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Analysis of Value Added Trade and Intermediates Exports of Commonwealth Countries and Comparator Groups

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Abstract

This paper provides an overview of two important aspects of value chain participation of Commonwealth countries: domestic value addition in exports and trade in intermediate goods. It compares this with global and regional trends and furthermore examines these indicators for other country groupings in which Commonwealth members are prominently represented. Examining these indicators allows for a more complete and accurate picture of what has been termed 'GVC (global value chain) trade', i.e. trade in a world of increasingly vertically integrated supply chains where comparative advantage resides in tasks rather than entire finished goods. We find regarding domestic value added in exports, we find that Commonwealth members have been increasing these during the time period under investigation at approximately the rate of the world average, but slightly faster than for OECD economies. Among the top performing Commonwealth members, Zambia, Ghana and India are notable for seeing rapid increases in both domestic and foreign value added. In terms of intermediate goods trade, again Commonwealth members increased exports at approximately the rate of the world average. Commonwealth members also moderate increases in their trade with other Commonwealth members, relative to non-Commonwealth members. However, this mirrors a trend among all regions and groupings, where intra-group trade in inputs has become more important. Finally, in looking at groups of intermediates, the growing significance of intra-Commonwealth trade in industrial goods, fuels and transport goods trade has been particularly pronounced.

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Keywords: value-added, global value chains, Commonwealth

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List of Abbreviations

AfDB	African Development Bank
BEC	Broad Economic Categories
CAGR	Compound Annual Growth Rate
DVA	Domestic Value Added
FVA	Foreign Value Added
GVC	Global Value Chain
ISIC	International Standard Industrial Classification
LDC	Least Developed Country
OECD	Organisation for Economic Co-operation and Development
SIDS	Small Island Developing States
SVE	Small and Vulnerable Economies
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

1. Summary

This paper aims to contribute to the forthcoming Commonwealth Secretariat flagship report on trade, by providing an overview of two important aspects of value chain participation of Commonwealth countries – namely domestic value addition in exports and trade in intermediate goods. It compares this with global and regional trends and furthermore examines these indicators for other country groupings in which Commonwealth members are prominently represented, particularly the World Trade Organization (WTO) negotiating group of Small and Vulnerable Economies (SVEs), and the group of Small Island Developing States (SIDS) and Least Developed Countries (LDCs), as defined by the United Nations.

Examining these indicators allows for a more complete and accurate picture of what has been termed ‘GVC (global value chain) trade’, i.e. trade in a world of increasingly vertically

integrated supply chains where comparative advantage resides in tasks rather than entire finished goods. This reduces the problem of double-counting gross trade flows and – from a policy perspective – facilitates the anticipation of upstream and downstream impacts of changes in tariff policies and non-tariff measures as well as the potential implications of macro-economic shocks or natural disasters.

The paper proceeds as follows: section 2 examines the evolution of domestic value added and foreign value added in exports using data from the United Nations Conference on Trade and Development (UNCTAD)/Eora Trade in Value Added (TiVA) database; section 3 focuses on trends in the trade of intermediate goods, based on the BEC (Broad Economic Categories) classification from the Comtrade database; and section 4 draws out some of the main conclusions.

2. Evolution of domestic value addition in exports

This section examines the evolution of domestic value addition in exports using the UNCTAD-Eora GVC TiVA database (Lenzen *et al.* 2012, 2013). This database is a reduced version of the Eora database and contains statistics at the aggregate country level of trade in value added. The database has a few key advantages over other sources of value added trade data. Specifically, it includes 187 countries, many of which are omitted in other multi-region input–output databases, including 43 Commonwealth countries. Moreover, it was modelled based on existing data sources and according to a transparent methodology, with standard deviation estimates included for all countries and sectors. Furthermore, it includes both goods and services trade, disaggregated into 26 ISIC (International Standard Industrial Classification) comparable sectors (see Appendix 1).

However, many assumptions have gone into modelling the data in order to ensure that frequently conflicting data sources could be harmonised into balanced tables. As such – in addition to frequently unreliable data from developing countries – results are likely to be subject to some errors. However, as past analyses of the database in the 2014 World Investment Report (UNCTAD 2013) and the 2014 African Economic Outlook (AfDB/OECD/UNDP 2014) demonstrate, they do provide a useful source of data to understand broad trends, particularly when aggregated across regions and country groups. While there has been a proliferation of indicators using value added trade data in recent years, this analysis focuses on three primary measures from the UNCTAD-Eora database:

- **Domestic value added (DVA) in exports:** This indicator measures how much value

produced in the respective country is embodied in exports. Growth of DVA over time tends to be a better proxy than looking just at gross exports of how much a country is benefiting from trade.

- **Foreign value added (FVA) in exports:** This indicator measures the share of inputs in exports and as such is a relatively good proxy for backward integration. DVA and FVA should add up to total gross exports.
- **DVA and FVA in exports as a share of gross exports:** This indicator examines the evolution of DVA (FVA) relative to total exports. There are several ways of interpreting this; for example, declining DVA in exports as a share of gross exports (and thus rising FVA in exports) would imply use of more foreign inputs in exports and could signify participation in longer, more sophisticated, value chains. It could, however, also be indicative of more tasks being outsourced and, in the absence of overall export growth, could mean that the country's position in GVCs is eroding. Finally, rising prices for commodities with high DVA content in exports (such as agricultural goods) would also be reflected in a rising share of DVA in exports as a share of total exports.

Table 1 provides an overview of value added trade from 2000 to 2012. While Commonwealth countries were able to increase exports (driven in particular by Asian Commonwealth members), they saw their overall share in value added trade largely stagnate. Among regions, there was a marked shift from the Americas and Caribbean region and Europe to Asia, while both Africa and the Oceania region saw relatively little change over time.

Figure 1 focuses on the evolution of DVA in exports both over the entire 12-year time period

and over the past 6 years. While the Commonwealth members overall grew their DVA at approximately the global average, this was faster than did Organisation for Economic Co-operation and Development (OECD) economies. However, some subgroupings in which Commonwealth members are prominently represented saw particularly rapid increases, including LDCs and SIDS, although when removing Singapore their growth is slightly less rapid. In regions with many Commonwealth members, particularly South Asia (driven largely, but not exclusively, by India) and sub-Saharan Africa, growth has been at over 10 per cent per year. The Caribbean has lagged behind, growing at 8 per cent for the 12-year time period and at less than 7 per cent for the past six years.

When looking at the share of DVA and FVA, respectively, in gross exports, the Commonwealth members have seen a declining share of domestic value in exports, with this decline occurring at approximately the same rate as the rest of the world (Figure 2). LDCs, starting at an extremely high baseline, have used more foreign inputs in their exports (increasing from 9 to 13 per cent) and SVEs have seen a similar evolution. The fastest decline was among the group of SIDS, but this was primarily driven by Singapore. Taking Singapore out of the sample, the performance of the SIDS group mirrors that of the SVEs.

Figure 3 examines the performance of Commonwealth countries and comparator groups and regions, examining both change in DVA in exports as a share of exports over time and 2012 performance. Here all regions, except SVEs, have seen this indicator decline over time.

Finally, Table 2 examines at the country level the biggest increases Commonwealth countries have seen in domestic and foreign value added between 2000 and 2012.

3. Evolution in exports of intermediate goods

This section examines the evolution of exports of intermediate goods for Commonwealth members and other regions and groupings of

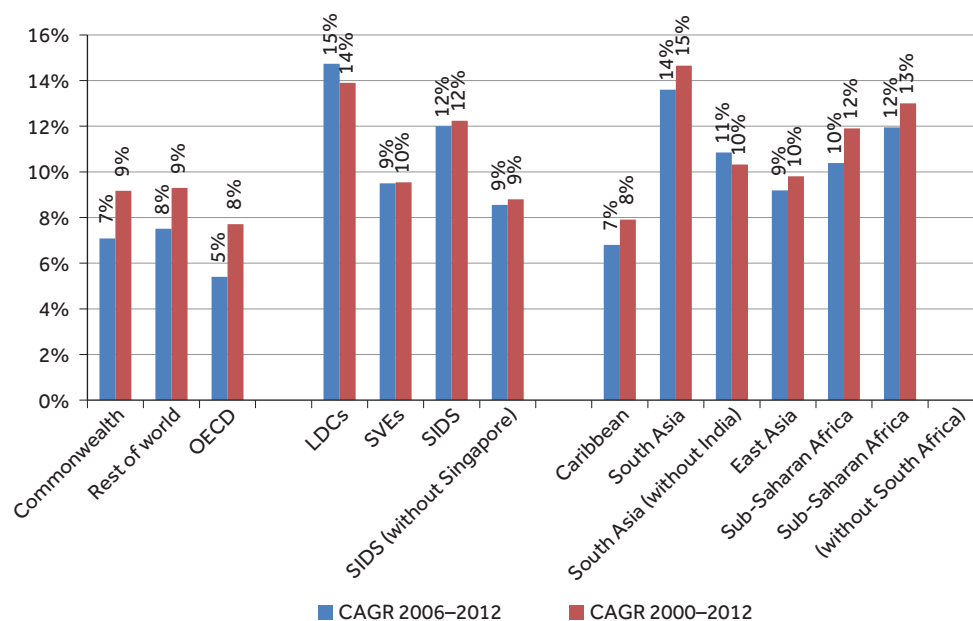
interest. Our definition of intermediates follows the BEC classification, which divides goods into capital, intermediate and consumption goods.

Table 1. Exports in value added (VA) by region as a share of world total, 2000–2012

	2000	2006	2012	Change, 2000–2012
Commonwealth	1,109,897,996	2,123,533,046	3,276,079,450	2,166,181,454
Share of world total	15.83%	15.48%	15.60%	-0.23%
Rest of world	5,901,490,452	11,596,080,839	17,726,424,007	11,824,933,555
Share of world total	84.17%	84.52%	84.40%	0.23%
Asia	1,851,380,952	3,704,178,406	6,732,837,298	4,881,456,345
Share of world total	26.41%	27.00%	32.06%	5.65%
Asia –	257,964,124	593,126,144	1,197,875,642	939,911,518
Share of world total	3.68%	4.32%	5.70%	2.02%
Comm only	116,729,937	257,995,992	448,353,432	331,623,495
Africa	1,666%	1.88%	2.13%	0.47%
Share of world total	57,134,518	118,030,565	206,714,621	149,580,103
Africa –	0.81%	0.86%	0.98%	0.17%
Comm only	1,585,032,613	2,519,659,680	3,783,300,069	2,198,267,456
America and Caribbean	22.61%	18.37%	18.01%	-4.59%
Share of world total	3,570,579,698	6,035,138,497	6,787,793,928	3,217,214,23
America and Caribbean –	5.09%	4.40%	3.23%	-1.86%
Comm only	3,325,441,422	6,961,308,411	9,476,775,087	6,151,333,664
Europe	47.43%	50.74%	45.12%	-2.31%
Share of world total	346,544,941	625,435,180	811,170,866	464,625,925
Europe -	4.94%	4.56%	3.86%	-1.08%
Comm only	90,091,297	181,250,327	377,840,739	287,749,441
Oceania	1.28%	1.32%	1.80%	0.51%
Share of world total	90,091,297	181,250,327	377,840,739	287,749,441
Oceania –	1.28%	1.32%	1.80%	0.51%
Comm only				

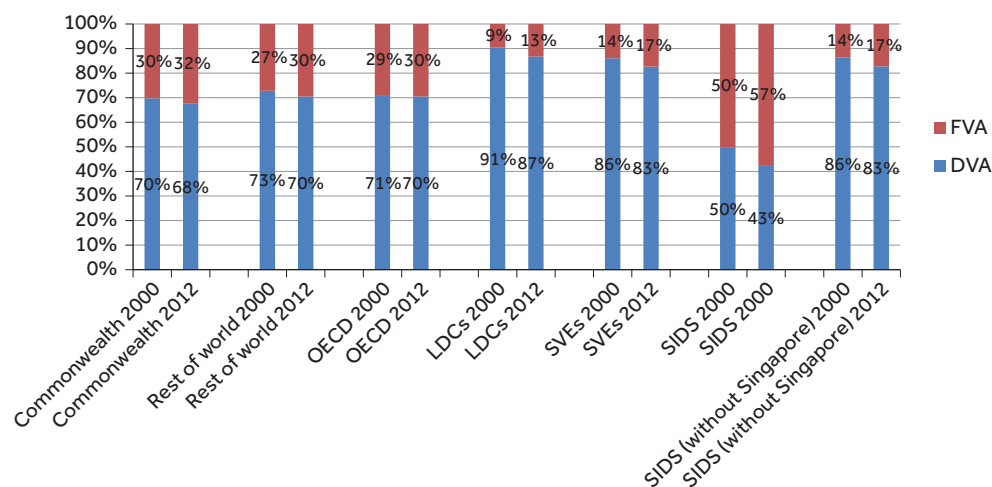
Source: Author's calculations based on UNCTAD-Eora database.

Figure 1. Change in domestic value added in exports in Commonwealth countries and comparator groups



Source: Author's calculations based on UNCTAD-Eora database; comparator groups including both Commonwealth and non-Commonwealth countries.

Figure 2. DVA and FVA in exports as share of gross exports for Commonwealth countries and comparators (comparator groups including both Commonwealth and non-Commonwealth countries)



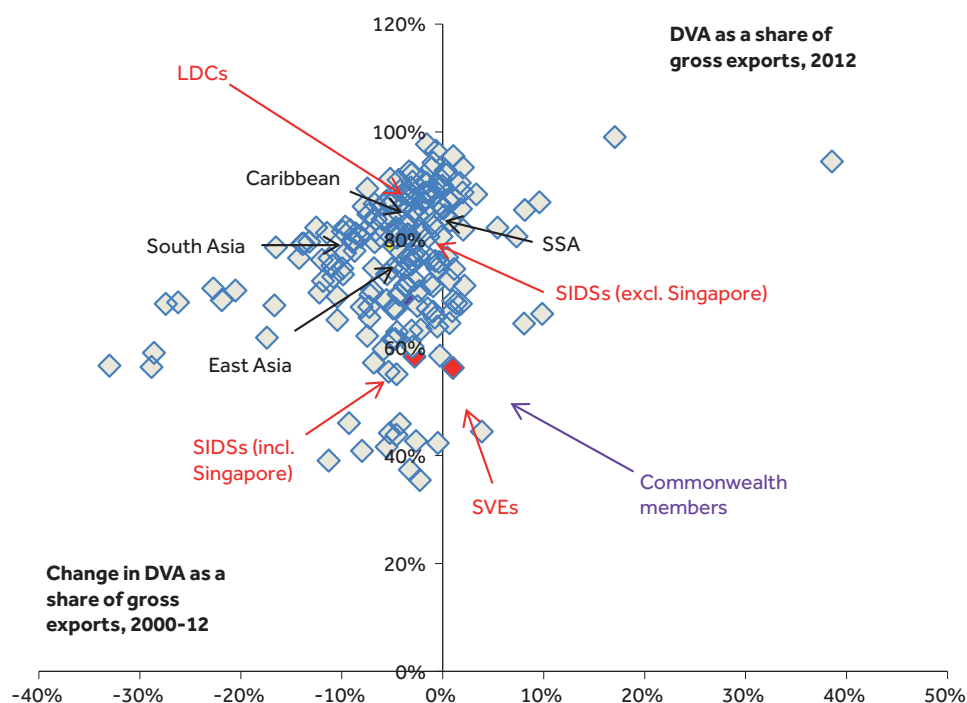
Source: Author's calculations based on UNCTAD-Eora database; comparator groups including both Commonwealth and non-Commonwealth countries.

Trade in intermediate goods provides a good indication of the extent to which countries are exporting inputs into production of other countries. Intermediate goods fall into five categories:¹

- 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.

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

Figure 3. DVA in exports as a share of gross exports



Source: Author’s calculations based on UNCTAD-Eora database; comparator groups including both Commonwealth and non-Commonwealth countries.

Table 2. Top Commonwealth performers in growth of domestic and foreign value added

Country	CAGR in DVA, 2000-12	Country	CAGR in FVA, 2000-12
Zambia	21%	Lesotho	27%
Ghana	17%	Ghana	23%
India	16%	India	23%
Singapore	14%	Zambia	21%
Namibia	14%	Rwanda	20%
Australia	13%	Bangladesh	20%
Malta	13%	Sierra Leone	19%
Swaziland	13%	Papua New Guinea	18%
Kenya	12%	Pakistan	18%
Lesotho	12%	Seychelles	17%
Commonwealth average	9.2%	Commonwealth average	10.0%

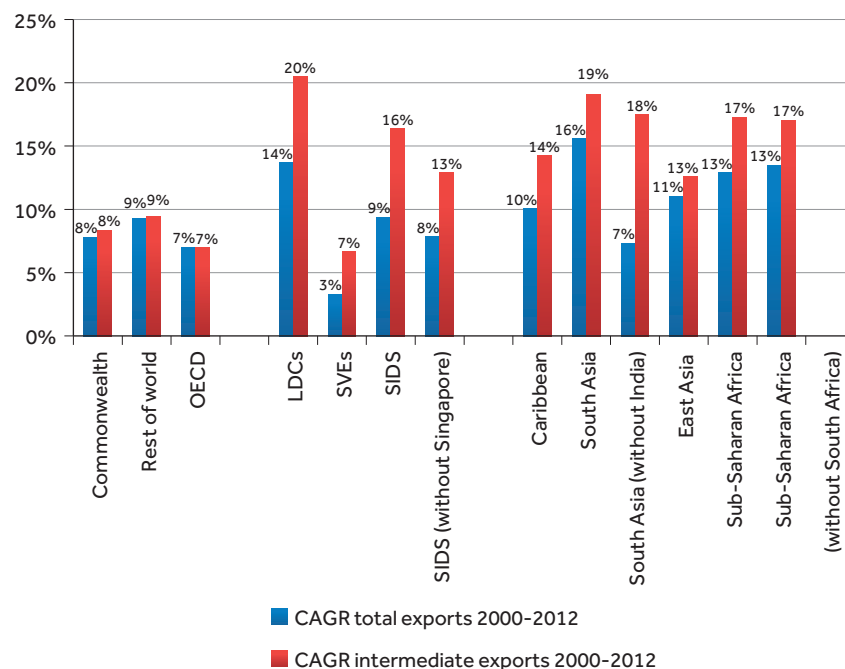
Source: Author’s calculations based on UNCTAD-Eora database.

Examining intra-Commonwealth trade of intermediates allows some indication of the extent to which value chains are emerging within the Commonwealth itself. The drawback is that not all countries have reported trade data for all three years (2000, 2006 and 2012). Thus, among Commonwealth members, the sample is reduced to 31 countries, while for LDCs only 13 countries have data for all three years, and only four countries do for

South Asia. As such, results need to be taken with some caution.

Figure 4 has an overview of the annual growth rates of Commonwealth members and comparators in terms of total exports and intermediate exports. Thus, while intermediate exports only grew slightly faster than total exports for Commonwealth members, for LDCs and SIDS (both with and without Singapore) the growth in intermediates trade was much faster.

Figure 4. Compound annual growth rates (CAGRs) of Commonwealth members and comparators in total exports and intermediate exports



Source: Author's calculations based on Comtrade database; comparator groups including both Commonwealth and non-Commonwealth countries.

Table 3. Share of intra-group total exports and intermediate exports, 2000 and 2012

	Share of intra-group exports in total exports, 2000	Share of intra-group exports in total exports, 2012	Share of intra-group intermediate exports in total intermediate exports, 2000	Share of intra-group intermediate exports in total intermediate exports, 2012
Commonwealth	14.58%	18.90%	15.66%	17.91%
LDCs	6.21%	12.47%	7.62%	10.82%
SVEs	4.32%	6.34%	4.76%	8.24%
SIDS	1.19%	2.51%	0.53%	0.86%
SIDS (without Singapore)	7.42%	12.90%	5.64%	14.85%
Caribbean	9.67%	15.09%	5.54%	18.83%
South Asia	4.52%	6.45%	5.75%	8.53%
South Asia (without India)	4.56%	13.53%	6.98%	22.99%
East Asia	29.26%	34.48%	36.55%	41.94%
Sub-Saharan Africa	13.33%	21.06%	11.43%	16.33%
Sub-Saharan Africa (without South Africa)	12.54%	18.14%	11.01%	15.58%

Source: Author's calculations based on Comtrade database; comparator groups including both Commonwealth and non-Commonwealth countries.

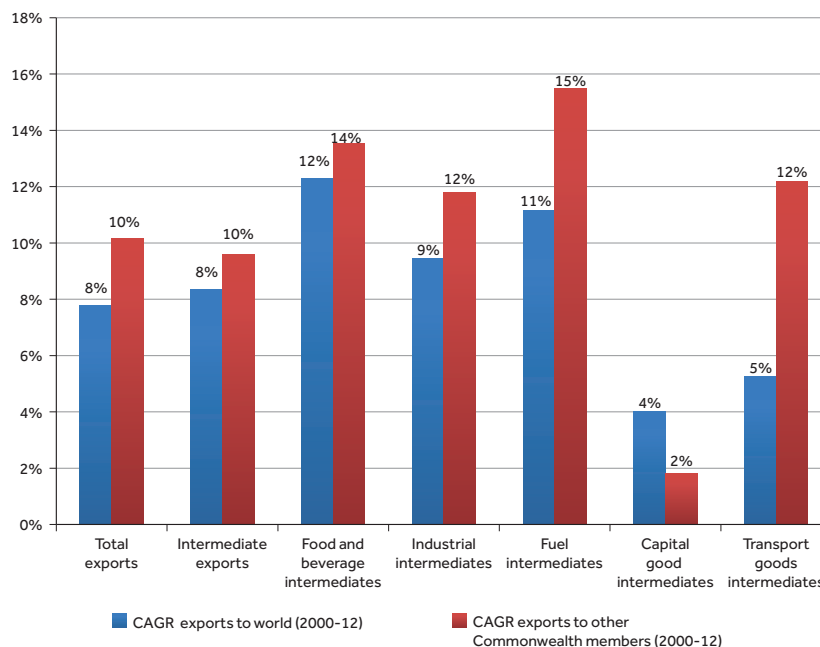
Turning to intermediate and total exports within respective country groupings, we see that intra-Commonwealth trade has increased both for all goods and for intermediate goods (see Table 4). Among SIDS and SVEs this growth, albeit from a lower baseline, has been even greater.

Table 4. Share of intermediate exports by category, 2000 and 2012

	Food & beverage		Industrial goods		Fuels		Capital goods		Transport goods	
	2000	2012	2000	2012	2000	2012	2000	2012	2000	2012
Common-wealth	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: Author's calculations based on Comtrade database; comparator groups including both Commonwealth and non-Commonwealth countries.

Figure 5. Compound annual growth rates of Commonwealth total and intermediate exports to world and to other Commonwealth members



Source: Author's calculations based on Comtrade database.

Finally, we disaggregate intermediate exports into the five different components. Here we find that the growth in intermediates for Commonwealth members has been particularly pronounced in fuel intermediates and transport good intermediates, while in capital goods it has largely stagnated (Figure 5). It is also notable that for all goods, except capital goods, the growth rate for intra-Commonwealth trade has been greater than for non-Commonwealth trade.

Disaggregating each region into the five subcategories of intermediates, we see that there has been a marked decline among Commonwealth members away from capital goods, with industrial goods and fuels making up a larger share (Table 4). At the regional level, there has been more consistency in this regard. This decline is striking but most likely represents the overall greater importance of industrial intermediates in GVC trade and – given the rising price of oil and gas over this time period – the fuels subcategory.

4. Conclusion

This background note has aimed to provide data to address two central questions linked to the past evolution of value chain participation for Commonwealth members, as well as comparator groups, namely if domestic value addition in exports has been increasing and if trade in intermediates has been increasing.

Regarding DVA in exports, we find that Commonwealth members have been increasing these during the time period under

investigation at approximately the rate of the world average, but slightly faster than for OECD economies. Unsurprisingly, considering the impact of the on-going economic crisis, this was faster during the 2000–2006 time period. Other groupings, particularly LDCs and South Asian and African countries, saw very rapid increases in DVA. However, overall, there was a slight decline in DVA in exports as a share of exports, suggesting that overall

export growth marginally exceeded that of domestic value addition in exports (and thus foreign inputs have become increasingly more important in exported goods). Among the top performing Commonwealth members, Zambia, Ghana and India are notable for seeing rapid increases in both DVA and FVA. Lesotho, Rwanda and Bangladesh had particularly rapid increases in FVA, which largely corresponds with our understanding of their integration into low-end manufacturing value chains that rely heavily on inputs.

In terms of intermediate goods trade, again Commonwealth members increased exports at

approximately the rate of the world average (see Figure 4). LDCs and SIDS saw particularly rapid increases in intermediate goods as opposed to total exports. Commonwealth members also moderate increases in their trade with other Commonwealth members, relative to non-Commonwealth members. However, this mirrors a trend among all regions and groupings, where intra-group trade in inputs has become more important. Finally, in looking at groups of intermediates, the growing significance of intra-Commonwealth trade in industrial goods, fuels and transport goods trade has been particularly pronounced.

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Appendix 1: Correspondence between Eora sectors and ISIC Rev.3

Eora sector	ISIC Rev.3 correspondence
Agriculture	1, 2
Fishing	5
Mining and quarrying	10, 11, 12, 13, 14
Food and beverages	15, 16
Textiles and wearing apparel	17, 18, 19
Wood and paper	20, 21, 22
Petroleum, chemical and non-metallic mineral products	23, 24, 25, 26
Metal products	27, 28
Electrical and machinery	29, 30, 31, 32, 33
Transport equipment	34, 35
Other manufacturing	36
Recycling	37
Electricity, gas and water	40, 41
Construction	45
Maintenance and repair	50
Wholesale trade	51
Retail trade	52
Hotels and restaurants	55
Transport	60, 61, 62, 63
Post and telecommunications	64
Financial intermediation and business activities	65, 66, 67, 70, 71, 72, 73, 74
Public administration	75
Education, health and other services	80, 85, 90, 91, 92, 93
Private households	95
Other	99