

India's Trade with BRICS and the World *Implications on Skill and Technology Content*



CWS Working Paper no. 35

Submitted to Department of Commerce, Government of India

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March 2014

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Section I

Trade between Member State and BRICS- Current and Future Potential

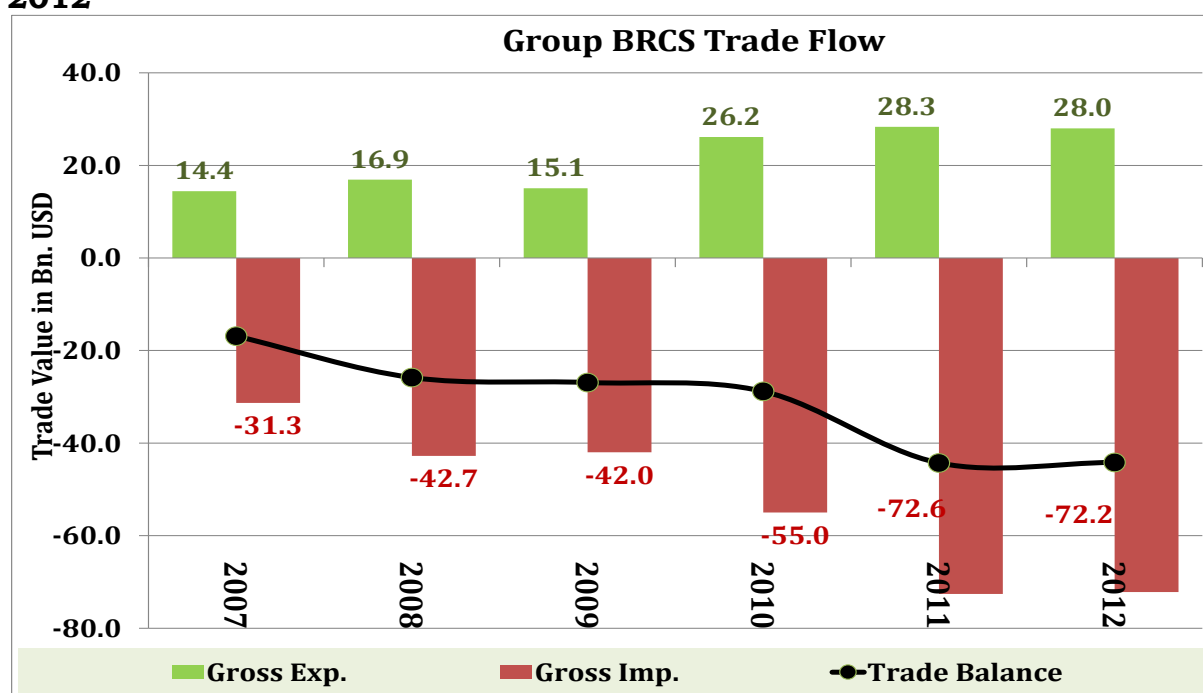
1.1 Introduction

This section analyses India's exports to, and imports from, the four bilateral partners namely: Brazil, Russian Federation, China and South Africa (BRCS). The analysis also looks at the trade deficit/surplus with each bilateral partner separately for the period 2007 to 2012.

1.2 Bilateral Trade Flows

The total trade of India with the BRCS¹ partners in 2007 was US\$ 45.8 billion. However within a short span of five years it increased by about 2.2 times and touched US\$ 100.2 billion by 2012 (figure 1). Exports by India to BRCS countries have nearly doubled from US\$ 14.4 billion in 2007 to US\$ 28 billion by 2012.

Figure 1: BRCS Aggregate Trade Flows and Trade Balance: 2007 to 2012



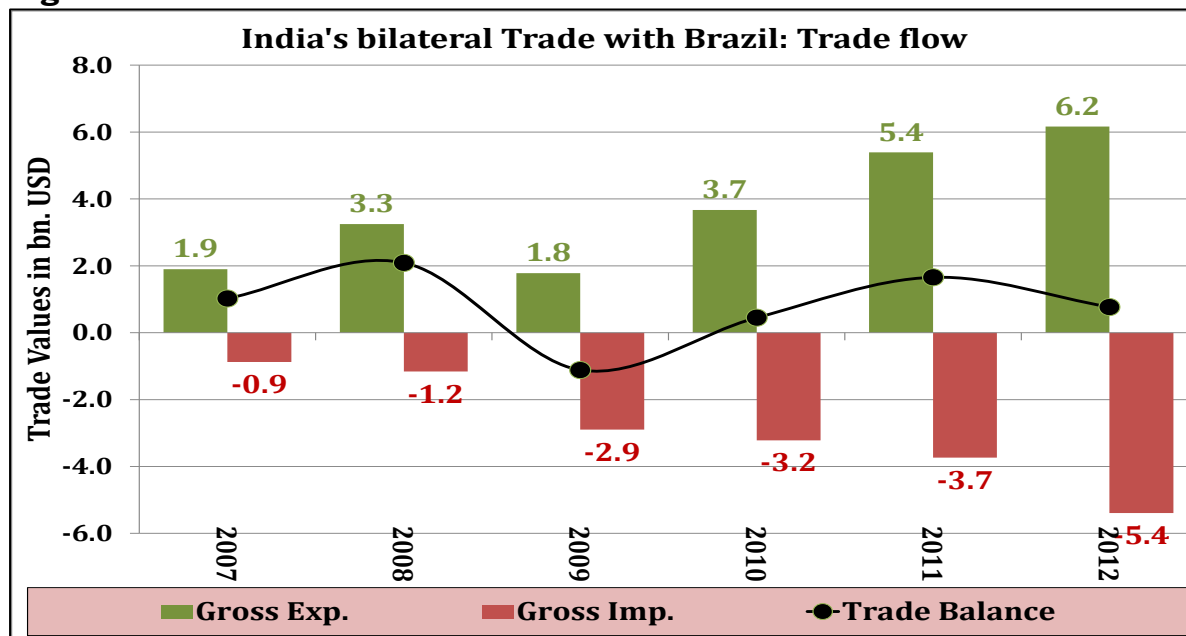
Source: Compiled by the Authors based on WITS online COMTRADE database.

At the aggregate level, imports from the BRCS showed an increase by little more than two times from US\$ 31.3 billion in 2007 to US\$ 72.2 billion in

¹ Excluding India as it would be double counting of

2012. With the BRCS as group, India has been experiencing a trade deficit since 2007. This is reflected in the trade deficit surging from US\$ 16.9 bn. in 2007 to US\$ 44.2 bn. by 2012. The deficit has exacerbated in recent years. With the exception of Brazil, India has a negative trade balance with other BRCS partners.

Figure 2: India's Bilateral Trade with Brazil: 2007 to 2012



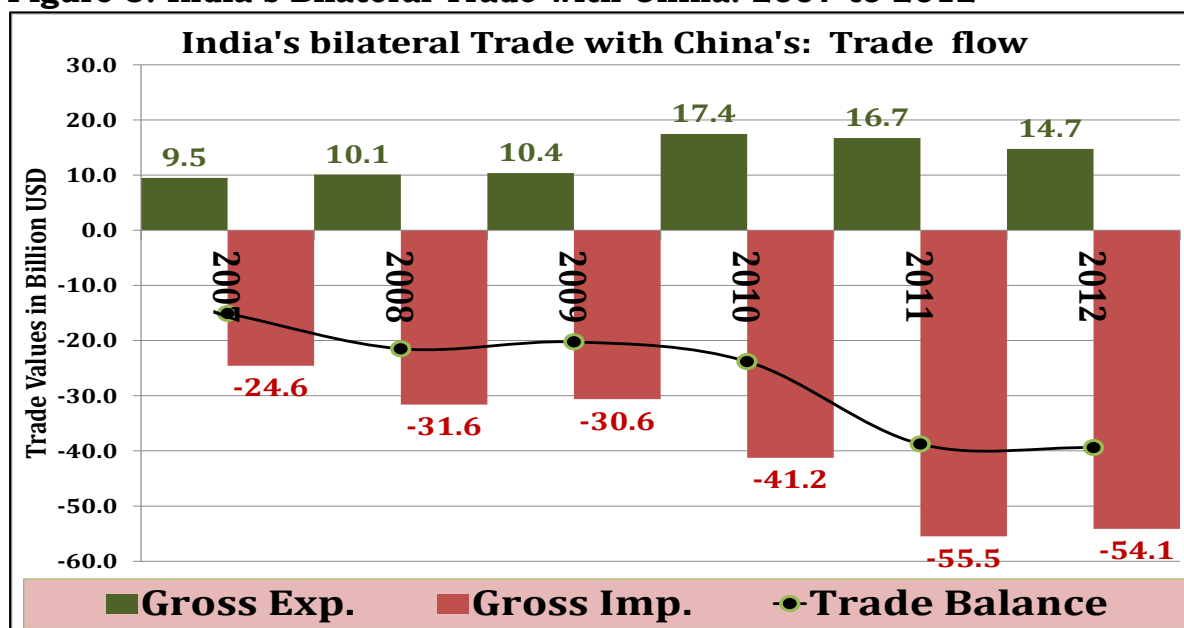
Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

Brazil is the only BRCS trading partner with which India had a positive trade balance throughout the period from 2007 to 2012, except for the year 2009 when it went negative US\$ 1.1 billion (figure 2). In the subsequent years India had a surplus trade balance. During this period the average annual growth of total bilateral trade was 32 percent (27 percent for India's exports and 43 percent for India's imports). The growth rates were the highest among the BRCS countries. However, it must be noted that the growth occurred on a small base.

India's trade with China has seen a significant spurt in the recent years. During the period 2007 – 2012, bilateral trade grew at 15 percent per year and peaked at US\$ 54 billion in 2012 (figure 3). However, the increase in bilateral trade was not balanced, leading to a secular increase of the negative trade deficit. India's exports showed an annual growth of 9

percent, while imports grew at 17 percent. At US\$ 15 billion in 2012, India's export was barely one fourth of the imports from China.

Figure 3: India's Bilateral Trade with China: 2007 to 2012

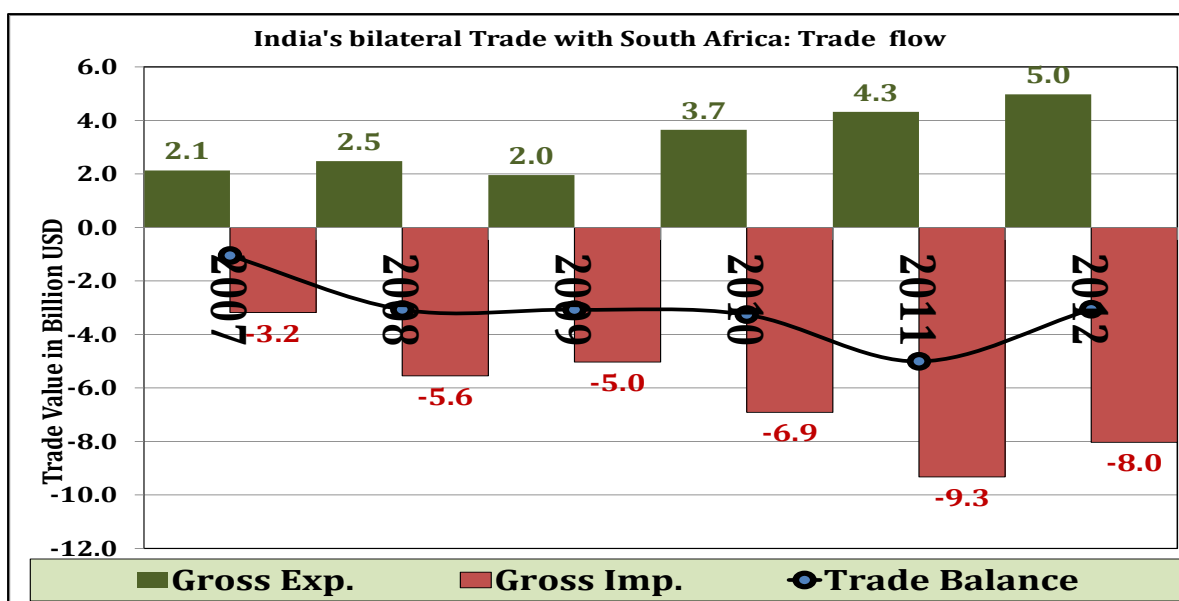


Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

India's bilateral trade with South Africa and Russian Federation has grown steadily over the years. With India's exports to the two countries consistently falling short of its imports from them, the overall trade balance remained negative during the period 2007-2012 (figures 4 and 5). While India's trade balance with the Russian Federation has shown an increasing trend, the deficit with South Africa shows a shrinking trend. In 2012 India's total bilateral trade with South Africa was US\$ 13 billion, with exports being US\$ 5 billion and imports US\$ 8 billion. The total bilateral trade grew at the rate 20 percent per year. It is useful to note that India's imports and exports grew at around the same rate (20 percent per year). This was the second highest rate of growth of bilateral trade after India-Brazil trade.

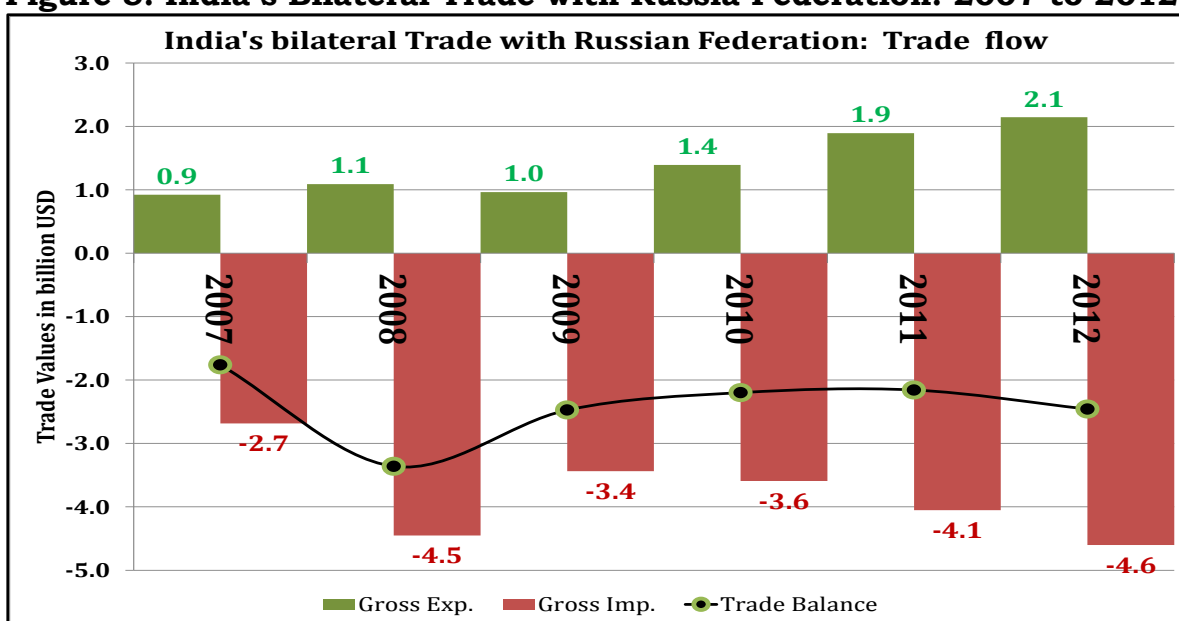
In 2012 India's total bilateral trade with Russia is US\$ 6.7 billion. India's exports stood at US\$ 2.1 billion and imports were US\$ 4.6 billion. During the period 2007-2012, the overall bilateral trade grew at the rate of 13 percent per year. This was the lowest growth among the BRCS countries. However, India's exports grew at 18 percent, while imports grew at 11 percent.

Figure 4: India's Bilateral Trade with South Africa: 2007 to 2012



Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

Figure 5: India's Bilateral Trade with Russian Federation: 2007 to 2012



Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

1. 3 Top Twenty Imports products at Heading Level from BRCS

Imports of the top twenty products during 2012 from the four partners are analysed in this sub-section. China was the source of highest imports for India US\$ 24,588 million. This was followed by South Africa at US\$ 7,665 million. The other two partners – Brazil and Russia- had relatively low values of imports at US\$ 4,967 and Russia at 3,723 million respectively (Tables 1 to 4).

Table 1: Top Twenty Import from Brazil at HS 4 digit level in 2012

S.N.	HS Codes	Description	India's imports from Brazil (In million USD)	Share in India's imports from Brazil
1	2709	Petroleum oils and oils obtained from bituminous	3,510	65.06
2	1701	Cane or beet sugar and chemically pure sucrose	400	7.41
3	1507	Soya-bean oil and its fractions, whether or not	302	5.59
4	2603	Copper ores and concentrates.	249	4.62
5	7202	Ferro-alloys.	83	1.54
6	7204	Ferrous waste and scrap; remelting scrap ingots	65	1.21
7	7207	Semi-finished products of iron or non-alloy steel	52	0.96
8	2524	Asbestos.	48	0.88
9	7225	Flat-rolled products of other alloy steel, of a	43	0.79
10	7208	Flat-rolled products of iron or non-alloy steel	33	0.62
11	7108	Gold (including gold plated with platinum) un	26	0.48
12	2601	Iron ores and concentrates, including roasted	25	0.47
13	0713	Dried leguminous vegetables, shelled, whethe	19	0.35
14	2602	Manganese ores and concentrates, including	18	0.33
15	8433	Harvesting or threshing machinery, including s	18	0.33
16	8708	Parts and accessories of the motor vehicles o	17	0.31
17	4002	Synthetic rubber and factice derived from oils	17	0.31
18	4407	Wood sawn or chipped lengthwise, sliced or	16	0.30
19	2818	Artificial corundum, whether or not chemical	14	0.26
20	2926	Nitrile-function compounds.	14	0.26
Total			4967	92.08

Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

Brazil ranked third in terms of the top twenty HS products² at four digit level with India's import of top 20 products at US\$ 5 billion. Substantial share of India's import was accounted for by the manufactured products with 78 percent share. Only three products belonged to the primary/processed agricultural products with 13.4 percent share - dried leguminous vegetables with US\$ 19 million (0.35 %); soya-bean oil and its fractions US\$302 million (5.6%) and cane or beet sugar and chemically pure sucrose with US\$ 400 million (7.4 %).

Within the manufactured products, petroleum oils and oils obtained from bituminous minerals crude (HS 2709) accounted for about 65.1 percent share. Therefore, India imports from Brazil are heavily concentrated in a few tariff lines.

Manufactured products constituted all the top twenty products imported from China. While the imports of top 20 products are mainly concentrated in the four chapters - 29, 31, 84 and 85- imports from China had a fairly equitable distribution in terms of shares to the total bilateral imports.

² A product used in this text refers to harmonised system four digit products.

Table 2: Top Twenty Import from China at HS 4 digit level in 2012

S.N	HS CODE	Description	India's imports from china (In million USD)	Share in India's imports from china
1	8517	Telephone sets, including telephones	5,843	10.79
2	9999	Commodities not specified according	4,463	8.24
3	8471	Automatic data processing machines	2,449	4.52
4	3105	Mineral or chemical fertilisers containi	1,559	2.88
5	3102	Mineral or chemical fertilisers, nitrog	1,124	2.08
6	7108	Gold (including gold plated with plati	1,050	1.94
7	8528	Monitors and projectors, not incorpor	900	1.66
8	8473	Parts and accessories (other than co	796	1.47
9	2942	Other organic compounds.	667	1.23
10	2941	Antibiotics.	664	1.23
11	7304	Tubes, pipes and hollow profiles, sea	620	1.14
12	8708	Parts and accessories of the motor v	544	1.00
13	8541	Diodes, transistors and similar semic	520	0.96
14	7225	Flat-rolled products of other alloy ste	507	0.94
15	8504	Electrical transformers, static conver	500	0.92
16	8414	Air or vacuum pumps, air or other ga	496	0.92
17	8529	Parts suitable for use solely or princi	491	0.91
18	2933	Heterocyclic compounds with nitroge	476	0.88
19	8443	Printing machinery used for printing	465	0.86
20	8523	Discs, tapes, solid-state non-volatile	452	0.83
Total			24588	45.42

Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

India's import of top 20 products from the Russian Federation in the year 2012 is close to US\$ 3.7 billion (table 3). It is evident from the analysis of the top 20 products that only one product (0713- dried Leguminous vegetable Shelled) belonged to primary/processed agricultural products. The rest of the nineteen products belonged to manufacturing products and had a share of 76.6 percent in the total imports from the Russian Federation. These are concentrated across five chapters namely- 27, 71, 72, 74 and 75 and have 13 different products with 62.5 percent of the total imports by India. Although, the top 20 products account for with nearly 81 percent of the imports share, the concentration of these products in terms of share has been one among the lowest of the four countries analysed. Measured in terms of coefficient of variation it is at 73.6 percent.

Table 3: Top Twenty Import from Russia at HS 4 digit level in 2012

S.N.	HS Code	Description	India's imports from Russia (In milion USD)	Share in India's imports from Russia
1	7102	Diamonds, whether or not worked, but n	678	14.74
2	3104	Mineral or chemical fertilisers, potassic.	339	7.37
3	7502	Unwrought nickel.	325	7.05
4	2524	Asbestos.	201	4.36
5	0713	Dried Leguminous vegetable Shld W/N S	198	4.30
6	4002	Synthetic rubber and factice derived fro	181	3.93
7	7207	Semi-finished products of iron or non-al	181	3.93
8	7407	Copper bars, rods and profiles.	178	3.87
9	7208	Flat-rolled products of iron or non-alloy	170	3.70
10	2704	Coke and semi-coke of coal, of lignite or	162	3.51
11	3105	Mineral or chemical fertilisers containin	157	3.42
12	4801	Newspprint, in rolls or sheets.	156	3.38
13	7225	Flat-rolled products of other alloy steel,	143	3.10
14	2701	Coal; briquettes, ovoids and similar solid	133	2.88
15	7106	Silver (including silver plated with gold o	127	2.76
16	2709	Petroleum oils and oils obtained from bi	122	2.64
17	7408	Copper wire.	85	1.86
18	9999	Commodities not specified according to	70	1.52
19	7206	Iron and non-alloy steel in ingots or othe	63	1.37
20	7202	Ferro-alloys.	55	1.20
Total			3,723	80.91

Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

India's imports of top twenty products from South Africa accounted for US\$ 7.7 billion in value terms in 2012 (table 4). The top twenty imported products mainly belonged to the manufactured sector and are concentrated to five chapters like: 26, 27, 29, 71 and 72. The concentration of imports was significant, with just two products 7108 (Gold) and 2701 (coal; briquettes, ovoid's and similar solid fuels materials) accounting for 78.3 percent share of the total bilateral imports. This was also reflected in the measure of COV's which was 276.1 percent. In terms of India's imports shares, South Africa witnessed the second highest import concentration among the four BRCS partners.

Table 4: Top Twenty Import from South Africa at HS 4 digit level in 2012

S.N.	HS Code	Description	India's imports from South Africa (In million USD)	Share in India's imports from South Africa
1	7108	Gold (including gold plated with platinum) unwrought	4,576	56.95
2	2701	Coal; briquettes, ovoids and similar solid fuels manufactured	1,715	21.35
3	7204	Ferrous waste and scrap; remelting scrap ingots	485	6.04
4	2602	Manganese ores and concentrates, including ferro-manganese	203	2.52
5	2601	Iron ores and concentrates, including roasted iron pyrites	111	1.38
6	2809	Diphosphorus pentoxide; phosphoric acid; polyphosphoric acid	98	1.22
7	7202	Ferro-alloys.	78	0.97
8	7601	Unwrought aluminium.	57	0.71
9	4702	Chemical wood pulp, dissolving grades.	52	0.64
10	7602	Aluminium waste and scrap.	46	0.57
11	7102	Diamonds, whether or not worked, but not mounted	42	0.52
12	5101	Wool, not carded or combed.	33	0.41
13	2914	Ketones and quinones, whether or not with other functional groups	24	0.30
14	2617	Other ores and concentrates.	23	0.29
15	7502	Unwrought nickel.	23	0.29
16	2610	Chromium ores and concentrates.	23	0.28
17	2905	Acyclic alcohols and their halogenated, sulphona	20	0.25
18	2710	Petroleum oils and oils obtained from bituminous	20	0.24
19	8421	Centrifuges, including centrifugal dryers; filterin	19	0.24
20	7110	Platinum, unwrought or in semi-manufactured form	19	0.23
Total			7,665	95.40

Source: Compiled by the authors based on the data from WITS online COMTRADE database.

1.4 Top Twenty Value Added Exports to each of BRCS Partners

The trade flow of 2012 has been analysed in this sub-section according to the UNCTAD classification³, which categorised around 5200 products (HS 6-digit) into two broad categories namely the primary products (PP) and the value added (VA) products. The VA exports consisted of products belonging to four broad sub-categories namely, a) Resource-intensive manufactures; b) low-skill and technology intensive; c) Medium-skill and technology intensive and d) High-skill and technology intensive. In order to analyse the value added products that India exported to each of BRCS partners, we need to understand composition of tariff lines under each of the broad categories. Table 5 provides information on the composition of tariff lines in terms of numbers and shares. The average composition of the products exported by India to the BRCS partners under the UNCTAD classification in 2012 are: High skill- and technology intensive manufactures with 535 six digit TLs (24 %); Low skill- and technology-intensive manufactures with 256 six digit TLs (12 %); Medium skill- and technology intensive manufactures with 459 six digit TLs (21 %); Mineral fuels with 9 six digit TLs (0.4 %); Non-fuel primary

³ The UNCTAD classification distinguishes between products by their technology and skill intensity, or the dominant factor input.

commodities with 254 six digit TLs (12 %); Resource-intensive manufactures with 670 six digit TLs (31 %) and Unclassified products with 11 six digit TLs (0.5 %).

Table 5: Skill and Technology Content based Classification of products (2012)

(A) Count of Tariff lines at HS 6 digit

UNCTAD T/S Classification	World	Brazil	China	Russian Federation	South Africa	Count of Avg. BRCS TLs (HS 6 digit)
High skill- & tech. int. mfg. (VA)	1127	507	651	355	626	535
Low skill- & tech. int. mfg. (VA)	503	248	267	176	332	256
Medium skill- & tech. int. mfg. (VA)	806	409	528	325	574	459
Mineral fuels (PP)	45	7	10	7	12	9
Non-fuel primary commodities (PP)	1001	139	339	174	365	254
Resource-int. mfg (VA)	1290	586	747	502	845	670
Unclassified products	30	11	11	8	12	11
Total 6 digit TLs	4802	1907	2553	1547	2766	2193
Percentage Share						
High skill- & tech. int. mfg. (VA)	23	27	25	23	23	24
Low skill- & tech. int. mfg. (VA)	10	13	10	11	12	12
Medium skill- & tech. int. mfg. (VA)	17	21	21	21	21	21
Mineral fuels (PP)	1	0	0	0	0	0.4
Non-fuel primary commodities (PP)	21	7	13	11	13	12
Resource-int. mfg (VA)	27	31	29	32	31	31
Unclassified products	1	1	0	1	0	0.5
Total 6 digit TLs	100	100	100	100	100	100
Value Added Export in terms of TLs	78	92	86	88	86	88

(B) Values in US\$ billion

UNCTAD T/S Classification	World	Brazil	China	Russian Federation	South Africa	Avg. BRCS Value(US\$ bn.)
High skill- & tech. int. mfg. (VA)	47.8	1.1	2.3	1.0	0.8	1.3
Low skill- & tech. int. mfg. (VA)	20.1	0.2	0.4	0.2	0.2	0.3
Medium skill- & tech. int. mfg. (VA)	29.6	0.6	0.7	0.2	1.3	0.7
Mineral fuels (PP)	54.4	3.4	0.3	0.0	1.8	1.4
Non-fuel primary commodities (PP)	74.8	0.1	9.4	0.5	0.4	2.6
Resource-int. mfg (VA)	60.3	0.7	1.6	0.2	0.4	0.7
Unclassified products	2.6	0.1	0.0	0.0	0.0	0.0
Grand Total	289.6	6.2	14.7	2.1	5.0	7.0
Percentage Share						
High skill- & tech. int. mfg. (VA)	16.5	17.5	15.5	48.4	17.0	18.7
Low skill- & tech. int. mfg. (VA)	6.9	3.4	2.9	9.0	4.4	3.7
Medium skill- & tech. int. mfg. (VA)	10.2	9.4	4.4	9.7	25.5	9.7
Mineral fuels (PP)	18.8	55.6	2.3	0.3	36.3	19.9
Non-fuel primary commodities (PP)	25.8	1.7	63.9	24.3	9.0	37.4
Resource-int. mfg (VA)	20.8	11.1	10.8	8.1	7.9	10.1
Unclassified products	0.9	1.3	0.2	0.2	0.0	0.4
Total 6 digit TLs	100.0	100.0	100.0	100.0	100.0	100.0
Value Added Export in terms of TLs	54	41	34	75	55	42

Source: Compiled by the Authors

Value-added products accounted for 78 percent of India's global exports by the number of tariff lines and 88 percent by value. On the other hand, products primarily accounted for 54 percent of India's exports to BRCS countries by the number of tariff lines and 42 percent by trade value. This suggests that the profile of India's global exports is different from that to BRCS countries.

It is relevant to analyse India's trade balance in different product categories according to the UNCTAD classification. In 2012 India had an overall negative balance of trade of US\$ 34.04 billion with all the BRCS partners

(see table 6). China alone accounted for 97 percent share of the total negative trade balance with a value of US\$ 33 billion. At the disaggregate level, two product categories - High skill and technology intensive manufacturing products and Medium skill and technology intensive manufacturing products- accounted for most of share in negative trade balance. Given this backdrop this sub- section analyses the bilateral value of exports with each of BRCS members and the shares they constitute in the value added section.

Table 6: India's Trade Balance with each of the BRCS Partners (2012)

UNCTAD Classification S&T (US\$ Bn)	China	Brazil	Russian Federation	South Africa	Total Trade Balance
High skill & tech. inten.mfg. (VA)	-16.37	0.79	-0.24	0.59	-15.23
Low skill & tech. inten.mfg. (VA)	-4.73	0.04	-0.42	0.11	-4.99
Medium skill & tech. inten.mfg. (VA)	-12.36	0.43	-0.45	1.18	-11.20
Mineral fuels	0.04	0.00	-0.17	-0.17	-0.30
Non-fuel primary com.'s	6.54	-1.37	-0.69	-0.77	3.71
Resource-inten. Mfg.	-6.09	0.65	-0.06	0.36	-5.14
Unclassified products	0.01	0.05	-0.95	0.00	-0.88
Grand Total	-32.95	0.59	-2.98	1.30	-34.04

Source: Compiled by the authors

Table 7: India's Bilateral Exports with Brazil in 2012

S.N.	HS Codes	Product Description	India's exports to brazil in million USD	Shares in Bilateral Value Added Exports
1	3808	Insecticides, rodenticides, fungicides, herbicides, etc.	273	10.37
2	5402	Synthetic filament yarn (other than sewing thread)	235	8.94
3	8708	Parts and accessories of the motor vehicles	147	5.59
4	3004	Medicaments (excluding items of 3002, 3003)	122	4.63
5	2942	Other organic compounds	98	3.73
6	3204	Synthetic organic coloring matter (with or without chemical elements)	78	2.97
7	5205	Cotton yarn (other than swung thread) containing 85% or more of cotton	62	2.36
8	2933	Heterocyclic compounds with nitrogen heteroatoms	45	1.70
9	6204	Women's or girls' suits, ensembles, jackets, blouses, shirts, blouses, etc.	41	1.57
10	4011	New pneumatic tyres of rubber	37	1.39
11	3902	Polymers of propylene/other olefins in primary forms	33	1.27
12	6206	Women's or girls' blouses, shirts and shirt-blouses	33	1.25
13	8479	Machines and mechanically operated appliances, individually or in sets	32	1.22
14	8503	Parts suitable for use solely or principally with the machines or appliances of heading 8479	32	1.22
15	8419	Machinery, plant or laboratory equipment, whether or not fitted with tools, knives, cutters or dies	32	1.21
16	2941	Antibiotics	30	1.14
17	5509	Yarn (other than swung thread) of synthetic or artificial fibres	29	1.12
18	8904	Tugs and pusher craft	29	1.09
19	6703	Human hair dressed, tinted, bleached or otherwise treated	28	1.05
20	3003	Medicaments (excluding goods heading 3002)	26	0.99
Total			1,443	54.81

Source: Compiled by the authors based on the data from WITS online COMTRADE database.

Top twenty value added products exported from India to Brazil stand at an absolute value of US\$ 1.4 billion, constituting approximately 55 percent of the total value added exports (Table 7). Three products had a share of more than 5 percent of the total value added exports to Brazil. These are: (3808) Insecticides, rodenticides, fungicides, herbicides etc. with 10.4 percent; (5402) synthetic filament yarn (other than sewing thread) not put up for

retail sale including synthetic monofilament of less than 67 decitex with 8.9 percent; and (8708) parts and accessories of the motor vehicles of headings no's 8701 to 8705 with 5.6 percent. Bilateral exports show no presence of low skill & tech intensive products. The highest shares in the India's value added exports was in the high skill- and technology intensive manufactures with nearly 28 percent, followed by the resource-intensive products with 16 percent and the medium skill- and technology intensive products with 11 percent. India's bilateral exports to Brazil showed the lowest products concentration in terms coefficient of variance with 98.7 percent.

Table 8: India's Bilateral Exports with China in 2012

S.N.	HS Codes	Product Description	India's exports to China in million USD	Shares in Bilateral Value Added Exports
1	5205	Cotn yrn(othr thn swng thrd)cntng 85%	966	19.41
2	3902	Polymrs of propnl/othr olfns in prmry frm	393	7.90
3	2902	Cyclic hydrocarbons	361	7.24
4	7202	Ferro-alloys	312	6.27
5	2906	Cyclic alchls & thr halntd slphntd nitrat	236	4.74
6	6703	Humn hair drssd thnd bleachd/othrws	159	3.19
7	3301	Esnl ols (cnerts/abslts);rsnds,extrtd olors	136	2.73
8	8517	Elctrel aparts fr line telephny/telgrphy, ii	87	1.74
9	3901	Polymers of ethylene in primary forms	85	1.71
10	4107	Leather further prepared after taning/ c	72	1.44
11	2905	Acyclic alcohol & thr halntd,slphnatd n	67	1.34
12	8708	Parts and accessories of the motor vehi	63	1.27
13	3003	Medicaments (excl goods hdg no 3002)	60	1.20
14	3204	Syntc orgnc colrng matr w/n chmclly dff	59	1.19
15	7011	Glass envelops(incl bulbs & tubes)open	56	1.13
16	9022	Other appliancesof heading 9021 bta/gn	52	1.04
17	9001	Optcl fibr & optcl fibr bundls etc;shts &	52	1.04
18	3808	Inseteds,rdnteds,fngecds,hrbeds,antsprou	50	1.01
19	8473	Prts & accessrs(excl covers,carryng cas	49	0.99
20	2933	Heterocycle compnds wth nitrogn hetro	47	0.95
Total			3,361	67.52

Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

India's top twenty value added exports to China stood at US\$ 3.3 billion and represented nearly 68 percent of the total value added exports (Table 8). Four products had a share of more than 5 percent of the total value added exports to China. These are: (5205) cotton yarn, single (excl. sewing) with 19.4 percent; (3902) polypropylene in primary forms with 7.9 percent; (2902) cyclohexane with 7.2 percent and (7202) Ferro-manganese, containing by weight with 6.3 percent.

As per the UNCTAD classification sub-categories, the highest share in the India's value added exports was under the high skill- and technology intensive products accounting for nearly 34 percent followed by the resource-intensive products with 25 percent and the medium skill- and technology intensive products with 2.3 percent. However, only one product

belonged to the low skill and technology intensive (7202- Ferro-Alloy), which accounted for nearly 6.3 percent share in the total value added exports by India. India's exports to China showed the third position in terms of products concentration as the coefficient of variance of shares of total value added was 129.6 percent.

Table 9: India's Bilateral Exports with Russian Federation in 2012

S.N.	HS Codes	Product Description	India's exports to russia in million USD	Shares in Bilateral Value Added Exports
1	3004	Medicaments (excl items of 3002,3005 /	477	29.49
2	8517	Electrel aparts fr line telephny/teigr	203	12.53
3	8803	Prts of goods of hdg no.8801 or 88	171	10.58
4	7210	Flt-rlld prdcts of iron/non-alloy stee	89	5.52
5	8708	Parts and accessories of the motor	53	3.26
6	3920	Othr plates, sheets, film, foil & strip	30	1.84
7	7219	Flt-rlld prdcts of stainless stl of wd	26	1.60
8	8545	Crbn elctrds, crbn brshs, lamp crbns	22	1.35
9	6802	Wrkd monmnt/bldg stone (except sl	17	1.04
10	8204	Hnd oprtd spaners & wrenchs(in	17	1.02
11	3204	Syntc orgne colrng matr w/n chmc	15	0.92
12	3003	Medicaments (excl goods hdg no 3	11	0.68
13	3808	Insectcds, rdntcds, fngcds, hrbcds, ant	11	0.67
14	5205	Cotn yrn(othr thn swng thrd)cntng	10	0.63
15	8511	Electrel igntn/strtnng eqpmnt fr sprk-	10	0.62
16	8704	Motor vhcls fr trnsprt of goods	10	0.61
17	6109	T-shrts, snglts & othr vests, knntd/cr	9	0.58
18	4010	Cnvyr trnsmssn blts/bltng of vulens	9	0.54
19	2942	Other organic compounds	9	0.54
20	7323	Table kitchn or othr domestic artcl	9	0.54
Total			1,206	74.55

Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

In 2012, India's top twenty value added exports to Russian Federation was US\$ 1.2 billion, constituting 75 percent of the total value added exports (Table 9). Four products had shares exceeding 5 percent of the total value added exports to Russian Federation. These are (3004) medicaments containing penicillin with 29.4 percent; (8517) line telephone sets with cordless with 12.5 percent; (8803) propellers & rotors & parts thereof with 10.6 percent and (7210) flat-rolled products of iron/non-alloy with 5.5 percent. In terms of the UNCTAD classification, the highest shares in exports to Russia was under the high skill- and technology intensive products accounting for approximately 57.2 percent followed by the low skill and technology intensive products which accounted for nearly 8.7 percent shares. The resource-intensive products had a share of 2.3 percent and medium skill and technology intensive products with 6.4 percent respectively. The Russian Federation showed the highest concentration of products in the top twenty exports from India with a coefficient of variance of 186.2 percent.

In 2012, India's top twenty value added exports to South Africa was US\$ 1.8 billion, constituting 66.3 percent share of the total value added exports (Table 10). Five of the four digit products had shares exceeding 5 percent of the total value added exports to South Africa. These are: (8703) motor cars & other motor vehicles for transport of persons (excl of 8702) with 20.7 percent; (3004) Medicaments (excl items of 3002,3005 or 3006) for therapeutic in packing for retail sale with 10.9 percent; (8704) motor vehicles for transport of goods with 5.8 percent; (8708) parts and accessories of the motor vehicles of headings nos 8701 to 8705 with 5.7 percent and (8517); and Electrical apparatus for line telephony/telegraphy and systems videophone with 5.7 percent.

In terms of the UNCTAD classification, the highest shares in exports to South Africa was under the medium skill and technology intensive seven products with 37 percent, followed by the high skill- and technology intensive seven products accounting for nearly 23.1 percent. The low skill and technology intensive products accounted for nearly 3 percent shares and the resource-intensive products had a share of 3.3 percent respectively. South Africa showed the second highest concentration of products in the top twenty exports from India among the BRCS partners with a coefficient of variance of 147.7 percent.

Table 10: India's Bilateral Exports with South Africa in 2012

S.N.	HS Codes	Product Description	India's exports to south africa in million USD	Shares in Bilateral Value Added Exports
1	8703	Motor cars & other motor vehicles for transport of persons (excl of 8702)	563	20.68
2	3004	Medicaments (excl items of 3002,3005 / 3006) for therapeutic in packing for retail sale	298	10.92
3	8704	Motor vehicles for transport of goods	159	5.82
4	8708	Parts and accessories of the motor vehicles of headings nos 8701 to 8705	156	5.72
5	8517	Electrical apparatus for line telephony/telegraphy and systems videophone	156	5.72
6	2942	Other organic compounds	86	3.18
7	8706	Chassis fitted with engines, for motor vehicles	53	1.93
8	7325	Other cast articles of iron or steel	49	1.81
9	6109	T-shirts, singlets & other vests, knitted or crocheted	49	1.80
10	3920	Other plates, sheets, film, foil & strip, of primary forms	42	1.55
11	8701	Tractors (excl tractors of hdg no. 8709)	33	1.20
12	4011	New pneumatic tyres of rubber	26	0.95
13	6302	Bed linen, table linen, toilet linen & kitchen linen	22	0.80
14	6204	Women's/girls' suits, ensembles, jackets, blouses, shirts and blouses	18	0.68
15	8414	Air/vacuum pumps, air/other gas compressors	18	0.66
16	3204	Synthetic organic coloring matter w/n chemically defined	18	0.64
17	7210	Flat-rolled products of iron/non-alloy steel of width not exceeding 1500 mm	17	0.64
18	3808	Insecticides, rodenticides, fungicides, herbicides, antiparasitics	15	0.55
19	7308	Structures (excl prefabricated buildings) of heading 7308	14	0.53
20	3921	Other plates sheets film foil & strip of plastics	14	0.51
Total			1,805	66.27

Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

1.5 Top Twenty Intra-Industry Trade in 2012

Intra-industry trade (IIT) is estimated using the Grubel-Lloyd Index to capture the commodity group-wise trade (exports and imports) between the countries at the six digit level. IIT values are estimated for the four BRCS trading partners across separate product groups. In addition, the IIT values are also calculated for BRCS as a group.

Following observations can be made based on the analysis of the top twenty products at the six digit level from the Tables 11 to 15. **First**, based on IIT values almost all of top twenty products of the bilateral partners exhibit very high intra-industry trade indices of 99 to 97 point values. **Second**, their share in total bilateral exports of India to the respective partners did not exceed 0.70 percent. The other partners countries in the descending order are Russian Federation (0.22 percent share), Brazil (0.11 percent) and South Africa (0.052 percent). **Third**, close to 93 percent of the products are from the value-added (VA) category and only 7 percent of products to the primary products (PP) category. **Fourth**, most of the top twenty products are unique for each of the bilateral export partners of India. This was evident from the 77 unique HS codes at the HS 6 digit level out of the total of 80 HS 6 digits. Overall, on the basis of very low share of products with high GL index in India's overall export basket, it can be concluded that India is not integrated in value chains with BRCS countries.

Table 11: India's Bilateral Intra-Industry Trade with Brazil in 2012

HS 6 Digit	Description	UNCTAD Broad Categories	GL index Brazil	Share in Bilateral Exports
848210	Ball bearings	Value Added Products	1.00	0.0198
830210	Hinges of base metal	Value Added Products	1.00	0.0007
283650	Calcium carbonate	Value Added Products	0.99	0.0059
701919	Slivers of glass fibres; chopped st	Value Added Products	0.99	0.0002
731823	Rivets of iron/steel	Value Added Products	0.99	0.0014
903290	Parts & accessories of the instr. &	Value Added Products	0.99	0.0106
901730	Micrometers, callipers & gauges	Value Added Products	0.98	0.0008
381600	Refractory cements, mortars, concre	Value Added Products	0.98	0.0042
820299	Saw blades (excl. of 8202.20-8202.9	Value Added Products	0.97	0.0002
420212	Trunks, suit-cases, vanity-cases, e	Value Added Products	0.97	0.0002
846799	Parts of tools for working in the h	Value Added Products	0.97	0.0023
901832	Tubular metal needles & needles for	Value Added Products	0.97	0.0283
401193	New pneumatic tyres, of rubber (exc	Value Added Products	0.97	0.0010
870830	Brakes & servo-brakes; parts thereo	Value Added Products	0.97	0.0230
482390	Paper, paperboard, cellulose waddin	Value Added Products	0.97	0.0009
392113	Plates, sheets, film, foil & strip,	Value Added Products	0.96	0.0002
620293	Women's/girls' anoraks (incl. ski-j	Value Added Products	0.96	0.0000
848410	Gaskets & similar joints of metal s	Value Added Products	0.95	0.0022
842820	Pneumatic elevators & conveyors	Value Added Products	0.95	0.0008
251512	Marble & travertine, merely cut, by	Primary products	0.95	0.0000
Average/Total			0.97	0.1027

Source: Compiled by the Authors based on the data from WITS online COMTRADE database.

Table 12: India's Bilateral Intra-Industry Trade with China in 2012

HS 6 Digit	Description	UNCTAD Broad Categories	GL index China	Share in Bilateral Exports
290290	Xylenes (excl. of 2902.41-2902.70)	Value Added Products	1.00	0.1030
290514	Butanols other than butan-1-ol (n-b	Value Added Products	1.00	0.0536
290512	Propan-1-ol (propyl alcohol) & prop	Value Added Products	1.00	0.0055
520942	Woven fabrics of cotton, containing	Value Added Products	0.99	0.0431
290517	Dodecan-1-ol (lauryl alcohol), hexa	Value Added Products	0.99	0.0007
320414	Direct dyes & preparations based th	Value Added Products	0.99	0.0067
670419	Wigs other than complete wigs, fals	Value Added Products	0.99	0.0002
281820	Aluminium oxide (excl. artificial c	Primary products	0.98	0.2870
844851	Sinkers, needles & otherarticles us	Value Added Products	0.98	0.0168
854150	Semiconductor devices n.e.s. in 85.	Value Added Products	0.98	0.0079
640391	Other footwear without outer soles	Value Added Products	0.98	0.0038
521011	Woven fabrics of cotton, containing	Value Added Products	0.98	0.0006
620332	Men's/boys' jackets & blazers (excl	Value Added Products	0.98	0.0060
320490	Synthetic organic products of a kin	Value Added Products	0.98	0.0477
680293	Mosaic cubes & the like, of granite	Value Added Products	0.98	0.0106
842119	Other centrifuges, incl. centrifuga	Value Added Products	0.98	0.0675
340311	Lubricating preparations containing	Primary products	0.97	0.0031
640420	Footwear with outer soles of leathe	Value Added Products	0.97	0.0006
720410	Waste & scrap of cast iron	Primary products	0.97	0.0044
620342	Men's/boys' trousers, bib & brace o	Value Added Products	0.97	0.0331
Average/Total			0.98	0.7021

Table 13: India's Bilateral Intra-Industry Trade with Russian Federation in 2012

HS 6 Digit	Description	UNCTAD Broad Categories	GL index Russian Fed.	Share in Bilateral Exports
591190	Textile products & articles, for te	Value Added Products	1.00	0.0003
381121	Additives for lubricating oils cont	Value Added Products	1.00	0.0077
853810	Boards, panels, consoles, desks, ca	Value Added Products	1.00	0.0804
903180	Measuring/checking instr., apparatu	Value Added Products	0.99	0.0310
401110	New pneumatic tyres, of rubber, of	Value Added Products	0.99	0.0034
730690	Tubes, pipes & hollow profiles of i	Value Added Products	0.99	0.0089
853890	Parts suit. for use solely/principa	Value Added Products	0.99	0.0619
560394	Nonwovens, whether/not impregnated/	Value Added Products	0.99	0.0002
848071	Moulds for rubber/plastics, Inject	Value Added Products	0.99	0.0062
490890	Transfers (decalcomanias) other tha	Value Added Products	0.99	0.0002
853610	Fuses, for a voltage not >1000V	Value Added Products	0.98	0.0005
853649	Relays (excl. of 8536.41), for a vo	Value Added Products	0.98	0.0074
722699	Other n.e.s. in 72.26 flat-rolled p	Value Added Products	0.98	0.0010
850590	Other, incl. parts of electro-magne	Value Added Products	0.96	0.0000
482190	Paper/paperboard labels of all kind	Value Added Products	0.96	0.0001
580620	Narrow woven fabrics (excl. of 5806	Value Added Products	0.96	0.0001
251512	Marble & travertine, merely cut, by	Primary products	0.95	0.0022
320210	Synthetic organic tanning substance	Value Added Products	0.95	0.0003
701790	Laboratory/hygienic/pharmaceutical	Value Added Products	0.93	0.0020
761519	Table/kitchen/other h-hold. article	Value Added Products	0.93	0.0022
Average/Total			0.98	0.2158

Table 14: India's Bilateral Intra-Industry Trade with South Africa in 2012

HS 6 Digit	Description	UNCTAD Broad Categories	GL index South Africa	Share in Bilateral Exports
381600	Refractory cements, mortars, co	Value Added Products	1.00	0.0060
731816	Nuts of iron/steel	Value Added Products	1.00	0.0132
731829	Non-threaded articles similar to	Value Added Products	0.99	0.0054
390390	Polymers of styrene, in primary	Value Added Products	0.99	0.0009
903190	Parts & accessories of the instr.	Value Added Products	0.99	0.0007
560750	Twine, cordage, ropes & cables	Value Added Products	0.99	0.0005
902920	Speed indicators & tachometers	Value Added Products	0.98	0.0000
382312	Oleic acid	Value Added Products	0.97	0.0006
90240	Tea, black (fermented) & partly	Primary products	0.97	0.0014
292111	Methylamine, di-/trimethylamine	Value Added Products	0.97	0.0007
591190	Textile products & articles, for t	Value Added Products	0.96	0.0016
392321	Sacks & bags (incl. cones), of pl	Value Added Products	0.96	0.0021
870870	Road wheels & parts & accesso	Value Added Products	0.96	0.0099
841360	Rotary positive displacement pur	Value Added Products	0.96	0.0023
701337	Other drinking glasses, other tha	Value Added Products	0.94	0.0003
700721	Laminated safety glass, of size &	Value Added Products	0.94	0.0000
846799	Parts of tools for working in the	Value Added Products	0.94	0.0035
901850	Ophthalmic instr. & appliances r	Value Added Products	0.93	0.0008
330210	Mixtures of odoriferous substanc	Value Added Products	0.92	0.0015
481013	Paper & paperboard of a kind us	Value Added Products	0.92	0.0007
Average/Total			0.96	0.0521

Table 15: India's IIT with BRCS Group

HS 6 Digit	Description	UNCTAD Broad Categories	GL index BRCS	Share in Bilateral Exports
290290	Xylenes (excl. of 2902.41-2902.70)	Value Added Products	1.00	0.0544
282749	Chloride oxides & chloride hydroxid	Value Added Products	1.00	0.0089
400921	Tubes, pipes & hoses, of vulcanised	Value Added Products	1.00	0.0153
845819	Horizontal lathes (incl. turning ce	Value Added Products	1.00	0.0105
610433	Women's/girls' jackets & blazers, k	Value Added Products	1.00	0.0005
581010	Embroidery in the piece, without vi	Value Added Products	1.00	0.0011
190410	Prepared foods obt. by the swelling	Primary products	1.00	0.0002
630399	Curtains (incl. drapes) & interior	Value Added Products	0.99	0.0041
721049	Flat-rolled products of iron/non-al	Value Added Products	0.99	0.1395
680300	Worked slate & articles of slate/ag	Value Added Products	0.99	0.0003
482010	Registers, account books, notebooks	Value Added Products	0.99	0.0019
401390	Inner tubes, of rubber (excl. of 40	Value Added Products	0.99	0.0026
284150	Chromates&dichromates(excl. of 2841	Value Added Products	0.99	0.0004
283329	Sulphates other than Sodium sulphat	Value Added Products	0.99	0.0081
854150	Semiconductor devices n.e.s. in 85.	Value Added Products	0.99	0.0043
481730	Boxes, pouches, wallets & writing c	Value Added Products	0.99	0.0004
292211	Monoethanolamine & its salts	Value Added Products	0.99	0.0043
670419	Wigs other than complete wigs, fals	Value Added Products	0.99	0.0001
540773	Woven fabrics (excl. of 5407.10-540	Value Added Products	0.99	0.0007
230690	Oil-cake & other solid residues, wh	Primary products	0.99	0.0001
Average/Total			0.99	0.2575

Source: Authors estimate based on the COMTRADE online database as available in WITS.

Section II

Trade in Value Added Exports: Tariff and Non-Tariff Barriers

2.1 Introduction

With decline in tariffs, the relative importance of non-tariff measures (NTMs) *vis-à-vis* tariffs for the developing countries' exports has grown significantly. This section analyses the BRCS group market access and we test for the balance between India's tariff and non-tariff measures. While tariff have been moving downwards for most countries, the NTMs have been on the rise and most of these stem from non-trade policy objectives, such as technical measures that ensure safety, quality, performance and protection of the environment. It is evident that tariff liberalization alone is not sufficient to provide the effective market access in any country. As a part of trade liberalisation and closer commercial cooperation, it is important to address the issues of NTMs. This section provides detailed analysis of the top twenty products value added exports with a focus on the market access offered by India through the application of tariff and non-tariff measures.

2.2 Applied Tariff on top Twenty Value Added Exports from BRCS Members

The exports of top 20 products at HS 4 digit level from Brazil to India under the value added category was worth US \$ 469.4 million. It had a share of nearly 70 percent of the total value added bilateral imports into India, (see Table 16). Six products are traded under the margin of preference (MoP) under the India-MERCUSOR preferential trade agreement. Therefore, instead of the MFN applied tariff of 4.2 percent these products are imported at a tariff of 3.4 percent and thus enjoying MoP of 0.8 percent. All the twenty products are imported at an average preference tariff of 4.7 percent instead of 5 percent; thereby a nominal MoP of 0.3 percent has been provided to the twenty products from Brazil. Only one product with HS code 8802- Aeroplanes and other aircraft had more than US\$ 100 million imports into India, and imported at 6.5 percent average MFN duty in year 2012-13.

Russia's exports of top 20 products at HS 4 digit level to India under the value added category was worth US \$ 1,960.5 million. It had a share of close to 53 percent of the total value added exports from Russia, see Table 17. The MFN applied tariff of 2012/13 was 3.5 percent. Nearly 50 percent of top twenty imports had more than US\$ 100 million imports, with three of them imported at zero MFN applied tariff.

Table 16: Top 20 Brazilian Exports to India and MFN Applied Tariffs in 2012

Product Code	Product Description	Brazil's Exports to India in 2012 (in Mn. USD)	Share in Exports to India	Share in Global Export of Brazil	Proposed MoP (under MERCUS OR - %)	MFN 2012 - 13	Preferential Tariff (2012)
8802	Aeroplanes & other aircraft, of an	183.7	27.2	5.4		6.5	6.5
7208	Flat-rolled products of iron/non-al	40.4	6.0	0.9		1.4	1.4
7202	Ferro-nickel, in granular/powder fo	32.0	4.7	3.2		9.3	9.3
8433	Parts of the machinery of 84.33	27.7	4.1	0.5	20.0	5.5	4.4
7225	Flat-rolled products of silicon-ele	27.0	4.0	0.3		5.0	5.0
7207	Semi-finished products of iron/non-	20.5	3.0	3.6		0.0	0.0
8708	Bumpers & parts thereof of the moto	16.0	2.4	4.3		9.3	9.3
2918	Citric acid	13.4	2.0	0.1	20.0	4.0	3.2
8483	Transmission shafts (incl. cam shaf	11.7	1.7	0.8	20.0	4.3	3.4
3201	Quebracho extract	11.0	1.6	0.1	20.0	6.7	5.3
8501	Electric motors of an output not >3	10.7	1.6	1.0	20.0	2.1	1.7
7210	Flat-rolled products of iron/non-al	10.7	1.6	0.3		6.4	6.4
8413	Fuel/lubricating/cooling medium pum	10.1	1.5	0.7	20.0	2.7	2.2
2933	Heterocyclic comps. with nitrogen h	8.5	1.3	0.1		7.8	7.8
3301	Essential oils of orange	8.2	1.2	0.3		11.3	11.3
4011	New pneumatic tyres, of rubber, of	8.1	1.2	1.7		6.4	6.4
7224	Semi-finished products (excl. ingot	7.8	1.2	0.8		5.0	5.0
8414	Compressors of a kind used in refri	7.8	1.1	1.3		2.5	2.5
8409	Parts suit. for use solely/principa	7.5	1.1	2.0		2.5	2.5
3004	Medicaments containing other antibi	6.8	1.0	1.3		1.3	1.3
Total / Average		469.4	69.5	28.6	20.0	5.0	4.7

Source: Authors estimate based on the TRAINS (WITS), TAO (WTO) and Customs Notifications of India.

The four products that are imported into India at zero tariffs are: 7207-semi-finished products of iron/non; 4801-newsprint in rolls/sheets; 8529-aerials & aerial reflectors and 8471-portable automatic data processing.

Table 17: Top 20 Russian Exports to India and MFN Applied Tariffs in 2012

Product Code	Product Description	Russia's Exports to India in 2012 (in Mn. USD)	Share in Global Export of Russia	Share in Exports to India	MFN Duty (2012-13)
3105	Mineral/chemical fertilisers containi	316.7	3.9	8.5	5.0
8411	Parts of the turbo-jets/turbo-propo	168.8	1.5	4.5	6.6
7207	Semi-finished products of iron/non-	150.9	7.7	4.0	0.0
4801	Newsprint, in rolls/sheets	138.7	0.7	3.7	0.0
8529	Aerials & aerial reflectors of all	134.4	0.2	3.6	0.0
8526	Radio remote control apparatus	134.3	0.4	3.6	5.0
7225	Flat-rolled products of silicon-ele	119.8	0.9	3.2	5.0
9031	Measuring/checking instr., apparatus	113.3	0.3	3.0	6.3
7208	Flat-rolled products of iron/non-al	110.9	3.2	3.0	1.4
2844	Radioactive elements & isotopes & c	84.4	0.1	2.3	8.0
8419	Dryers for use as machinery/plant/1	65.8	0.2	1.8	2.5
9014	Parts & accessories of the navigati	63.5	0.1	1.7	5.6
8471	Portable automatic data processi	57.5	0.2	1.5	0.0
9013	Lasers (excl. laser diodes)	55.6	0.2	1.5	1.9
7202	Ferro-nickel, in granular/powder fo	51.8	2.0	1.4	9.3
8543	Signal generators	47.8	0.3	1.3	3.0
9032	Thermostats	43.5	0.2	1.2	3.0
8504	Electrical transformers (excl. diel	39.6	0.2	1.1	4.5
7326	Articles of iron/steel, forged/stam	32.8	0.3	0.9	2.5
8544	Co-axial cable & other co-axial ele	30.4	0.4	0.8	0.9
Total / Average		1960.5	23.1	52.5	3.5

Source: Authors estimate based on the TRAINS (WITS) and TAO (WTO).

China's exports of top 20 products at HS 4 digit level to India under the value added category was worth US \$ 16,528.6 million. These products had a share of 28 percent of the total value added bilateral exports from China. The MFN applied tariff of 2012/13 was 4.8 percent, see Table 18. All the top twenty imports had more than US\$ 100 million imports, with three of them imported at zero MFN applied tariff. Three products are imported from China with import values of more than US\$ 1000 million. These are: 8517-line telephone sets with cordless (zero MFN app.); 8471-portable automatic data processing (zero MFN app.) and 3105-mineral/chemical fertilisers (5 % MFN app.)

Table 18: Top 20 Chinese Exports to India and MFN Applied Tariffs in 2012

Product Code	Product Description	China's Exports to India in 2012 (in Mn. USD)	Share in Global Export of China	Share in Exports to India	MFN Duty (2012-13)
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8517	Line telephone sets with cordless h	2,918.5	8.0	6.6	0.0
8471	Portable automatic data processi	2,275.1	8.5	5.1	0.0
3105	Mineral/chemical fertilisers contai	1,719.8	0.2	3.9	5.0
8528	Other monitors, not of a kind solel	905.9	1.4	2.0	7.8
8402	Vapour generating boilers,incl.hy	739.9	0.1	1.7	4.5
2933	Hetero cyclic comps.with nitrogen	739.8	0.3	1.7	7.8
7304	Line pipe of a kind used for oil/ga	713.7	0.4	1.6	3.8
8504	Electrical transformers (excl.diel	710.2	1.2	1.6	4.5
2941	Penicillins & their derivatives	696.4	0.1	1.6	3.3
8406	Steam turbines & other vapour	567.8	0.1	1.3	7.5
8414	Compressors of,a kind use dinrefri	542.8	0.5	1.2	2.5
5903	Textile fabrics impregnated/coated/	502.6	0.3	1.1	0.0
8708	Bumpers & parts thereof of the moto	498.8	1.2	1.1	9.3
7225	Flat-rolled products of silicon-ele	494.9	0.3	1.1	5.0
7308	Towers & lattice masts of iron/stee	430.7	0.6	1.0	6.0
8518	Parts of the apparatus & equip. of	429.4	0.7	1.0	10.0
8473	Parts & accessories (excl.covers,	427.5	1.6	1.0	1.3
8507	Electric accumulators, incl. separa	423.0	0.4	1.0	8.8
9013	Lasers(excl. laser diodes)	397.3	2.0	0.9	1.9
8714	Saddles for motorcycles (incl.mope	394.7	0.2	0.9	6.7
Total / Average		16,528.6	28.1	37.1	4.8

Source: Authors estimate based on the TRAINS (WITS) and TAO (WTO)

South Africa's exports of top 20 products at HS 4 digit level to India under the value added category was worth US\$ 376.3 million. It accounted for nearly 78 percent share of the total value added bilateral exports from South Africa. The MFN applied tariff of 2012/13 was 4.3 percent, see Table 19. None of the top twenty imports had more than US\$ 100 million imports.

Table 19: Top 20 South African Exports to India and MFN Applied Tariffs in 2012

Product Code	Product Description	South Africa's Exports to India in 2012 (in 1000 USD)	Share in Global Export of South Africa	Share in Exports to India	MFN Duty (2012-13)
2809	Phosphoric acid & polyphosphoric ac	86.7	0.5	18.0	5.0
7202	Ferro-nickel, in granular/powder fo	55.2	10.7	11.4	9.3
8421	Filtering/purifying machinery & app	33.7	6.5	7.0	5.5
8529	Aerials & aerial reflectors of all	33.1	0.3	6.9	0.0
2914	Aromatic ketones without other oxyg	22.8	0.7	4.7	5.7
2905	Mannitol	18.2	0.8	3.8	8.5
2907	Polyphenols (excl. of 2907.21-2907.	17.8	0.2	3.7	4.4
7005	Float glass & surface ground/polish	16.4	0.1	3.4	0.0
2825	Molybdenum oxides & hydroxides	15.4	0.3	3.2	4.4
8609	Containers (incl. containters for t	15.3	0.5	3.2	10.0
3201	Quebracho extract	9.1	0.2	1.9	6.7
7219	Flat-rolled products of stainless s	8.5	2.2	1.8	2.1
8408	Compression-ignition internal combu	8.4	0.5	1.7	0.0
2841	Sodium dichromate	5.8	0.1	1.2	5.7
7201	Non-alloy pig iron containing by we	5.6	0.9	1.2	6.7
3814	Organic composite solvents & thinne	5.4	0.7	1.1	0.0
3603	Safety fuses; detonating fuses; per	5.1	0.2	1.1	0.0
7210	Flat-rolled products of iron/non-al	4.7	0.6	1.0	6.4
8474	Sorting/screening/separating/washin	4.7	1.4	1.0	3.2
8409	Parts suit. for use solely/principa	4.2	1.0	0.9	2.5
Total / Average		376.3	28.4	77.9	4.3

Source: Authors estimate based on the TRAINS (WITS) and TAO (WTO)

In terms of tariff barriers it is clear that majority of the BRCS partner countries had market access at an average MFN applied rate of 5 percent (nearly 4.8 % in the case of China and 4.5 % for Brazil) with the lowest average MFN applied rate being 3.5 percent for Russian Federation.

2.3 Non-Tariff Barriers Affected Value-Added Exports

The other side of the coin of market access - non-tariff measures (NTMs) - has been growing significantly in the global context. This is primarily driven by the increase in number of the Sanitary and Phytosanitary Measures (SPS) and Technical Barriers to Trade (TBT) measures. The NTMs have been analysed for the period of January 1995 to July 2013. The report uses Centre for WTO Studies database on the notification to the WTO SPS and TBT Committees. It may be noted none of the India's SPS notifications have targeted any region or country specifically. The results shown below in Table 20 are based on the product coverage. In respect of tariff lines analysed in the previous sub-section, India notified seven SPS measures to the WTO. These measures affected exports of Brazil and South Africa.

Table 20: SPS Barriers Faced by the Top 20 Export BRCS

Objective	Brazil	South Africa
Food safety		1 (2004)
Human Health	6 (1996)	
Total SPS measures	6	1

Note: The year of notification to the WTO is shown in parenthesis.

Source: Authors' calculation based on Centre for WTO Studies web portal on SPS and TBT database.

It is difficult to precisely quantify the impact of an SPS measure on trade of a country. However, a crude method would be to compare the share of global exports with bilateral exports to the market imposing an SPS measure. If the latter is lower than the former, one reason could be that the SPS measure has impeded the exports. Using this crude method, it is seen that the six SPS measure imposed on (3004-medicaments containing other antibiotics) have adversely affected Brazil's exports to India. This is evident from the fact that while this product had 7 percent share in Brazil's global exports, it had

only 1 percent share in bilateral exports to India. The product was also listed as the last in the top twenty value added exports from Brazil.

In case of SPS measure on Mannitol (2904), there may have been no significant impact on South Africa's exports to India. The share of this product in South Africa's global export basket was 0.3 percent, while its share in bilateral exports to India was 3.8 percent.

In the case of technical barriers to trade (TBT) measures, India has 47 different measures (notifications). 26 of these measures (55.3 %) are internationally accepted standards and therefore cannot be considered as being more restrictive than necessary. 21 measures are not based on international standards and instead are based on national⁴ standards, see Table 21. Brazilian (18 measures) and Chinese (15 measures) exports faced the maximum restriction in the Indian market; the two accounted for nearly 71 percent share of the total TBT measures (notifications).

Categorising the TBT measures on the basis of their objectives, it is observed that quality standards dominated with nearly 40 percent share. This was followed by consumer health and safety with 17 percent share and closely behind was environmental protection with nearly 15 percent share. In general it is evident that while the consumer health and safety and environmental protection are the major objectives for many of the TBT measures, in the case of China quality standards with 60 percent share is the significant objective of the measures.

⁴ The national measures are deviations from the international standards. Generally these measures could be based on the best practises available in the region or standards which are based on regional conditions

Table 21: TBT Barrier by India on BRCS Countries

Country/Nature	Certif.	Con. Health & Safety	Con. Prot.	Con. Prot. & Safety	Con. Safety	Envir. Prot.	Envir. Prot. & Human Health	Human Health & Saf.y	Qual. Stand.s	Total TBT Measures by India	Share of Countries /Products
China		2	1	1		1		1	9	15	31.9
Share in %	0.0	13.3	6.7	6.7	0.0	6.7	0.0	6.7	60.0	100.0	
International		2							8	10	21.3
2933									2	2	4.3
5903									5	5	10.6
7225		1								1	2.1
7304									1	1	2.1
8414		1								1	2.1
National			1	1		1		1	1	5	10.6
2941			1	1						2	4.3
8414						1				1	2.1
8517								1		1	2.1
8708									1	1	2.1
Russia Fed.		2	1			1		1	3	8	17.0
Share in %	0.0	25.0	12.5	0.0	0.0	12.5	0.0	12.5	37.5	100.0	
International		2							3	5	10.6
2844									2	2	4.3
7207		1								1	2.1
7326									1	1	2.1
8504		1								1	2.1
National			1			1		1		3	6.4
7225			1							1	2.1
8504						1				1	2.1
8526								1		1	2.1
South Africa		2	1					1	2	6	12.8
Share in %	0.0	33.3	16.7	0.0	0.0	0.0	0.0	16.7	33.3	100.0	
International		2							2	4	8.5
2809									1	1	2.1
2825									1	1	2.1
7210		1								1	2.1
8529		1								1	2.1

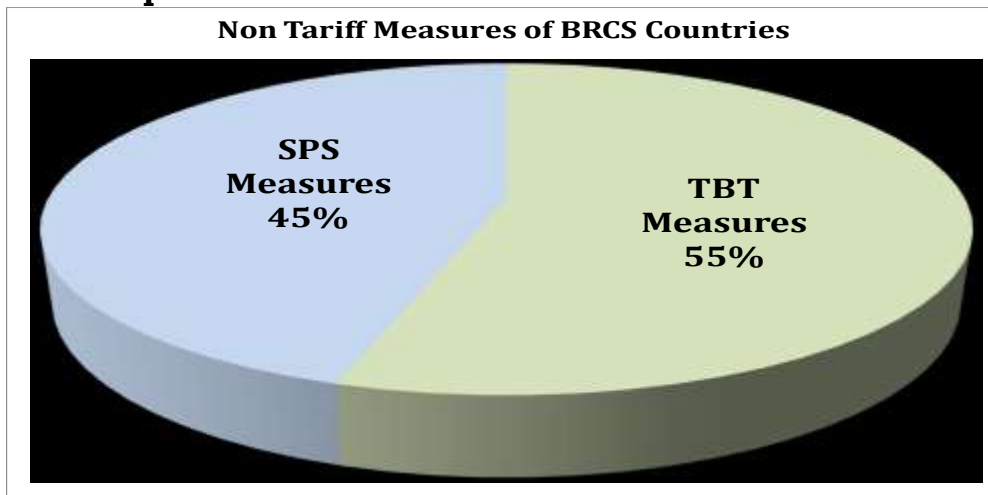
National			1					1		2	4.3
2905			1							1	2.1
8529								1		1	2.1
Brazil	1	2	1	2	1	5	1		5	18	38.3
Share in %	5.6	11.1	5.6	11.1	5.6	27.8	5.6	0.0	27.8	100.0	
International		2		1					4	7	14.9
2918									1	1	2.1
4011				1					1	2	4.3
7207		1								1	2.1
8414		1								1	2.1
8483									2	2	4.3
National	1		1	1	1	5	1		1	11	23.4
2918			1							1	2.1
3004				1						1	2.1
3301					1					1	2.1
4011	1						1			2	4.3
8414						1				1	2.1
8501						4				4	8.5
8708									1	1	2.1
Grand Total	1	8	4	3	1	7	1	3	19	47	100.0
Share in %	2.1	17.0	8.5	6.4	2.1	14.9	2.1	6.4	40.4	100.0	

Source: Authors Calculation based on Centre for WTO Studies web portal on SPS and TBT database.

2.4 Market access barriers faced by India in the BRCS Economies

The potentials for market access for India in the BRCS markets are determined by the range of average MFN tariffs levels and simultaneously the existence of non-tariff measures in the form of standards/technical regulations. The average MFN tariffs have been in the range of 4.7 (Brazil and China) to 3.5 percent in Russia. While the tariffs have been relatively on the lower side, it is observed that some of these countries maintain restrictions in the form of SPS and TBT measures.

Figure 6: Composition of SPS and TBT Measures in BRCS Countries



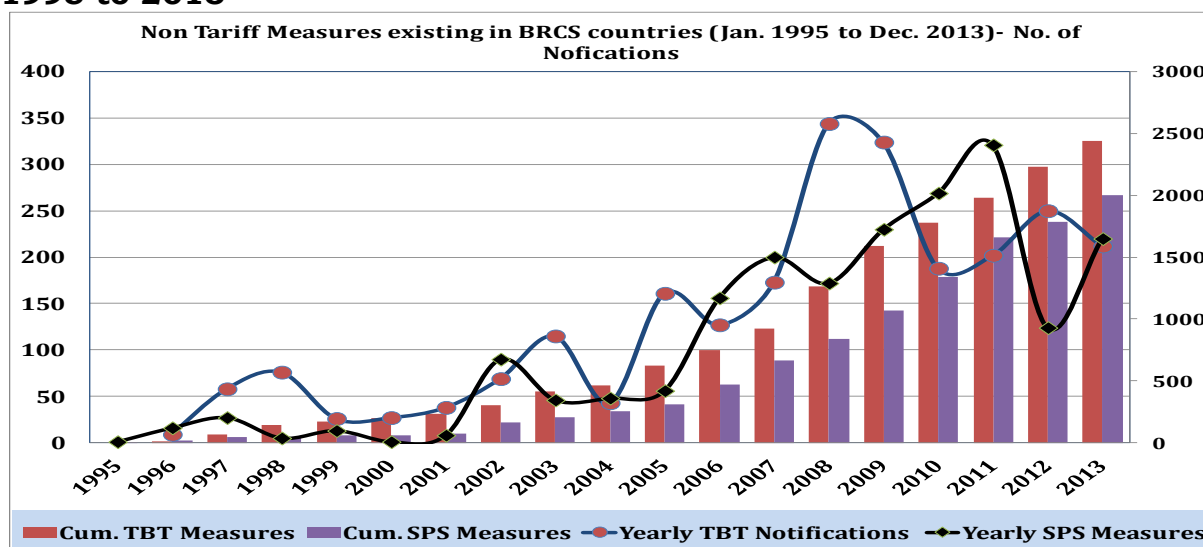
Source: Based on CWS Portal on SPS and TBT Database.

The BRCS countries have made approximately 4500 notifications to WTO under the SPS and TBT committees. Of these nearly 55 percent (2442) were TBT notifications and the rest of 45 percent (2003) were SPS notifications, see Figure 6. The yearly exponential growth trends during the period 1995 to 2013 suggest a growth of 17.2 percent and 30.6 percent respectively in TBT notifications and SPS notifications.

The MFN average tariffs have seen a decreasing trend over years in the BRCS markets. Simultaneously we can trace the increasing trend in non-tariff measures (NTMs) like SPS and TBT measures. This is evident both in terms of yearly notifications to the WTO and cumulative notifications. The TBT notifications increased from 9 notification in 1996 to 212 notifications by 2013 and SPS notifications increased from 1 notification in 1995 to 220 notifications by 2013. Therefore, during the period of 1995 to 2013 alone,

both TBT and SPS notifications to the WTO increased suggesting a shift in trade policy in favour of the usage of NTMs, see Figure 7.

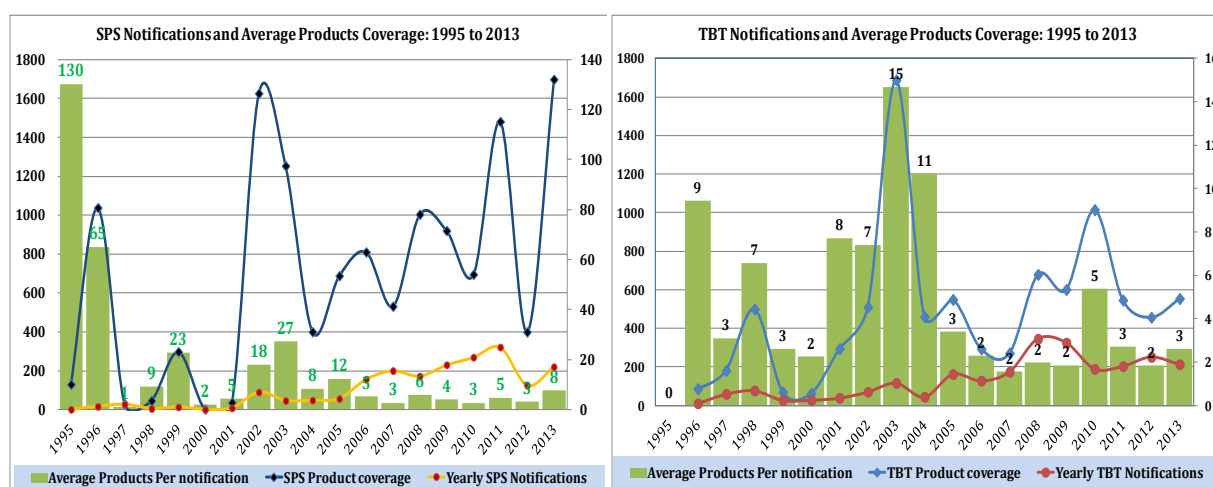
Figure 7: BRCS Members Notification of NTMs to WTO Secretariat: 1995 to 2013



Source: Based on CWS Portal on SPS and TBT Database.

In this report, as discussed in the earlier section in this chapter, the product coverage is defined as the number of products that are covered by single standard which gets notified to the WTO (in the case of SPS measures it could be maximum residual limits (MRLs) in vegetables/processed foods and feed or in the case of TBT it could be certification/licensing requirement or it could be as complex as technical specifications) by one notification; the range of coverage could vary from anything like 1 product to 1200 products at 4 digit level.

Figure 8: NTMs in BRCS Markets and their Average Product-coverage



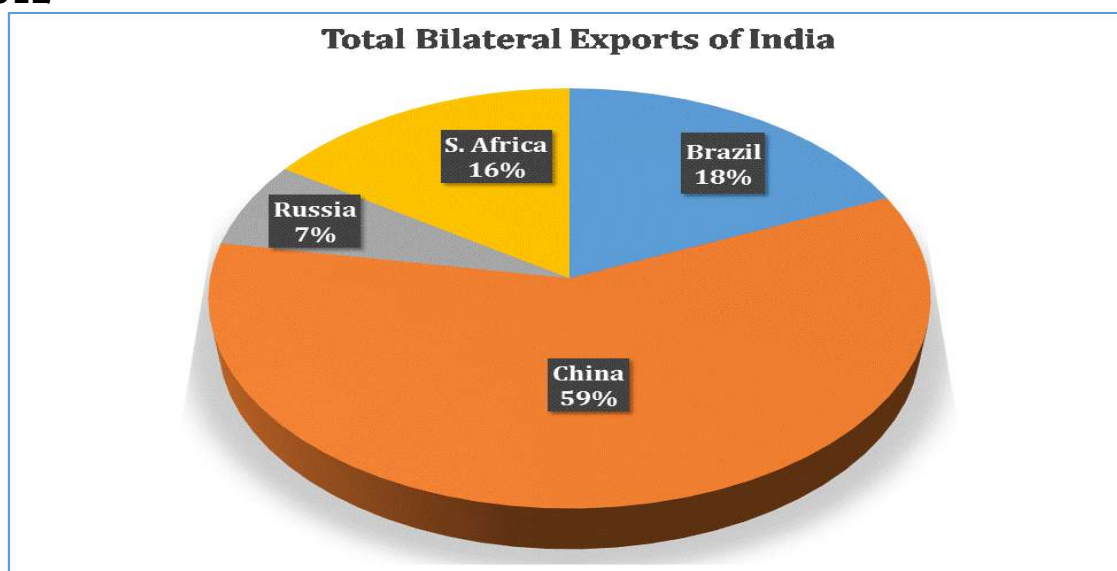
Source: Based on CWS Portal on SPS and TBT Database.

Figure 8 analyses the product coverage and finds that the SPS measures has higher products coverage than TBT measures for the period 1995 to 2013. This is evident from the average of 18 products per SPS notification when compared with the 5 products per TBT notification. In accordance with the global trends, the BRCS economies also suggested the SPS measures related food and feed safety to be dominating in terms of number of notifications and their product coverage.

2.4.1 Non-Tariff Measure⁵ and Product-wise Market Access

In this sub-section the market access is analysed from the point of view of the India's total exports (in values and shares) which are subjected to restrictions in BRCS countries/markets. To understand this phenomenon the report conducts detailed analyses of the total exports of India to world and BRCS countries. Comparing the difference in shares of the “*global Vs BRCS countries*” and trade under the “*products covered by NTMs Vs those products which are not covered by NTMs*”. Further draws conclusions on the probable real impacts on values of India's export coverage in term of shares.

Figure 9: Composition of India's exports to BRCS Countries: 2010 to 2012



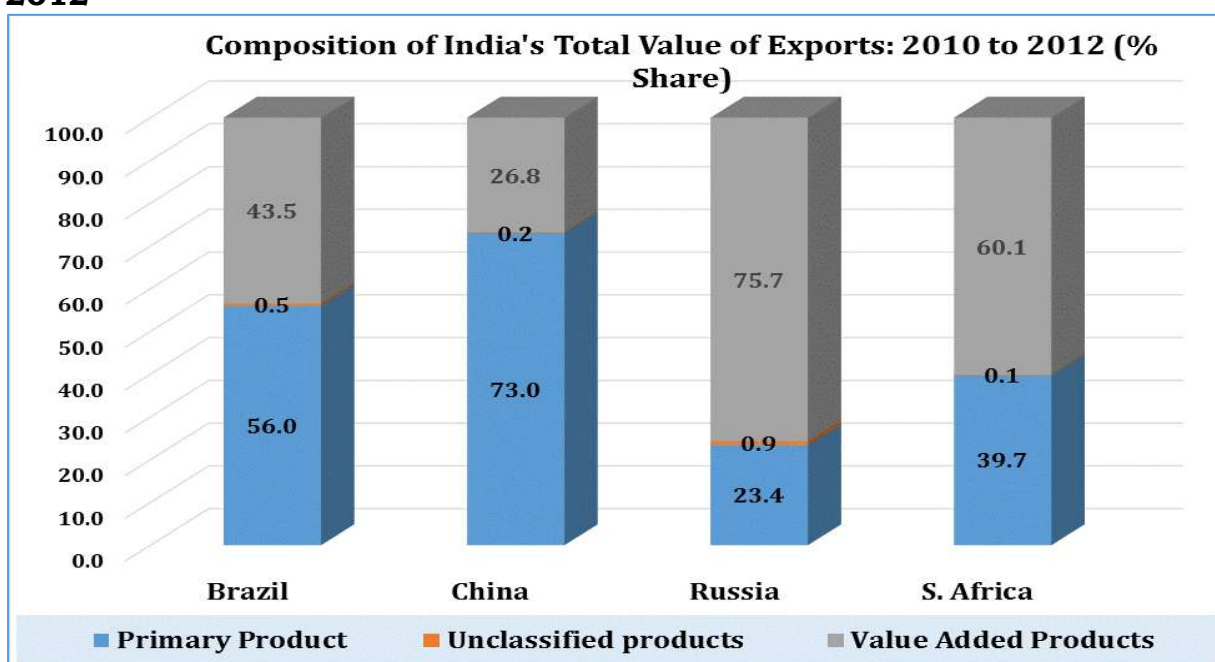
Source: Based on online data from WITS COMTRADE.

⁵ In this sub-section a cumulative impact analysis is undertaken. Cumulative analysis in the case of SPS and TBT measures would mean all the notifications since the formation of WTO to 31st December 2013 are taken together for market access impact analysis.

India's total exports to globe (2010 - 2012) has been US\$ 811.5 billion and to the four BRCS countries have been close to US\$ 82.5 billion having a share of 10.2 percent for the period of 2010 to 2012.⁶ China accounted for a majority share of 59 percent, followed by Brazil with 18 percent followed by South Africa with 16 percent share and Russian Federation with 7 percent shares.

Figure 9 clearly revealed that of the BRCS countries **China accounted for nearly 60 percent of India's exports.** Therefore, the first primary conclusion is clearly that any NTM restriction imposed by China would have a direct bearing on India's exports. At a very broad level, it is important to understand the composition of India's exports to each of the BRCS countries separately. It is therefore analysed in terms of exports of India undertaken for three broad categories: primary products; unclassified products and value added products. The observation suggests that China accounted for a very high share of primary products with 73 percent share (US\$ 48.9 billion) of India's exports. The rest of India's exports were under the categories of value added products with 26.8 percent share and unclassified products with 0.2 percent shares in China.

Figure 10: India's Exports composition to BRCS countries: 2010 to 2012



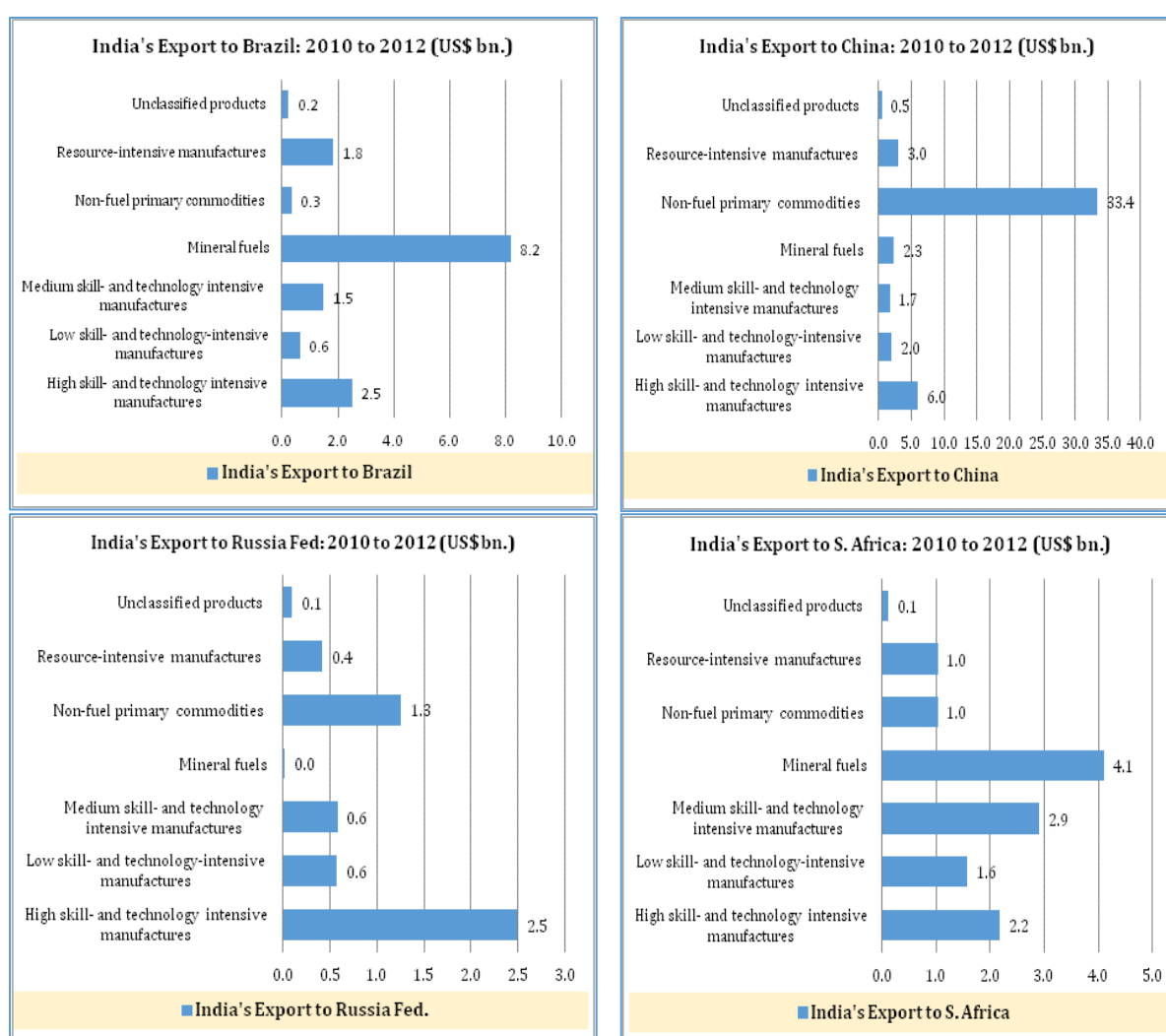
⁶ In the report, we have undertaken a three year analysis for a better coverage of bilateral trade, as in some year the bilateral exports may be missing at the heading level (4 digit HS).

Source: Based on online data from WITS COMTRADE.

India's exports to Brazil suggested a similar trend as seen in China. Of the US\$ 15.2 billion bilateral exports of India, close to 56 percent share was of primary product exports and the rest in value added exports (43.5 %) and unclassified products accounting for only 0.5 percent share.

India's exports to Russian Federation and South Africa suggested similarities in the composition in terms of distribution of shares between the primary and value added products.

Figure 11: Product based on Skill the Technological Intensity and India's Exports



Source: Based on online data from WITS COMTRADE and UNCTAD classification as provided in the TOR.

In both the economies value added products exported by India had a higher share. In South Africa of the US\$ 12.9 billion exports of India, the value

added exports share was nearly 60 percent. In the case of India's export to Russia with US\$ 5.4 billion and a share of 76 percent dominated by value added exports. A further detailed analysis of India's exports is carried-out to capture the exact segment of products (in term of skill and technology intensity) which are subjected to the NTM barriers. Therefore, India's exports are analysed in terms of seven product categories based on the nature of technology intensity and skill content used for the production of each of the products. The seven product categories are 1) high skill, 2) medium skill and 3) low skill and technology intensive manufactures and 4) mineral fuels, 5) non-fuel primary commodities, 6) resource-intensive manufactures and 7) unclassified products.

Figure 11 below analyses India's export under these seven product categories for the period 2010 to 2012. Further analysis provide evidence on the nature of products which are dominant. In Brazil mineral fuel with US\$ 8.2 billion exports and in China the non-fuel primary products with US\$ 33.4 billion accounted for 54 percent and 68 percent shares respectively.

In the other two BRCS countries *i.e.*, Russian Federation and South Africa it was the value added products dominated India's exports. It is clearly evident that in Russian Federation high skill- and technology intensive manufactures with US\$ 2.5 billion and a share of 46 percent was the dominant product category. In the case of South Africa, although India's mineral fuel exports was US\$ 4.1 billion with a share of 32 percent was dominant product category, but the three (High skill-, Medium skill- and low skill technology intensive manufactures) of the value-added products categories had US\$ 6.7 billion with 51 percent share.

Based on the composition of exports of India to the BRCS countries under the seven sectors, *prima-facie* it could be said that restrictions posed by NTMs like SPS and TBT measures in both China and Brazil were relatively more onerous for value added exports in comparison to the primary products exports. Similarly, the NTMs restrictions affecting the exports of India's primary product was relatively more onerous in comparison with the value added exports in Russian Federation and South Africa. However, this

conclusion would need a further confirmed based on the evidences which emerge from a detailed data analysis of the SPS and TBT measures and their product coverage in India's exports in the BRCS countries.

2.4.2 Actual Market Access Restrictions by the TBT and SPS Measures

The actual impact on the market access is determined by the product coverage of the NTMs in the TBT and SPS notification. Detailed discussion on the products coverage in the context of BRCS countries in the Indian market has been provided in the earlier section. In this section detailed analysis of the products coverage of each of four markets have been undertaken. The Tables 22 & 23 below analyses the shares of the NTMs (TBT and SPS measures). **It becomes important to look for the difference in India's export shares from "No TBT and SPS measures" to "TBT and SPS measures" shares; the negative difference can be termed as a more restrictive market and vice-versa.**

It is a difficult task to quantify the impact of SPS/TBT measures on trade. We use a rudimentary approach to assess the extent to which SPS/TBT measures of a country are constraining India's exports. Under this approach India's global and bilateral exports shares are disaggregated under 7 categories. If the exports are further divided into those facing SPS/TBT measures and those that do not face such measures. If bilateral exports share of products facing SPS/TBT measures is significantly lower than the share of global exports facing such measures then *prima facie* it can be concluded that these measures in BRCS country is adversely affecting India's exports. The conclusion is established on a firm basis if bilateral products share not facing SPS/TBT measures is higher than the corresponding share of global exports.

Table 22: TBT Measures and Actual Impact on Market Access (Shares of India's Export 2010 to 2012)

Product Classification (Based on Skill and Technological intensity)	Brazil		China		S. Africa		Russia Fed.	
	Global Shares	Bilateral Shares	Global Shares	Bilateral Shares	Global Shares	Bilateral Shares	Global Shares	Bilateral Shares
1. High skill- and technology intensive manufactures(VAP)	13.98	16.53	13.98	12.21	13.98	16.76	13.98	45.81
No TBT Measures	0.72	0.01	4.83	7.58	10.99	12.87	13.21	45.13
TBT Measures	13.26	16.52	9.15	4.63	2.99	3.90	0.76	0.68
2. Low skill- and technology-intensive manufactures (VAP)	8.59	4.18	8.59	4.07	8.59	12.23	8.59	10.58
No TBT Measures	5.10	2.40	2.15	3.55	7.65	11.61	7.80	10.52
TBT Measures	3.49	1.78	6.44	0.52	0.94	0.62	0.79	0.06
3. Medium skill- and technology intensive manufactures(VAP)	9.79	9.75	9.79	3.52	9.79	22.44	9.79	10.67
No TBT Measures	1.96	2.19	0.19	0.04	1.97	1.96	5.53	6.12
TBT Measures	7.83	7.56	9.60	3.49	7.83	20.48	4.26	4.55
4. Mineral fuels (PP)	18.36	53.83	18.36	4.78	18.36	31.77	18.36	0.33
No TBT Measures	18.26	53.82	18.36	4.78	18.36	31.77	18.21	0.33
TBT Measures	0.10	0.01	--	--	--	--	0.15	0.00
5. Non-fuel primary commodities (PP)	26.61	2.15	26.61	68.24	26.61	7.94	26.61	23.05
No TBT Measures	16.20	0.87	4.09	27.89	20.85	6.65	21.55	19.11
TBT Measures	10.41	1.28	22.52	40.35	5.76	1.29	5.06	3.94
6. Resource-intensive manufactures (VAP)	13.86	12.01	13.86	6.11	13.86	7.97	13.86	7.73
No TBT Measures	1.37	0.30	0.81	0.65	1.74	1.25	13.81	7.68
TBT Measures	12.49	11.71	13.05	5.46	12.12	6.72	0.05	0.05
7. Unclassified products (UP)	6.27	1.00	8.82	1.06	8.82	0.88	8.82	1.84
No TBT Measures	5.92	0.57	2.92	1.01	8.56	0.60	8.81	1.84
TBT Measures	0.35	0.43	5.89	0.05	0.25	0.29	0.01	0.00
Total of 1 to 7	97	99	100	100	100	100	100	100
Summary Results (Average of Shares)								
No TBT Measures	7.1	8.6	4.8	6.5	10.0	9.5	12.7	13.0
TBT Measures	6.8	5.6	11.1	9.1	5.0	5.5	1.6	1.3
Difference	0.2	3.0	-6.3	-2.6	5.0	4.0	11.1	11.6

Source: compiled from online WITS COMTRADE database and CWS SPS and TBT database.

Table 23: SPS Measures in BRCS Markets (Count and Values)

Product Classification (Based on Skill and Technological intensity)	Brazil		China		S. Africa		Russian Fed.	
	Global Shares	Bilatera 1 Shares	Global Shares	Bilatera 1 Shares	Global Shares	Bilatera 1 Shares	Global Shares	Bilatera 1 Shares
1. High skill- and technology intensive manufactures (VAP)	13.98	16.53	13.98	12.21	14.0	16.8	13.98	45.81
No SPS Measure	4.74	2.62	6.39	7.07	10.4	9.6	13.79	45.73
SPS Measure	9.23	13.91	7.59	5.14	3.6	7.1	0.19	0.08
2. Low skill- and technology-intensive manufactures (VAP)	8.59	4.18	8.59	4.07	8.6	12.2	8.59	10.58
No SPS Measure	8.31	3.91	8.32	4.05	8.6	12.2	8.18	10.28
SPS Measure	0.28	0.27	0.27	0.02	0.0	0.0	0.41	0.30
3. Medium skill- and technology intensive manufactures (VAP)	9.79	9.75	9.79	3.52	9.8	22.4	9.79	10.67
No SPS Measure	9.11	8.67	9.39	3.40	9.8	22.4	9.63	10.56
SPS Measure	0.68	1.09	0.40	0.12			0.16	0.11
4. Mineral fuels (PP)	18.36	53.83	18.36	4.78	18.4	31.8	18.36	0.33
No SPS Measure	18.36	53.83	18.36	4.78	18.4	31.8	18.36	0.33
SPS Measure							0.00	0.00
5. Non-fuel primary commodities (PP)	26.61	2.15	26.61	68.24	26.6	7.9	26.61	23.05
No SPS Measure	13.06	0.68	14.50	46.17	19.8	4.8	19.56	18.10
SPS Measure	13.55	1.47	12.11	22.07	6.8	3.2	7.05	4.95
6. Resource-intensive manufactures (VAP)	13.86	12.01	13.86	6.11	13.9	8.0	13.86	7.73
No SPS Measure	11.21	8.75	12.84	5.59	13.8	7.9	13.37	7.17
SPS Measure	2.65	3.26	1.02	0.52	0.0	0.0	0.49	0.56
7. Unclassified products (UP)	6.27	1.00	8.82	1.06	8.8	0.9	8.82	1.84
No SPS Measure	6.17	0.56	8.82	1.06	8.8	0.9	8.81	1.84
SPS Measure	0.10	0.44	0.00	0.00			0.00	0.00
Total of 1 to 7	100	100	100	100	100	100	100	100
Summary Results(Average of Shares)								
No SPS Measure	10.1	11.3	11.2	10.3	12.8	12.8	13.1	13.4
SPS Measure	4.4	3.4	3.6	4.6	2.6	2.6	1.2	0.9
Difference	5.7	7.9	7.7	5.7	10.2	10.2	11.9	12.6

Source: Based on CWS Portal on SPS and TBT Databases and WITS online database.

On the basis of the methodology stated alone, it is concluded that China's TBT measures in the following sectors are adversely affecting India's exports: high skill and technology intensive manufactures; medium skill and technology intensive manufactures and resource intensive manufactures. Russia's SPS measures in the following products categories can be considered to be significantly impeding India's exports: low skill and technology intensive manufactures; medium skill and technology intensive manufactures and non-fuel primary products.

The next chapter of the report we would be analysing the potential in the value added products using the various trade policy indices.

Section III

Trade in Value-Added Products - Potential Trade Analysis

3.1 Introduction

This section analyses India's export with BRCS for identifying value added products in which India's export potential has been exploited. The analysis also identifies products in which India has been unable to exploit the export potential.

3.1 Revealed Comparative Advantage for Value Added top twenty products

India's RCA have been analysed separately under the four UNCTAD sub-classification like: Resource-intensive manufactures; Low skill- and technology-intensive manufactures; Medium skill- and technology intensive manufactures and High skill- and technology intensive manufactures. Tables 22 to 25 list the top 20 products at 4 digit HS level on the basis of India's global RCA.

Among the resource intensive exports of India seven products at 4 digit had RCA of more than 10 (table 24). These are: (5310) woven fabrics of jute or of other textile; (5307) yarn of jute or of other textile bast fibres; (6304) other furnishing articles, excluding those of head; (5701) carpets and other textile floor coverings, knotted; (5205) Cotton yarn (other than sewing thread), containing; (4113) leather further prepared after tanning or crusting; (6214) shawls, scarves, mufflers, mantillas, veils and (4112) leather further prepared after tanning or crusting.

Table 24: India's Resource Intensive Manufacturers and RCA (2012)

Product Code	Tech Linked Classification	Revealed Comparative Advantage of India
5310	Woven fabrics of jute or of other textile bast fib	42.61
5307	Yarn of jute or of other textile bast fibres of he	41.70
6304	Other furnishing articles, excluding those of head	16.19
5701	Carpets and other textile floor coverings, knotted	15.14
5205	Cotton yarn (other than sewing thread), containing	14.74
4113	Leather further prepared after tanning or	12.90

	crusting	
6214	Shawls, scarves, mufflers, mantillas, veils and th	10.84
4112	Leather further prepared after tanning or crusting	9.51
7011	Glass envelopes (including bulbs and tubes), open,	9.41
5705	Other carpets and other textile floor coverings, w	9.37
5212	Other woven fabrics of cotton.	8.63
5515	Other woven fabrics of synthetic staple fibres.	8.30
6206	Women's or girls' blouses, shirts and shirt-blouse	7.50
5204	Cotton sewing thread, whether or not put up for re	7.14
4203	Articles of apparel and clothing accessories, of l	6.55
6305	Sacks and bags, of a kind used for the packing of	6.54
6209	Babies' garments and clothing accessories.	6.00
5809	Woven fabrics of metal thread and woven fabrics of	5.97
5908	Textile wicks, woven, plaited or knitted , for lam	5.56
6111	Babies' garments and clothing accessories, knitted	5.43

Source: Authors estimate based on the WITS COMTRADE online database. In the case of low skill-& technology-intensive products only one product – 8904 Tugs and pusher craft - had RCA more than 10 (table 25).

Table 25: India's Low Skill-& Technology-Intensive Manufactures and the RCA (2012)

Product code	Description	Revealed Comparative Advantage of India
8904	Tugs and pusher craft.	13.08
7325	Other cast articles of iron or steel.	8.36
7303	Tubes, pipes and hollow profiles, of cast iron.	8.20
7614	Stranded wire, cables, plaited bands and the like,	7.42
7223	Wire of stainless steel.	7.42
7222	Other bars and rods of stainless steel; angles, sh	6.20
7305	Other tubes and pipes (for example, welded, rivete	5.73
8905	Light-vessels, fire-floats, dredgers, floating cra	5.27
7419	Other articles of copper.	4.54
7418	Table, kitchen or other household articles and par	4.03
8711	Motorcycles (including mopeds) and cycles fitted w	3.99
7202	Ferro-alloys.	3.65
8204	Hand-operated spanners and wrenches (including tor	3.46
8906	Other vessels, including warships and lifeboats ot	3.45
7323	Table, kitchen or other household articles and par	2.92
7221	Bars and rods, hot-rolled, in irregularly wound co	2.88
8908	Vessels and other floating structures for breaking	2.69
7319	Sewing needles, knitting needles, bodkins, crochet	2.51
7311	Containers for compressed or liquefied gas, of iro	2.34
8201	Hand tools, the following : spades, shovels, matto	1.87

Source: Authors estimate based on the WITS COMTRADE online database.

Under the UNCTAD classification of medium skill- and technology intensive products no products had RCA more than 10 (table 26). In fact none of the products had an RCA exceeding 5.

Table 26: India's Medium Skill- & Tech. Intensive Manufactures and RCA (2012)

Product code	Description	Revealed Comparative Advantage of India
4013	Inner tubes, of rubber.	4.03
8706	Chassis fitted with engines, for the motor vehicle	3.15
8545	Carbon electrodes, carbon brushes, lamp carbons, b	2.55
8405	Producer gas or water gas generators, with or with	2.07
8435	Presses, crushers and similar machinery used in th	2.02
8402	Steam or other vapour generating boilers (other th	1.87
4014	Hygienic or pharmaceutical articles (including tea	1.77
8445	Machines for preparing textile fibres; spinning, d	1.74
8448	Auxiliary machinery for use with machines of headi	1.73
8546	Electrical insulators of any material.	1.67
8547	Insulating fittings for electrical machines, appli	1.54
8437	Machines for cleaning, sorting or grading seed, gr	1.53
3918	Floor coverings of plastics, whether or not self-a	1.35
8404	Auxiliary plant for use with boilers of heading 84	1.32
8455	Metal-rolling mills and rolls therefor.	1.31
4010	Conveyor or transmission belts or belting, of vulc	1.14
8487	Machinery parts, not containing electrical connect	1.14
4011	New pneumatic tyres, of rubber.	1.11
8468	Machinery and apparatus for soldering, brazing or	1.07
4008	Plates, sheets, strip, rods and profile shapes, of	1.05

Source: Authors estimate based on the WITS COMTRADE online database.

Table 27: India's High skill- & Technology Intensive Manufactures and RCA (2012)

Product code	Description	Revealed Comparative Advantage of India
2942	Other organic compounds.	42.77
2805	Alkali or alkaline-earth metals; rare-earth metals	14.19
2906	Cyclic alcohols and their halogenated, sulphonated	11.78
3301	Essential oils (terpeneless or not), including con	11.32
2920	Esters of other inorganic acids of non-metals (exc	7.46
3204	Synthetic organic colouring matter, whether or not	7.04
3706	Cinematographic film, exposed and developed, wheth	6.46
2823	Titanium oxides.	5.65
3205	Colour lakes; preparations as specified in Note 3	5.40
2831	Dithionites and sulfoxylates.	4.88
2939	Vegetable alkaloids, natural or reproduced by synt	4.83
2904	Sulphonated, nitrated or nitrosated derivatives of	4.78
2802	Sulphur, sublimed or precipitated; colloidal sulph	4.58
2913	Halogenated, sulphonated, nitrated or nitrosated d	4.48
3202	Synthetic organic tanning substances; inorganic ta	4.47
2941	Antibiotics.	4.29
2925	Carboxyimide-function compounds (including sacchar	3.91
2911	Acetals and hemiacetals, whether or not with other	3.74
2827	Chlorides, chloride oxides and chloride hydroxides	3.45
3211	Prepared driers.	3.41
Average RCA		7.94

Source: Authors estimate based on the WITS COMTRADE online database. The last of UNCTAD classification namely the high skill- and technology intensive manufactures has four products with RCA more than 10 (table 27). These are: (2942) other organic compounds; (2805) alkali or alkaline-

earth metals; rare-earth metals; (2906) cyclic alcohols and their halogenated, sulphonated and (3301) essential oils (terpeneless or not), including concentrated - products largely belong to the Chemical and Chemical Products sector.

3.2 India's Potential Value-Added Products in BRCS

In this subsection, we would be tracing India's value added exports in which exports potential is not fully exploited; products which have a high export potential across BRCS countries; and products with export potential in the BRCS partners but India does not have the supply capacity.

The export potential analysis, we focused on 846 "*value added products*" (HS 4 digits level) as identified by the UNCTAD⁷. Three variables are considered for the analysis: India exports to World; World imports from World; and total BRCS partners import from the World for the period 2010 to 2012 (US\$ current prices). Averages for the period taken for final assessment. The methodology followed to arrive at the scenarios is as specified: **step one** calculation of the average share of "India's exports to World *upon* total World Imports from World"; **Step two** calculate share of "India's bilateral exports to each of BRCS partners *upon* their (BRCS) total imports the World"; **Step three**, map the two sets of shares into one spreadsheet to be used as a common set of information based on the 4 digit HS codes. Finally we use this spreadsheet to undertake threshold analysis for identifying products in the three categories.

1) High Export Potential in BRCS partners' realised by India's exports:

For this analysis we have used a rather simple approach of taking the difference between the share of "India's bilateral exports *upon* BRCS imports from World" and "India's exports to World *upon* World imports from World". All HS 4 digit products with positive values (**or more than 0**) are categorised as "**high export potential in BRCS partners which are realised through India's exports**". The underlying logic is that if the share of a particular product in India's bilateral export basket exceeds the share of that product in India's global export basket, then that product can be said to have realised the export potential in the concerned BRCS country.

2) Value added exports not fully exploited:

Value added exports not fully exploited scenario is identified based on those 4 digit lines with negative values (**or less than zero**) of the difference in the

⁷ The category involved sub-categories like: High Skill-and Technology Intensive Manufacturing; Medium Skill-and Technology Intensive Manufacturing; Low Skill-and Technology Intensive Manufacturing and Resource Intensive Manufacturing.

shares of “India's bilateral exports **upon** BRCS imports from World” and “India's exports to World **upon** World imports from World”. A second criterion is **more than USD 10 million** used for the variable “India’s exports to World”. The underlying logic is that if the share of a particular product in India's bilateral export basket is lower than the share of that product in India's global export basket, then that product can be said to not to have realised the export potential in the concerned BRCS country. The additional filter of more than USD 10 million is used to ensure that India has the supply capacity to export that product.

3) High potential in BRCS partners’ with export supply constraint:

High potential in BRCS partners’ with export supply constraint scenario is identified based on those 4 digit lines with negative values of the difference in the shares of “India's bilateral exports **upon** BRCS imports from World” and “India's exports to World **upon** World imports from World”. A second criterion is of **less than USD 10 million** used for the variable “India’s exports to World”. The underlying logic is that if the share of a particular product in India's bilateral export basket is lower than the share of that product in India's global export basket, then that product can be said to not to have realised the export potential in the concerned BRCS country. The additional filter of less than USD 10 million is used as a proxy for India not having the supply capacity to export that product.

Table 28 provides a detailed account of number of India’s exports at the 4 digit level distributed across the three categories for each of four BRCS partners⁸.

Table 28: India’s Value Added Exports to BRCS Partners (under three categories)

Three Scenarios	(Count of products)			
	Brazil	China P.R.	Russian Federation	South Africa
Export potential realised by India	131 (15.5)	91 (10.8)	65 (7.7)	352 (41.6)
India's exports capacity not fully exploited	435 (51.4)	486 (57.4)	499 (59.0)	287 (33.9)
Existing market in partner with India facing SUPPLY CONSTRAINT	278 (32.9)	267 (31.6)	277 (32.7)	198 (23.4)
Not Categorised [@]	2 (0.2)	2 (0.2)	5 (0.6)	9 (1.1)
Four Digit Value Added (HS Codes)	846	846	846	846

Note: @ represents two common 4 digit HS codes across the BRCS partners these are 7006 (Glass of heading 70.03, 70.04 or 70) and 9302 (Revolvers and pistols, other than) due to absence of bilateral trade and the others are excluded codes due to the selection criteria’s. The figures in parenthesis are percentage shares.

Source: Based on Authors calculations.

India’s exports to BRCS partners (Brazil, China and Russian Federation) had a similar composition and the distribution of tariff lines across the three

⁸ One plausible limitation of this approach would be that it may be absolving the relative imports of different partner countries. For example, both China with the highest imports and the South Africa with the lowest are treated in same proportion using a common criterion across the four BRCS partners.

categories. However, South Africa showed some difference with the dominance of export potential items realised by India's exports having the highest number 352 products almost 42 percent share of total India's VA exports – the highest share across the BRCS partner countries observed under this category.

The three BRCS partners have similarities in terms of average composition of distribution of products under the three categories. The category of India's exports capacity not fully exploited had the highest average of 56 percent share, followed by the category of India not realising the export potential due to supply constraint at 32.3 percent share and the last was export potential realised by India's exports with a share of 11.3 percent. To sum up at the broad BRCS level we observe that close 50 percent of the products exported by India was under the category of export potential not fully exploited. One of the recommendations that emerges from this analysis is that some of these products (capacity not fully exploited) should be identified at the individual BRCS partner's level and India should explore the possibility for enhancing exports of these products.

A detailed discussion of the three categories of products in BRCS group-wise is undertaken in the next few sub-sections. BRCS partner country-wise detailed analysis at four digit level would bring out the differences.

3.2.1 India's Exports to Brazilian Market

Brazil had 131 tariff lines under the scenario of export potential realised by India and it accounted for 15.5 percent share of total 846 VA tariff lines. The dominant six products are: (8904) tugs and pusher craft; (5207) cotton yarn (other than sewing thread); (2942) other organic compounds; (6703) human hair, dressed, thinned, bleached; (2802) sulphur, sublimed or precipitated; and (6507) headbands, linings, covers, frames, visors, etc. chinstrap.

The category 'capacity not fully exploited' had 435 VA products accounting for 52.4 percent share. Out of these, six products had export exceeding USD 2,000 million. These are: (7113) articles of jewellery and parts the; (3004) medicaments (excluding goods of heading); (8703) motor cars

and other motor vehicles; (8517) telephone sets, including telephone; (8905) light-vessels, fire-floats, dredger; and (8708) parts and accessories of the motor. In Brazil, Chapter 87-vehicles other than railway or tramway rolling stock exports can be seen to among the products which faced export potential not fully exploited scenario.

278 VA products were identified under the category of products facing supply constraint with nearly 33 percent share. Some of the most severely affected products were: (8605) railway or tramway passenger coaches; (5405) artificial monofilament; (4405) wood wool; wood floor; (3803) tall oil, whether or not refined; (9604) hand sieves and hand riddles; and (9304) arms nesoi, other than side arms and similar arms.

3.2.2. India's Exports to China

In the Chinese market, India's exports had achieved its export potential in 91 different products. These products accounted for nearly 11 percent share. Three significant products in this category are: (5207) cotton yarn (other than sewing thread); (6802) worked monumental or building stone; and (2913) halogenated, sulphonated, nitrated. Products belonging to 28- inorganic chemical, organic/inorganic compounds of precious metals, isotopes and 29- organic chemicals, 30- pharmaceutical products largely belong to this category.

In China, the category of 'products in which India's exports capacity was not fully exploited' accounted for 486 HS 4 digit products with 57.4 percent shares. Nine products with export values of more than USD 2,000 million are: (7113) articles of jewellery and parts; (3004) medicaments (excluding goods of heading); (8703) motor cars and other motor vehicles; (8517) telephone sets, including telephone; (8905) light-vessels, fire-floats, dredger; (5205) cotton yarn (other than sewing threads); (8708) parts and accessories of the motor; (2942) other organic compounds; and (6204) women's or girls' suits, ensembles. It was found that products in which India could not fully exploit the market available belonged largely to Chapters: 84-nuclear reactors, boilers, machinery & mechanical appliances, computers; 85-electrical machinery & equip. & parts, telecommunications equipment,

sound recorders, television recorders; 29-organic chemicals; 72 – iron and steel; and 39-plastics & articles thereof.

Market existing in China but India's exports were faced with supply constraint was the last category for analysis. It was found that this category had 276 products with nearly 31.6 percent share. A total of 76 products had less than USD one million export value, and within this five products were critical and these are: (8605) railway or tramway passenger coaches; (5405) artificial monofilament; (4405) wood wool; wood flour; (3803) tall oil, whether or not refined; and (9604) hand sieves and hand riddles. The chapters with very high concentration of such products are: 28-inorganic chemical, organic/inorganic compounds of precious metals, isotopes; 84-nuclear reactors, boilers, machinery & mechanical appliances, computers; and 90-optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & accessories.

3.2.3. India's Exports to Russian Federation Market

Russia with 65 products, exhibits one of the lowest number of products under the category of export potential realised by India's exports. It accounted for a share of 7.7 percent. This clearly indicates low harvesting of the existing longstanding social and economic ties. There are five significant products in this category: (8803) parts of goods of heading 8801; (8906) other vessels, including warships; (2913) halogenated, sulphonated, nitrated; (5809) woven fabrics of metal thread; and (8487) Machinery parts, not containing electronics. In case of Russia, close to 33 percent of realised export potentials products were concentrated just in three Chapters: 28-inorganic chemical, organic/inorganic compounds of precious metals, isotopes; 84-nuclear reactors, boilers, machinery & mechanical appliances, computers; 85- electrical machinery & equip. & parts, telecommunications equipment, sound recorders, television recorders; and 72- iron & steel. It can be noted that there is very high concentration of the existing exports from India to Russian Federation.

The second category is the products in which India has the exporting capacity, but it failed to utilise its full potential. Russia has substantial

numbers of these products with 499 exports accounting for about 59 percent shares- the highest across the BRCS partner countries. The eight products in which the export values were more than USD 2,000 million are: (7113) articles of jewellery and parts thereof; (3004) medicaments (excluding goods of heading); (8703) motor cars and other motor vehicles; (8905) light-vessels, fire-floats, dredger; (5205) cotton yarn (other than sewing thread); (8708) parts and accessories of the motor; (2942) other organic compounds; and (6204) women's or girls' suits, ensembles. Nearly 40 percent of this category was concentrated in six chapters: 84-nuclear reactors, boilers, machinery & mechanical appliances, computers; 29-organic chemicals; 85- electrical machinery & equip. & parts, telecommunications equipment, sound recorders, television recorders; 72-iron & steel; 39- plastics & articles thereof; and 90-optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & accessories.

Supply constraint by India was observed in the case of 277 products, accounting for nearly 33 percent. 85 products had less than USD one million exports, with the most severely affected HS 4 digit products being: (8605) railway or tramway passenger coaches; (5405) artificial monofilament; (4405) wood wool; wood flour; (3803) tall oil, whether or not refined; and (9604) hand sieves and hand riddles. Nearly 32 percent of products were concentrated across six chapters like: 28-inorganic chemical, organic/inorganic compounds of precious metals, isotopes; 84-nuclear reactors, boilers, machinery & mechanical appliances, computers; 90-optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & accessories; 48- paper & paperboard, articles of paper pulp; 96- miscellaneous manufactured articles; and 38-miscellaneous chemical products.

3.2.4. India's Exports to South African Market

Among the BRCS partner countries, South Africa had the highest number of 352 products under the category of 'export potential realised by exports' with a share of 41.6 percent of the India's VA total exports. There are six

significant products in this category. These are: (8904) tugs and pusher craft; (8905) light-vessels, fire-floats, dredger; (2942) other organic compounds; (8706) chassis fitted with engines; (5113) woven fabrics of coarse animal hair; and (5705) other carpets and other textile floor. 45 percent share in this category was concentrated in chapters like: 84-nuclear reactors, boilers, machinery & mechanical appliances, computers; 85-electrical machinery & equip. & parts, telecommunications equipment, sound recorders, television recorders; 39- plastics & articles thereof; 28-inorganic chemical, organic/inorganic compounds of precious metals, isotopes; 72- iron and steel; 29-organic chemicals; 73- articles of iron or steel; 90- optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & accessories; and 48- paper & paperboard, articles of paper pulp.

The second category is products in which India has the export capacity, but it failed to utilise its full potential. South Africa accounted for 287 products (HS 4 digit) with a share of 34 percent which is the lowest under this category, across the BRCS partners. There are only three Indian products with export values more than USD 2,000 million: (7113) articles of jewellery and parts; (5205) cotton yarn (other than sewing thread); and (6204) women's or girls' suits, ensembles. 35 percent share under this category is concentrated in chapters: 84-nuclear reactors, boilers, machinery & mechanical appliances, computers; 29-organic chemicals; 28- inorganic chemical, organic/inorganic compounds of precious metals, isotopes; 85-electrical machinery & equip. & parts, telecommunications equipment, sound recorders, television recorders; and 72- iron and steel.

The last category is of products in which India suffered from supply capacity in South Africa. The number of such products was one of the lowest among the BRCS partner countries at 198 with a share of 23.4 percent. Only 59 products had less than USD one million export, while the most severely affected HS 4 digit products are: (8605) railway or tramway passenger coaches; (5405) artificial monofilament; (4405) wood wool; wood flour; and (3803) tall oil, whether or not refined. Concentration was observed under the 20 percent share in terms of chapters under this scenario and these are:

28-inorganic chemical, organic/inorganic compounds of precious metals, isotopes; 84-nuclear reactors, boilers, machinery & mechanical appliances, computers; and 96- miscellaneous manufactured articles.

To summarise the three categories, there are certain common HS products across 3 or 4 countries among the BRCS partner countries. It can be seen that under the first category of “export potential realised by Indian exports” only 23 products were found to be common across countries accounting for 11 percent of the total of 222 products. While in the case of second category “India's exports capacity not fully exploited” nearly 83 percent of products were found to be common to 3 to 4 countries of BRCS partners. Similarly, in the last category of “existing market in partner with India facing supply constraint” close to 84 percent of products were common to 3 or 4 countries.

Section IV

Conclusions and Recommendations

4.1 Conclusions

India's trade with BRCS partner's doubled in less than decade - it reached USD 100 billion by 2012. India's exports to BRCS countries doubled from US\$ 14 billion in 2007 to US\$ 28 billion by 2012. At the aggregate level India had an overall negative trade balance with the BRCS trading partners. This was reflected in India's negative trade balance with China, Russia Federation and South Africa. However India enjoyed a trade surplus with Brazil.

India's total imports from BRCS came from largely China, followed by South Africa, Russian Federation and Brazil. Close to 66 percent of India's imports from Brazil was in a single tariff line HS code 2709 petroleum oil and oils obtained from bituminous. Imports from South Africa were also concentrated in two lines accounting for 78 percent share in the total imports. On the other hand, India's imports from China and Russian Federation were less concentrated and were mostly of manufactured products.

UNCTAD has classified the products into two broad categories i.e., Primary Products and Value Added Products. In 2012, the product count in resource intensive products has 31 percent share with 10 percent share in value of exports. The high skill- & technology intensive manufactures had 24 percent share in terms of product count while it had only 19 percent share in value of exports. Medium skill- & technology intensive manufactures had 21 percent share of tariff lines but accounted for 9.7 shares in terms of value of exports. Similarly, skill- & technology intensive manufactures accounted for nearly 12 percent share in tariff lines, but in terms of value it accounted only 3.7 percent share. On the whole the category of Primary Products (PP), which includes the non-fuel primary commodities and mineral fuels accounted for 12.4 percent share of the total tariff lines and 58 percent share of the value of exports from India.

The dominant country (based on top 20 imports) for imports by India from among the BRCS partner's countries has been China, followed by South

Africa, Brazil and Russian Federation. All the top 20 imports from China and South Africa were mainly from the Value added products; while the imports from Brazil were substantially in primary products and imports from Russian Federation were partially from the latter. In terms of exports there was substantial overlap in the products that were in the top 20 products to each of BRCS countries. Unique 35 products accounted for nearly 67 percent of total of top 20 products exported by India to the BRCS partners. India's exports under the HS 6 digit products suggests that, while in terms of number of tariff lines the VA accounted for a majority of 88 percent in value of exports it only accounted 42 percent share in 2012. On the other hand, primary products which accounted for a meagre share of 12 percent in term of number of lines accounted for 47 percent share in value terms. Products with high value of Intra-industry trade accounted for a very low share in bilateral trade. This suggests that India is not closely integrated in value chains of the BRCS countries.

While tariff across countries have been converging by 2012, within a range of 7 to 15 percent, the extent of usage of non tariff measures which needs to be scrutinised. It could be said that India had lower WTO notified restrictions in the case of Sanitary and Phytosanitary Measures (SPS) when compared with Technical Barriers to Trade (TBT).

An analysis was undertaken to identify India's exports in three categories - value added exports in which exports potential is not fully exploited; products which have a high export potential across BRCS countries; and products with export potential in the BRCS partners but India does not have the supply capacity. While the general composition of products in the three categories to the BRCS countries showed considerable similarities, South Africa showed some crucial difference with the dominance of export potential items realised by India's exports having the highest number 352 products almost 42 percent share of total India's VA exports – the highest share across the BRCS partner countries observed under this scenario. It is seen that under the first category of “export potential realised by Indian exports” only 23 products were found to be common across BRCS countries accounting for 11 percent of the total of 222 products. While in the case of

second category “India's export capacity not fully exploited” nearly 83 percent of products were found to be common to 3 to 4 countries of BRCS partners. Similarly, in the last category of “existing market in partner with India facing Supply Constraint” close to 84 percent of products were common to 3 or 4 countries.

4.2 Recommendations

- 1 India having export capacity but not fully exploited category had nearly 50 percent share of the total Indian exports to BRCS. Clearly this calls for revamping the production structure in these tariff lines identified as having the export potential that has not been fully exploited. One reason could be the prevalence of behind the border measures and regulations in the importing partners.
- 2 Attempts should be made to overcome this problem by seeking mutual recognition of standards, testing procedures, conformity assessment and accreditation of testing laboratories.
- 3 Primary product (PP) has a higher share in India's export basket to BRCS when compared to value added (VA) products. Special initiatives are required to promote value added exports from India to BRCS.