non-Commonwealth countries.

Singapore (5.5 per cent). However, in terms of intra-group intermediate exports, these shares have increased mainly for South Asia without India (16.0 per cent) followed by the Caribbean (13.2 per cent) and SIDS (excluding Singapore).

These results tell us that intra-regional sourcing of intermediate goods within exports has barely increased for some Commonwealth members compared with others. We therefore proceeded to examine trade shifts within intermediate goods at the sectoral level. The intermediate goods analysed fall into five categories:¹²

- primary and processed food and beverage goods for industry;
- industrial supplies;
- primary and processed fuel and lubricants;
- parts and accessories of capital goods (excluding transport equipment); and
- parts and accessories of transport equipment.

The results are presented in Table 5. The major trends apparent in relation to intra-Commonwealth sourcing of intermediate goods include:

- A substantial increase in intra-Commonwealth sourcing of industrial goods and fuels, which increased between 2000 and 2012 by 10.8 and 9.7 per cent, respectively.
- An increase in intra-Commonwealth sourcing of food and beverages, and transport goods, which increased by 2 and 1.4 per cent, respectively, between 2000 and 2012.
- A substantial decline in the sourcing of capital goods from within the Commonwealth, which declined by 23.9 per cent between 2000 and 2012.

Overall, these results suggest Commonwealth members tend to trade more intensely on an intra-regional basis within more additive types of value chains (e.g. natural resource based, agro-processing) compared to other more vertically fragmented types of GVCs (using the distinction made by Kaplinsky and Morris, 2015). However, there is evidence of shifts in intermediate goods sourcing, with more recent increases in the intra-Commonwealth sourcing of industrial goods.

5. Linking firm-level data to trade data in the Commonwealth

Making the link between GVC participation and outcomes at the firm level remains an important research agenda and there are a few case studies which adopt this mixed-methods approach, and others still which analyse firm-level performance over time linked to GVC participation. This important knowledge gap, thankfully, is being recognised within the emerging GVC literature and some of the most recent available studies have been summarised below:

- **Pietrobelli and Saliola (2008)** engage with the issue of causality and the learning by

exporting hypothesis; they find that the governance of value chains affects the productivity of suppliers in domestic value chains to a greater extent than for firms supplying multinational enterprises or exporters. They note that this result may be explained by the different nature of information and knowledge being exchanged, and by the larger gaps in knowledge and capabilities between the domestic leader and its suppliers¹³. Essentially, the case-study GVC literature describes how domestic firms must collaborate with lead firms in order to access and export to global markets.

¹² See <http://unstats.un.org/unsd/tradekb/Knowledgebase/Intermediate-Goods-in-Trade-Statistics> for more information.

¹³ As found by Pietrobelli and Saliola (2008), firms that service the domestic, rather than the export, market can also benefit considerably from engagement with lead firms operating within GVCs.

- **Gasiorek and Lopez-Gonzalez (2013)** match firms using a logistic regression where the probability of exporting in GVCs is explained by whether the firm is foreign-owned employment and revenue generated, and trading status¹⁴. They find that restrictions in financing, registration processes and discretionary enforcement of regulation and other barriers affect GVC trade. In comparison, intellectual property rights protection seems to be a barrier for non-GVC firms within their sample of firms selected to explore EU–China GVC participation.
- **Pietrobelli and Montalbano (2015)** combine the World Bank enterprise surveys dataset with the new Organisation for Economic Co-operation and Development (OECD)–World Trade Organization (WTO) Trade in Value Added (TiVA) dataset and present three main empirical exercises: (i) an analysis of productivity premia associated with participation in international trade and presence of inward FDI; (ii) a Cobb–Douglas output function expanded to firms’ international linkages; and (iii) a further expanded version of the above relationship including the TiVA-based indicators of value added trade and industry participation and position in global production networks. However, because of data limitations they focus on four countries in Latin America only.
- **Keane and Kennan (2015)** explore the influence of firm-level characteristics on their decision to export (binary outcome), making use of the World Bank enterprise surveys. Firms’ share of foreign ownership of 10 per cent or more is positively associated with exporting. A comparison is made across the regions the World Bank services, such as Africa, East Asia and the Pacific, Eastern Europe, Latin America and the Caribbean, and South Asia. A methodology is developed to explore differences in firm-level characteristics between those that export more on an intra- than an extra-regional basis in Southern Africa.
- **Kowlaski *et al.* (2015)** explore the relationship between FDI and GVC and present

the correlations between their measure of revealed openness to FDI – the share of inward FDI stock as a percentage of gross domestic product (GDP) – and GVC participation indices. A note of caution is urged, as they find a positive correlation between FDI openness and backward integration and a negative one with forward integration. These results, on balance, suggest that inward FDI tends to be associated more with establishing a foreign subsidiary to import foreign inputs for exports processing rather than sourcing the value added from the host country for exports.

5.1 Analysis for the Commonwealth

In order to get a handle on the role of Commonwealth firms’ participation in GVCs, this part of the research integrates firm-level and trade data analyses in view of related GVC participation and outcome measures¹⁵. Our objective is to explore whether or not there is any link between the indicators we have identified – GVC participation, social/economic upgrading and policy/institutional barriers – and the likelihood that a firm chooses an intra- or extra-Commonwealth marketing channel over another. The definition of a GVC used for this analysis is whether a firm has a share (10 per cent or more) of foreign ownership.

We use a logistic model, as the results from the analysis are more intuitive for those interested in GVC analysis. We are able to interpret the odds ratio for each dependent variable as either increasing or decreasing the likelihood that a particular marketing route is chosen. We specify γ as a dichotomous outcome variable, coded as = 1 if firms produce and export, and use π to denote the probability that firms export the said good. The probability of an alternative marketing channel being selected is therefore $(1 - \pi)$ and hence the model is specified as:

$$\begin{aligned} \text{logit}(\pi) = & \alpha + \beta_1 \text{ ownership} + \beta_2 \text{ age} \\ & + \beta_3 \text{ managers experience} \\ & + \beta_4 \text{ size} + \beta_5 \text{ customs,} \\ & \quad \text{trade reg dummy} \\ & + \beta_6 \text{ labour reg dummy} \\ & + \beta_7 \text{ workforce dummy} \\ & + \beta_8 \text{ training dummy} + \varepsilon \end{aligned}$$

¹⁴ Using an index which ranges from 0 (no trader) to 1 (only importer), 2 (only exporter) and 3 (two-way trader).

¹⁵ The methodology adopted essentially follows that of Keane and Kennan (2015).

Table 6. Summary of results: odds ratios Exp (B) for exporting firms

Indicator	Commonwealth exporters	Intra-Commonwealth exporter	Extra-Commonwealth exporters	Africa	EaP	EECA	LAC	SAR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Column								
10% + Foreign Ownership Dummy	2.995**	1.326*	0.754*	3.892**	5.818**	4.348**	2.820**	1.595*
Managers' experience (years)	1.004	0.985	1.015**	1.026**	1.019**	1.020**	1.002	1.014**
Firm's age (years)	1.001	1.008**	0.992**	1.002	1.000	1.019**	1.009**	0.993*
Customs, TradeReg Dummy	0.797**	1.211	0.826	1.000	1.389**	1.747**	1.535**	0.986
LabourReg Dummy	0.973	1.177	0.850	0.641**	1.300*	1.349**	0.961	1.219
Workforce Dummy	0.961	0.917	1.091	1.390	0.679**	1.003	0.895	1.049
N	14480	992	992	15611	8554	15682	14657	4345
Cox and Snell	0.046	0.060	0.060	0.061	0.094	0.55	0.060	0.091
Nagelkerke R Square	0.093	0.082	0.082	0.149	0.168	0.103	0.104	0.170

Note: ** denotes significant at 5 per cent level; * denotes significance at the 10 per cent level. The LabourReg, Customs, TradeReg and WorkforceReg dummy variables take a value of 1 if firms report these policy and institutional variables to have either a severe or a major (negative) effect on production. Intra- and extra-Commonwealth trade has been defined based on the destination of 50 per cent or more of trade.

EaP: xxx; EECA: xxx; LAC: XXX, SAR, xxxxx.

Source: World Bank country enterprise surveys and global enterprise surveys; UNComtrade database; and Keane and Kennan (2015).

Because of data limitations, we limit the variables we examine, as specified above. Underpinning our model specification are the following major hypotheses:

- H1: Alternative: there are significant differences in the effect of the above indicators on the firm's decisions (odds ratio) or not to export through a particular marketing channel.
- H0: Null: there are no significant differences in the effect of the above indicators on the firm's decisions (odds ratio) or not to export through a particular marketing channel.

We take the following indicators included in the World Bank enterprise surveys:

- **GVC participation:** ownership structure and share of foreign investment.
- **Social/economic upgrading:** managers years of experience/firm age managers' years of experience.
- **Policy/institutional variables:** customs trade regulations, labour market regulations, workforce regulations.

We apply the model across the following marketing channels:

- intra-Commonwealth regional; and
- extra-Commonwealth regional.¹⁶

We explore the extent to which these variables influence the odds or likelihood that a firm chooses one marketing channel over another. We use the International Standard Industrial Classification (ISIC) codes referred to in the enterprise surveys to classify the types of activities undertaken by firms and translate these into their corresponding Harmonized System (HS) codes for the purposes of trade data analysis¹⁷. We then apply a value threshold to classify those products traded more on an intra- or extra-Commonwealth basis.

We exclude from our sample those firms purely engaged in services activities and explore only those engaged in manufacturing. Of course, this means we are unable to infer from

these results the implications for the population of firms included within the sample itself as well as with regard to the general landscape of firms included within the countries included. Nevertheless, the results are somewhat insightful in terms of better understanding how the Commonwealth region compares with others¹⁸. Our overall results are summarised in Table 6.

5.2 Results

The main results arising from this analysis can be summarised as follows:

- For Commonwealth exporters, firms with a 10 per cent or more share of foreign ownership (equity), which is used as an indicator of FDI, are more likely to export than serve their domestic market, and this result is significant at the 5 per cent level. This result is broadly in line with other regions included in the World Bank global enterprise surveys.
- Commonwealth firms with a 10 per cent or more share of FDI increase their likelihood of exporting by almost three times, with an increased likelihood that these exports are destined for other intra-Commonwealth partners¹⁹.
- There is an important difference between Commonwealth exporters and other regions: firms that report customs and trade regulations as either a major or a severe barrier to their production are less likely to export. These barriers, though, seem less problematic for intra-Commonwealth exporters. This result deserves much more attention in view of the fact that the overwhelming majority of Commonwealth members are small states, including, but not limited to Least Developed Countries in Africa.
- Further disaggregated analysis, not included in Table 6, suggests that firms located in SIDS are five times more likely to export to other Commonwealth members (odds ratio 5.088**) and are least likely to export on an extra-Commonwealth basis (odds ratio 0.372**). There are no

¹⁶ A next step in the analysis could be to replicate the analysis using a multinomial model.

¹⁷ This methodology is adapted from Keane and Kennan (2015).

¹⁸ A next step in the analysis is to undertake more disaggregated analysis for the Caribbean and the Pacific.

¹⁹ We cannot control for the nationality of firm managers or the source of foreign ownership.

significant results for SVEs. The reasons for this result, similarly deserve much more careful scrutiny and more region and country-specific analysis for SIDS located in the Caribbean and the Pacific.

5.3 Exploration of other global value chain indicators

We explored the effect of domestic value added (DVA) and FVA, which is calculated at the industry level on the subsequent choice of either intra- or extra-Commonwealth markets for firms included in the enterprise surveys. This combined use of the World Bank enterprise surveys with the DVA and FVA indicators obtained from the UNCTAD-Eora database has been undertaken by others in the literature, including Pietrobelli and Montalbano (2015). However, they explored the effect of DVA/FVA and the GVC participation index created by the OECD on firm-level productivity (output per

worker) for only a few countries in Latin America (in view of data limitations).

We decided, because of conceptual issues, not to use the combined GVC participation index of DVA and FVA. Instead, we explored both the DVA and FVA separately. Our results suggest that FVA exerts a significant but small increase in the likelihood (odds ratio 1.039**) that a firm exports on an intra-Commonwealth basis. In comparison, DVA exerts a significant decrease in the likelihood (odds ratio 0.962**) exports on an intra-Commonwealth basis²⁰. The opposite is therefore also true: DVA for CW firms increases the likelihood (odds ratio 1.060**) that firms export on an extra-regional basis; FVA for Commonwealth firms decreases the likelihood (odds ratio 0.962**) that firms export on an extra-regional basis. These results which are suggestive of more vertically fragmented types of value chain in operation on an intra-Commonwealth basis deserve further attention.

6. Conclusions

Overall, the results presented in this paper suggest that Commonwealth members tend to trade more intensely on an intra-regional basis within more additive types of value chains (e.g. natural resource based, agro-processing). However, with regard to intermediate goods sourcing there have been some shifts, with increased intra-Commonwealth sourcing of some types of industrial goods. These shifts are seemingly reflected in the firm-level analysis linked to GVC participation. Finally, we find that SIDS are more likely to export on an intra-Commonwealth basis than other groups of member countries.

We have revealed differences in firm-level characteristics according to their end market, and hence identified GVC-related firm-level heterogeneity for Commonwealth members. Our approach to linking firm- and product-level information has revealed a number of significant measures of association, though we are unable to identify the direction of causality (and association in some cases could be

spurious). This caveat applies to all of the logistic regression analyses presented in this paper.

The quantitative analysis carried out is underpinned by the assumption that firms have a choice in relation to their export market and that this applies equally to intra- and extra-Commonwealth markets. In practice, however, we know this choice is not equally weighted and the more qualitative and case study-based GVC literature emphasises such aspects as power, rents and barriers to entry, in this regard.

Generally, the exploratory analysis presented in this background paper could be improved in a number of ways. Panel data analysis for countries with the available data may be more revealing. Case-study analysis would help to substantiate further the findings presented in this paper. Finally, the robustness of results could be further improved, and some variables could be excluded from the analysis to sharpen the results. Despite these limitations, however, this background paper constitutes a first step in

²⁰ This analysis has not yet been undertaken for all firms in the global enterprise survey, but could be a next step.

terms of the exploration of intra-Commonwealth value chain development and potential future trajectories and scope for policy influence.

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