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National Agricultural Marketing Council
Strategic positioning of South African Agriculture in dynamic global markets

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by Ron Sandrey and Nick Vink

Summary and some implications for South Africa

The aim of this chapter is to provide some background on the agricultural sectors in Russia, India and China. It starts with a comparative description of the agricultural sectors in these three countries from a global perspective before giving more details on agricultural production and trade in Russia, India and China, and concluding with perspectives on their agricultural policy.

We find that the BRICS[1] (Brazil, Russia, India, China and South Africa) are providing a slowly increasing share of world production; (42.4% in 2010), with China the dominant producer in the group. Similarly, some BRICS sit at the top table for world trade, with Brazil and China the second and third leading agricultural exporters respectively and India just making the top ten. China and Russia are both top-five importing countries. Overall, agriculture is very important to both India and China as measured by their direct contribution to GDP, but this has been steadily declining in the three economies examined. Meanwhile, despite recent spectacular Gross Domestic Product (GDP) growth rates, there is a range in the Gross National Income (GNI) per capita in the BRICS: from India's $3,620 as the lowest to Russia's $19,940 as the highest, with South Africa, China and Brazil having very similar figures about half-way between India and Russia.

Examining the individual agricultural sectors we find that since the breakup of the old Soviet Empire in 1991 Russian agriculture has been in turmoil, with agricultural production still lower than in 1990 even though Russia currently ranks amongst the top twelve producers globally in all of its major commodities. Livestock production declined more than the overall sector but cattle products (cow's milk and beef) still dominate overall production, followed by wheat and then chicken and pig meat. Meanwhile, grain and related crops dominate Russian exports, with wheat increasing to be some 40% of the total while exports of commodities such as sunflowers and sunflower oil, rapeseed oil and maize have increased from virtually zero to emphasise the emergence of a new agricultural system in Russia. The European Union (EU) is becoming less important as a destination as Africa (and

[1] The terms BRIC and BRICS tend to become confusing. We use the former term BRIC for Brazil, Russia, India and China (and BRICs for their collective term) while BRICS refers to the original BRIC grouping plus newly-joined South Africa.

Egypt in particular) is taking its place, and the linkages to the old Soviet Empire remain important. Import sources are globally widespread, with the EU remaining in the top spot. Brazil has become an active trading partner, while Africa as an entity would be just ahead of China in fourth place. Russia remains a net importer of agricultural goods, with exports ($9bn) barely a quarter of imports by value with Russia importing relatively higher value products (dairy and fresh fruit) as opposed to the grain exports.

Aggregate agricultural production in India has increased steadily in recent years, with most of the main products being familiar. The product rankings are consistent, reflecting a country with centuries of established agricultural expertise. The EU is India's major export market (but closely matched by challenges from China, the United States (US) and Vietnam) and is losing market share as India's total agricultural exports have increased some fivefold in little more than a decade. Africa as a whole would be in fourth place. Rice is both the largest commodity produced and exported in most years, but other exports such as cotton, beef, cane sugar and maize are increasing. Palm oil from Indonesia and soybeans from Argentina are the main imports.

China, home to some 1.33 billion persons, is a mountainous country with high plateaus and deserts in the west constraining arable land for permanent crops, a constraint that is accentuated by scarce water resources. Nevertheless, China has made dramatic strides in agricultural production in the last few decades and now produces nearly one-quarter of the world's agricultural output by value with most of the main commodities produced having global ranking of number one or two. China's biggest export destination is Japan, and if Africa was a country it would be ranked at fifth. Africa in aggregate would be in eleventh position as an import source while India has been the big import mover, followed by a similar growth from Indonesia, Argentina and, at number two, Brazil.[2] The composition of imports is changing as China's income growth has spurred changes in demand for more luxury-type foods. This is exemplified in the imports of protein for animal feeds, as soybean products and palm oil now constitute nearly 43% of China's agricultural imports.

Examining the general picture for support to agriculture, we find that both South Africa and Brazil join New Zealand, Australia and Chile as the least subsidised global agricultural producers. Support to Indian agriculture is hard to ascertain but seems to around that of the Organisation for Economic

[2] We note from recent 2012 Brazilian data that there has been a steep decline of almost 80% in Brazil's agricultural exports to China – chiefly as a result of a dramatic decline in exports of soybeans and related products. This is confirmed from Chinese import data for 2012.

and Cooperation Development (OECD) average, which would put it on a par with China but possibly just below Russia. In China transfers to specific commodities vary widely, while in India the tension between the desire to raise food prices for farmers but lower them for consumers leads to heavy intervention. In Russia support has increased through a tightening of border protection and an increase in budgetary transfers to the sector.

What can Africa learn from these three BRICs? Both Russia and India would seem to offer few lessons for Africa, but certainly the dramatic increase in Chinese agriculture can offer more. This increase started from an enabling macroeconomic and policy environment and was fuelled by an impressive research and development programme that focused on new plant varieties and the associated inputs to support their improved performance. Also, but not discussed in this chapter, China instigated an impressive extension service to deliver these technologies to every farmer. The threat from BRIC agricultural exports to Africa is discussed elsewhere in this book, while the increases in imports of higher-value products and wine into Russia, India and China as the wealth of their consumers increase offers export opportunities for South Africa.

1. Introduction

The aim of this chapter is to provide some background on the agricultural sectors in Russia, India and China.[3] The chapter starts with a comparative description of the agricultural sectors in these three countries from a global perspective before giving more details on agricultural production and trade in Russia, India and China. The chapter concludes with perspectives on agricultural policy, farm size structure and technologies employed in these three countries.

2. The big picture

The global importance of Russia, India and China as agricultural producers is shown in Table 1. Starting with total net production,[4] these countries are providing a slowly increasing share of world production; from 36.8% in 1995 rising to 42.4% in 2010. China is the dominant producer, followed by India and Brazil and with Russia significantly behind. Crop production is a much higher proportion of total agriculture in both India (74.8%) and China (70.3%) than globally (66.8%) or in the other three

[3] Brazilian agriculture is addressed in Chapter 8 and as a tralac working paper (Sandrey and Vink 2012).
[4] Net production is defined by the Food and Agricultural Organisation (FAO) as the value of production measured in monetary terms at the farm-gate level after the deduction of intermediate inputs used within the agricultural sector (seed and feed).

BRICS countries, and especially in Russia and South Africa where crop and livestock production are more evenly matched.[5]

The global trade profile for Russia, India and China is presented in Table 2. China ranks as the third largest agricultural exporter globally (after the US and Brazil), with India in tenth place and Russia in the twelfth. For agricultural importers, China is second, Russia fifth and India eleventh. Both sets of data show a significant underestimate of the percentage share of 'real' global agricultural trade, as intra-EU trade is included in the totals. As this figure is around one-third of the total value of the trade reported for the top fifteen traders globally, global shares without intra-EU trade may be around 50% higher than the data shown here. Brazil is a minor agricultural importer and South Africa does not rank in the top fifteen in either category. The economic downturn during 2009 is apparent, with only Indian imports showing an increase, while there has been a strong recovery since then. Note that this data using the World Trade Organisation (WTO) database does not reconcile with the individual data presented later for agricultural exports and imports using the Global Trade Atlas data.

[5] Note that the sum of crops and livestock is greater than the total for agriculture: feed for livestock is double counted.

Table 1 Agricultural production in Russia, India and China

	1995	2000	2005	2008	2009	2010
$ million						
Agriculture total						
Russia	34,556	32,495	36,957	39,601	41,996	37,172
India	145,298	162,815	179,671	210,414	204,977	222,168
China	280,801	352,375	422,804	475,036	486,844	499,450
World	1,461,741	1,668,448	1,890,714	2,068,610	2,093,182	2,129,307
% world total	36.8%	38.4%	40.1%	41.8%	41.7%	42.4%
Crops						
Russia	18,568	18,796	23,870	26,759	25,650	17,870
India	112,793	124,170	134,406	158,327	150,542	166,265
China	202,051	249,368	293,514	335,596	341,610	351,014
World	975,912	1,125,313	1,280,280	1,408,812	1,410,694	1,433,953
% world total	39.3%	39.9%	40.7%	43.0%	42.6%	43.4%
Livestock						
Russia	22,862	19,370	19,878	22,180	23,110	23,844
India	34,845	40,997	48,413	55,659	57,920	60,277
China	105,680	134,749	159,701	171,542	177,738	182,449
World	610,168	679,081	755,976	813,125	827,065	
% world total	32.4	35.1	37.5	38.3	38.9	39.3

Source**:** FAOSTAT (2012)

Table 2: Agricultural trade by value and by share

		Value $bn	% World Share			Annual % change			
Rank	Exporters	**2011**	**1990**	**2000**	**2011**	**2005-11**	**2009**	**2010**	**2011**
4	China	65	2.4	3.0	3.9	14	-3	26	25
10	India	34	0.8	1.1	2.1	22	-23	41	49
12	Russia	30	-	1.4	1.8	13	-16	4	38
	Importers								
2	China	145	1.8	3.3	8.3	21	-12	41	34
5	Russia	41	-	1.3	2.3	16	-15	20	17
11	India	23	0.4	0.7	1.3	20	18	26	26

Source: WTO. [Online]. Available: http://www.wto.org/english/res_e/statis_e/its2012_e/its12_merch_trade

The data in Table 3 describes the general macroeconomic profile of the three countries and provides a perspective by firstly showing the GNI per capita expressed in US dollars followed by recent GDP growth rates. There is a range in the GNI per capita, from India's $3,620 as the lowest to Russia's $19,940 as the highest, with that of South Africa and Brazil very similar and that of China closing in on South Africa. The GDP growth rate in the lower half of the table similarly shows a variation, with China's well-known stellar performance evident and South Africa's struggle to keep pace. The 2009 year was not a good one for Brazil, Russia and South Africa as the global economic downturn hit, with Russia experiencing a significant decline in GDP. The power of compounding is apparent from the GNI per capita data for China: the 2011 GNI of $8,450 is some 51% higher than the 2007 figure. Conversely, South Africa's GNI per capita grew by only 12% over the same period.

Table 3: GNI per capita and GDP growth rates

GNI per capita, Purchasing Power Parity (PPP) (current international $)					
	2007	**2008**	**2009**	**2010**	**2011**
Brazil	9,570	10,160	10,180	11,000	11,500
Russia	16,350	19,850	18,270	19,190	19,940
India	2,720	2,840	3,070	3,340	3,620
China	5,580	6,230	6,820	7,530	8,450
South Africa	9,620	10,090	10,040	10,330	10,790
GDP growth (annual %)					
Brazil	6.1	5.2	-0.3	7.5	2.7
Russia	8.5	5.2	-7.8	4.3	4.3
India	9.8	3.9	8.2	9.6	6.9
China	14.2	9.6	9.2	10.4	9.3
South Africa	5.5	3.6	-1.5	2.9	3.1

Source: World Bank. [Online]. Available: http://data.worldbank.org/country

This GDP data is extended in Table 4 to introduce the World Bank forecasts through to 2014 for the five countries. Here the World Bank is suggesting that each of the five countries will remain on their same growth trajectory, albeit with South Africa still marginally below Brazil and Russia but with these three significantly below both India and China.

Table 4 World Bank GDP growth forecasts

	2010	2011	2012[e]	2013[f]	2014[f]
Brazil	7.5	2.7	2.9	4.2	3.9
Russia	4.3	4.3	3.8	4.2	4
India	9.6	6.9	6.6	6.9	7.1
China	10.4	9.2	8.2	8.6	8.4
South Africa	2.9	3.1	2.7	3.4	3.5

Source**:** World Bank forecasts. [Online]. Available: http://data.worldbank.org/country

Table 5 shows firstly the share of agricultural value added in each country followed by the annual percentage change in this figure. Agriculture is more important in the BRIC countries than in South Africa, and especially so in the Asian economies of India and China. While this direct contribution of agriculture to GDP has been steadily declining in all the economies, the relative decline in South Africa has been more pronounced. Overall a declining role for agriculture in the economy is not necessarily a bad thing, but when set against the real problem of rural poverty and the lack of industrial expansion that besets South Africa, and combined with modest GDP growth, it is a problem for the country.

Table 5: Agricultural value added

	2007	2008	2009	2010	2011
Agriculture, value added (% of GDP)					
Brazil	5.6	5.9	5.6	5.3	5.5
Russia	4.4	4.4	4.7	4.0	
India	18.3	17.8	17.7	17.7	17.2
China	10.8	10.7	10.3	10.1	10.0
South Africa	3.4	3.2	3.0	2.5	2.4
Agriculture, value added (annual % growth)					
Brazil	4.8	6.3	-3.1	6.3	3.9
Russia	1.3	6.4	1.3	-10.7	
India	5.8	0.1	1.0	7.0	2.8
China	3.7	5.4	4.2	4.2	4.3
South Africa	3.5	10.9	-3.2	5.0	0.7

Source: World Bank. [Online]. Available: http://data.worldbank.org/country

3. The production and trade performances of Russia, India and China

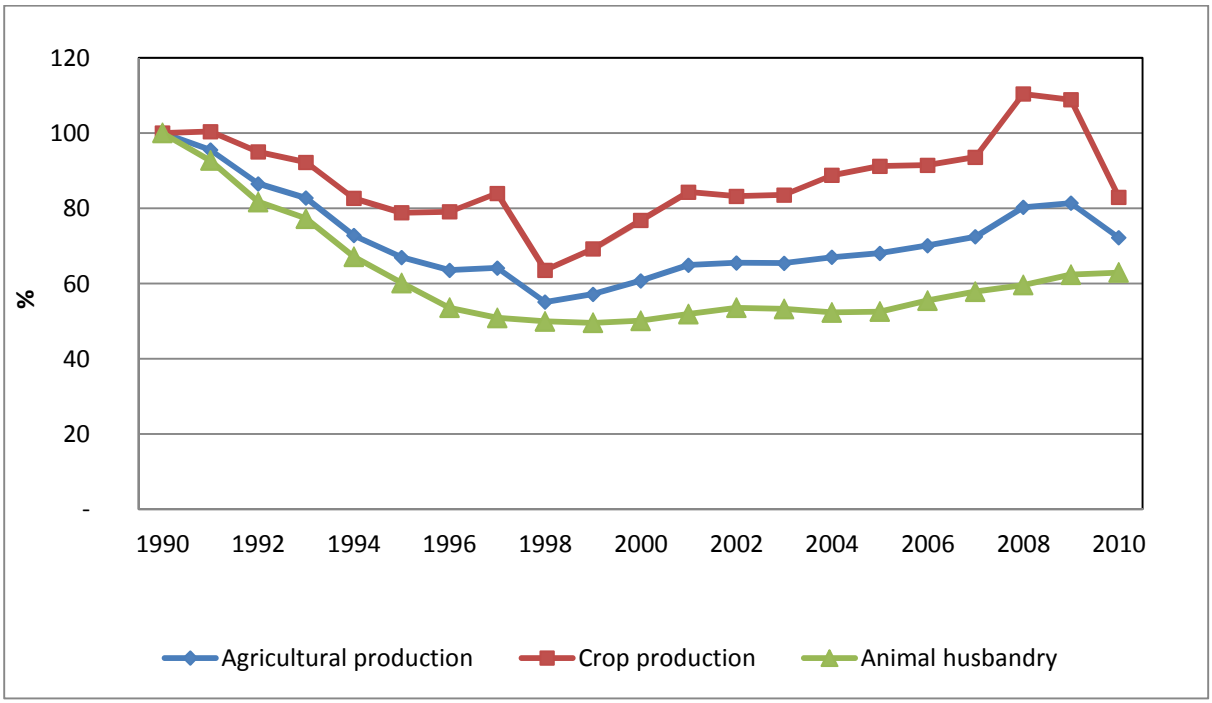
From the FAO database we extracted the values of the 15 largest agricultural products by value for each country, with the discussion of each country following the same format where possible. Data for the half-decades ending in 1995, 2000, 2005 and 2010 are used, along with the 2010 global ranking of production in the respective country/commodity under 'rank'. From there the Global Trade Atlas data was used to present the details on agricultural trade. For the trade data we use the first available year in the 1990s, followed by 2000, 2005 and the last three years (2009 to 2011) inclusive, with all data in US dollars (millions) unless otherwise stated, and at the HS 6 line level. This latter feature means that sometimes the same commodity may appear twice as these commodities are similar at this level of disaggregation (India with palm oil is an example). For a detailed analysis of South Africa's agricultural trading relationship with BRICs, see Chapter … for South African exports and future prospects to these destinations, and Sandrey et al. (2012) for competition from BRICs in the African market.

3.1 Russia

Following the breakup of the Soviet Union in 1991, the Russian agricultural sector faced turmoil. The large collective and state farms had to contend with the sudden loss of state-guaranteed marketing and supply channels and a changing legal environment that created pressure for reorganisation and restructuring. Aggregate agricultural production is shown in Figure 1, where the decline following the breakup of the old Soviet system is apparent. Total agricultural production is still lower than in 1990, with livestock production experiencing the biggest difficulties. Furthermore, the impact of the 2010 drought on crop production is plain to see.

Table 6 shows the main agricultural products in the Russian agricultural sector. Cattle products (cow's milk and beef) dominate, followed by wheat and then chicken and pig meat. Russia ranks amongst the top twelve producers globally in all of these commodities, with sunflower seeds and 'other meats' ranked number two. Yet the dollar value for several of these commodities in 2010 was lower than their nominal values in 1995, with a few (notably wheat and chicken) actually increasing.

Figure 1: Net agricultural production in Russia, Index 1990 = 100



Source: Kiselev and Romashkin (2012); data supplied by the ICTSD

Table 6: Russian agricultural production, 1995-2010

Commodity	1995	2000	2005	2010	Global rank
	$ million				
Cow milk	8 575	8 386	8 254	8 855	6
Beef	7 365	5 119	4 840	4 648	7
Wheat	1 249	2 607	4 702	4 104	5
Chicken	1 224	1 071	1 890	3 631	5
Pig meat	2 863	2 411	2 325	3 491	8
Hen eggs	1 556	1 571	1 700	1 875	6
Potatoes	4 056	3 181	3 547	1 563	5
Sunflower seed	1 087	989	1 642	1 361	2
Sugar beet	793	589	853	925	3
Tomatoes	739	623	848	757	12
Sheep meat	650	324	367	446	11
Apples	507	775	755	417	12
Cabbages, etc.	258	482	341	409	3
Vegetables, other	681	264	462	392	11
Meat, other	7		8	387	2

Source: FAOSTAT (2012)

Table 7 shows the performance and destination of Russia's agricultural exports. The emergence (and importance) of new markets such as Egypt and, to a lesser extent, Turkey is notable, while the predominance of the republics of the former Soviet Empire is as expected. There has also been a large continental shift. The EU now absorbs just more than 16% of exports compared to more than half less than 15 years ago, even though it remains the single largest destination. On the other hand, were Africa to be included as a country, it would be in number one place with $2,190 million of exports, thanks largely to the contribution from Egypt.

Table 7: Russian agricultural exports by destination, 1997-2011

Partner country	1997	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
EU	839	53.00	483	552	980	792	1489	16.38
Egypt	2	0.13	16	344	867	907	1342	14.77
Turkey	110	6.95	79	79	545	473	1024	11.27
Ukraine	44	2.78	81	441	526	566	730	8.03
Azerbaijan	20	1.26	45	213	435	340	556	6.12
Saudi Arabia	31	1.96	5	98	245	125	379	4.17
Israel	35	2.21	31	63	127	103	243	2.67
Uzbekistan	67	4.23	11	14	133	133	230	2.53
Armenia	5	0.32	3	47	157	146	177	1.95
Kyrgyzstan	16	1.01	12	64	118	118	175	1.93
World	1583	100	1200	3564	7747	5921	9088	100
Top 10 as % of total	73.80		63.80	53.70	53.30	62.50	69.80	

Source: Global Trade Atlas (2012)

Table 8 shows the composition of these exports. Grain and related crops dominate, with wheat (whose production has increased as was seen above) increasing from less than 6% of the total to some 40%. Several exports (sunflowers and sunflower oil, rapeseed oil and maize) have grown from virtually zero to several percentage points, emphasising the emergence of a new agricultural system in Russia over a relatively short period. In this process, Russian farmers are concentrating on a smaller number of commodities – the ten largest exports have increased from a fifth to almost two-thirds of total exports.

Table 8: Russian agricultural exports by commodity, 1997-2011

Commodity	1997	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
Wheat	85	5.37	42	1127	2727	2056	3641	40.06
Barley	120	7.58	44	203	421	195	483	5.31
Sunflower	12	0.76	58	168	375	210	397	4.37
Cigarettes	5	0.32	3	128	313	276	317	3.49
Wheat flour	16	1.01	31	43	121	36	220	2.42
Sunflower oil	6	0.38	15	24	176	164	211	2.32
Rapeseed oil	0	0.00	0	3	53	77	177	1.95
Vodka	69	4.36	31	54	134	147	164	1.80
Maize	0	0.00	0	6	187	42	156	1.72
Cocoa reparations	15	0.95	21	73	230	129	153	1.68
World	1583	100	1200	3564	7747	5921	9088	100
Top 10 as % of total	20.70		20.40	51.30	61.10	56.30	65.10	

Source: Global Trade Atlas (2012)

Table 9 shows the sources of Russia's major agricultural imports: all of the top ten sources of imports have increased their market share, with the notable exception of the US, which has lost more than half of its share since 1995 despite maintaining the value of its exports to Russia. These sources are more globally widespread than the export destinations, with the EU remaining in the top spot throughout the period under review. Brazil has become an active trading partner, almost tripling its share of the Russian market and taking the number two spot.[6] Africa as a country would be just ahead of China in fourth place. It is also evident from this data that Russia remains a net importer of agricultural goods, with exports ($9bn) barely a quarter of imports by value.

[6] Note that Brazil's exports to Russia declined by almost half between 2011 and 2012, when Brazil's total agricultural exports declined by almost a third.

Table 9: Russian agricultural imports by source, 1997-2011

Source	1997	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
EU	4765	37.04	2288	5094	8857	11703	14330	38.60
Brazil	389	3.02	370	2117	3232	3826	3824	10.30
Ukraine	750	5.83	626	1410	1390	1917	2065	5.56
China	333	2.59	149	591	1022	1192	1554	4.19
United States	1495	11.62	702	849	1724	1288	1552	4.18
Turkey	136	1.06	91	376	1106	1449	1543	4.16
Ecuador	103	0.80	156	463	791	878	1189	3.20
Argentina	187	1.45	85	565	1021	764	818	2.20
Indonesia	96	0.75	53	207	278	467	631	1.70
Canada	120	0.93	32	64	259	307	501	1.35
World	12866	100	7315	15726	26223	31324	37129	100
Top 10 % total	65.10		62.20	74.60	75.00	76.00	75.40	

Source: Global Trade Atlas (2012)

Russia sources a wide range of commodities from overseas markets. Even though the share of the ten largest import commodities has increased, it is still less than a third of total imports, as opposed to the almost two-thirds share of the ten largest export commodities. It is also clear that Russia is importing relatively higher value products (dairy and fresh fruit) as opposed to the grain exports.

Table 10: Russian agricultural imports by commodity, 1997-2011

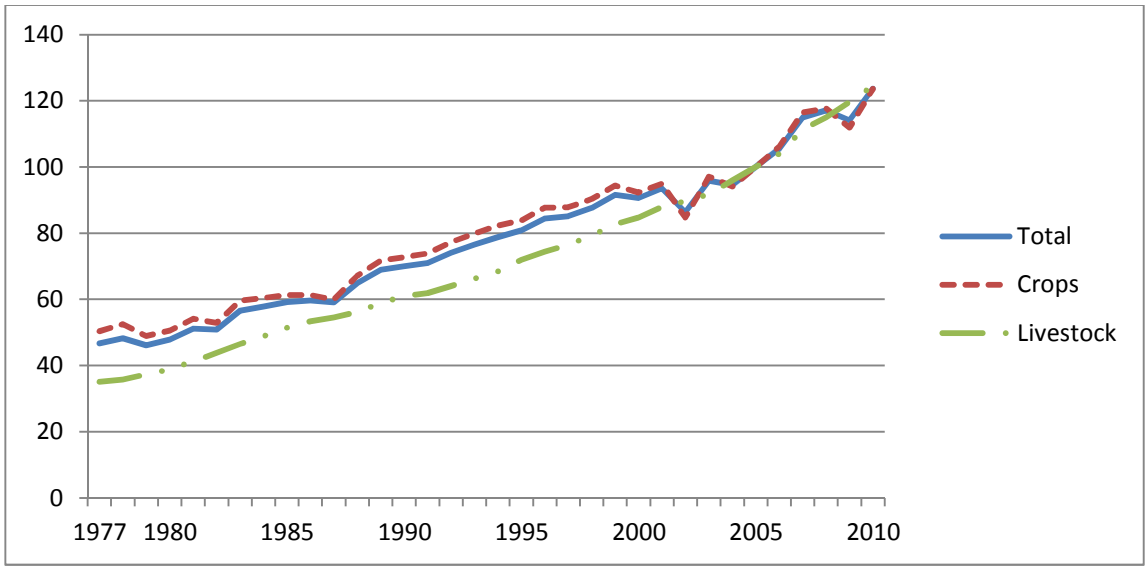
Commodity	1997	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
Beef	379	2.95	143	803	2118	2013	2156	5.81
Pig meat	224	1.74	86	549	1471	1541	1715	4.62
Cane sugar	806	6.26	690	742	504	1151	1539	4.15
Cheese	106	0.82	44	570	743	1135	1219	3.28
Bananas	154	1.20	175	449	628	694	948	2.55
Tobacco	99	0.77	260	496	804	790	945	2.55
Tomatoes	110	0.85	42	216	640	755	813	2.19
Other food preparations	188	1.46	37	266	504	677	769	2.07
Apples	219	1.70	82	294	537	633	757	2.04
Palm oil	76	0.59	51	300	454	643	726	1.96
World	12866	100	7315	15726	26223	31324	37129	100
Top 10 % of total	18.40		22.00	29.80	32.00	32.00	31.20	

Source: Global Trade Atlas (2012)

3.2 India

Aggregate agricultural production for India is shown in Figure 2, starting in 1977. Production has increased steadily throughout the period, with livestock catching up on the crop index in the new millennium.

Figure 2: Net agricultural production in India



Source: FAOSTAT (2012) Note: Index, 2004-2006 = 100

The main agricultural commodities produced in India are shown in Table 11, along with their global rankings. Apart from tomatoes (3rd), soybeans (4th) and poultry meat (6th), India is the largest or second largest producer by value of its most important commodities. Most of the products are familiar ones, but the inclusion of buffalo milk at number two and buffalo meat nearer the bottom is different (and may inspire South Africans to seek buffalo milk from their herd). There is consistence throughout the table, as one would expect from a country that has had several centuries of established agricultural production and has not gone through the turmoil of the post-Communist eras of China and especially Russia.

India's export destinations are shown in Table 12. As with Russia, the EU is the major market but has lost market share despite a near tripling of exports there – India's agricultural exports have increased some five-fold in little more than a decade. China and Vietnam have both become more favoured destinations, while the US has lost ground despite an almost fourfold increase in exports. These top ten export destinations have maintained a consistent 60 to 65% market share over the period. Africa as a whole would be in fourth place.

Table 11: Indian agricultural production, 1995-2010

Commodity	1995	2000	2005	2010	Rank
Rice	30 618	33 871	36 686	38 425	2
Buffalo milk	14 308	17 322	20 769	24 870	1
Cow milk	8 337	10 288	12 407	17 133	2
Wheat	9 858	11 499	10 277	12 146	2
Mangoes, etc.	6 591	6 293	7 088	9 004	1
Sugar cane	8 460	9 141	7 279	8 926	2
Bananas	2 868	3 982	5 319	8 387	1
Cotton lint	3 125	2 345	4 495	8 139	2
Vegetables, other	3 805	5 395	4 169	5 978	2
Potatoes	2 638	3 892	4 435	5 678	2
Tomatoes	1 944	2 746	3 262	4 595	3
Buffalo meat	3 156	3 380	3 660	4 009	1
Soybeans	1 312	1 343	2 132	3 336	4
Onions	857	9 92	1 981	3 175	2
Chicken meat	865	1 233	1 999	3 124	6

Source: Global Trade Atlas (2012)

Table 12: Indian agricultural exports by destination, 1999-2011

	1999	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
EU	1127	23.35	1006	1468	2016	2435	3234	10.66
China	50	1.04	61	362	1029	2424	3204	10.56
United States	713	14.77	647	868	990	1264	2924	9.64
United Arab Emirates	265	5.49	281	512	1367	1535	2020	6.66
Vietnam	28	0.58	41	208	970	1072	1780	5.87
Bangladesh	300	6.22	182	649	740	1096	1694	5.58
Saudi Arabia	406	8.41	383	611	1004	1151	1317	4.34
Indonesia	108	2.24	126	223	353	565	1208	3.98
Malaysia	118	2.44	157	284	600	819	1124	3.70
Iran	55	1.14	23	63	611	570	858	2.83
World	4827	100.00	4611	8835	14871	20465	30344	100.00
Top 10 % of total	65.70		63.00	59.40	65.10	63.20	63.80	

Source: Global Trade Atlas (2012)

Rice is not only the largest commodity produced by India's farmers by value, but has also been the main agricultural export over most of the period (Table 13). The rapid rise in exports means that even the tripling in value of rice exports has resulted in a steep decline in export share. Cotton and beef are catching up rapidly, while cane sugar and maize, of interest to South Africa, are also increasing rapidly. India is a 'swing' global trader in sugar, as Table 11 shows it to be a major producer and, combined with a very large population, small variations in crop yields can make a significant difference to the net trading position. In some years (e.g. 2009), India is even a net importer of sugar.

Table 13: Indian agricultural exports by commodity, 1999-2011

Commodity	1999	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
Rice	916	18.98	631	1692	2373	2284	3774	12.44
Cotton	15	0.31	9	323	1191	2997	3211	10.58
Beef	90	1.86	161	529	946	1681	2505	8.26
Soybean oilcake	357	7.40	462	638	1365	1659	2158	7.11
Mucilages[1]	165	3.42	165	218	213	480	1893	6.24
Cane sugar	1	0.02	21	17	5	594	1817	5.99
Maize	0	0.00	2	61	501	516	1045	3.44
Peanuts	69	1.43	59	79	263	394	914	3.01
Cashew nuts	563	11.66	424	620	578	562	849	2.80
Castor oil	192	3.98	195	229	337	576	823	2.71
Total	4827	100	4611	8835	14871	20465	30344	100
Top 10 % of total	49.10		46.20	49.90	52.30	57.40	62.60	

Source: Global Trade Atlas (2012) Note: [1]A gelatinous substance of plant origin

India's main sources of imports are shown in Table 14, with Indonesia (palm oil) overtaking Malaysia as the largest source. Import sources are also becoming more concentrated, with the top ten sources increasing their share of the Indian market from three-quarters to almost 85%. Africa ranks second, just marginally ahead of Malaysia. India is a net exporter by value of agricultural products, with imports dropping from 78% of exports to 54%.

Table 14: Indian agricultural imports by source, 1999-2011

	1999	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
Indonesia	355	9.34	427	1189	3120	4035	5323	32.50
Africa	394	10.37	440	625	1013	1045	1570	9.58
Malaysia	926	24.37	528	289	793	812	1564	9.55
Argentina	304	8.00	316	587	535	931	1007	6.15
Ukraine	25	0.66	6	7	399	526	839	5.12
China	170	4.47	147	266	463	473	809	4.94
EU	279	7.34	139	216	354	481	777	4.74
United States	263	6.92	200	286	616	827	762	4.65
Canada	62	1.63	19	169	588	552	600	3.66
Myanmar	40	1.05	32	210	854	686	599	3.66
World	3800	100	2857	5477	11438	13323	16380	100
Top 10 as % of total	74.20		78.90	70.20	76.40	77.80	84.60	

Source: Global Trade Atlas, 2012

As signalled in the previous table, the rapidly rising imports of palm oil, from mostly Indonesia but also Malaysia, dominate imports. These have become considerably more concentrated, with the share of the top ten increasing from half to almost three-quarters of total agricultural imports.

Table 15: Indian agricultural imports by commodity, 1999-2011

	1999	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
Palm oil	17	0.45	211	836	2800	3660	5551	33.89
Soybean oil	7	0.18	45	798	695	1110	1214	7.41
Palm oil	1170	30.79	671	369	766	841	1177	7.19
Cashew nuts	198	5.21	259	476	594	571	1150	7.02
Sunflower	8	0.21	78	12	475	581	969	5.92
Peas dried	46	1.21	30	195	581	503	771	4.71
Beans dried	5	0.13	11	23	570	613	387	2.36
Legumes, other	19	0.50	21	164	433	295	323	1.97
Almonds	48	1.26	58	145	189	246	314	1.92
Wool	61	1.61	57	97	124	197	253	1.54
Total	3800	100	2857	5477	11438	13323	16380	100
Top 10 as % of total	41.60		50.40	56.90	63.20	64.70	73.90	

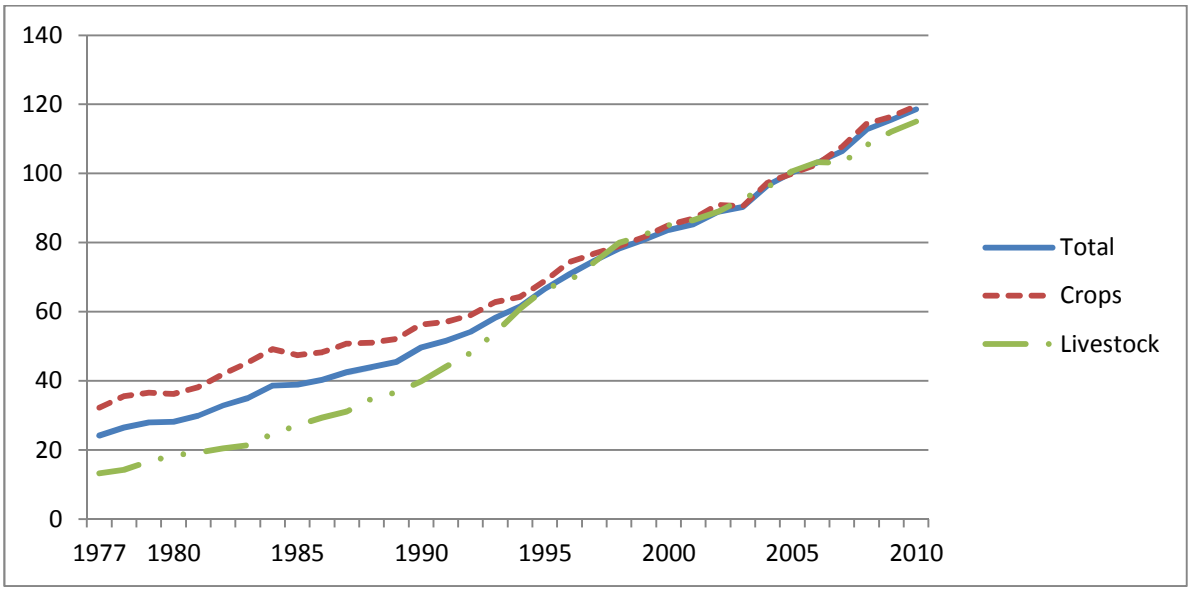
Source: Global Trade Atlas (2012)

3.3 China

China is the world's fourth largest country by area but the largest by population with some 1.33 billion people. Its terrain is mostly mountains, high plateaus and deserts in the west and plains, deltas, and hills in the east. Although the country is endowed with various natural resources, land is a constraint. Some 16.7% of the land is arable or in permanent crops, but with around 9% of the world's arable land, and water resources per capita at perhaps as low as one-quarter of the global average, there is considerable pressure on this land and the scarce water resources.

Aggregate production for Chinese agriculture from 1977 to 2010 is shown in Figure 3, which, when compared to the growth performance of India, illustrates an important difference between the two Asian giants. India started in 1977 with an index value of 47, while China's starting point that same year was 24 – almost exactly half. Therefore, the Chinese growth through to the index of 2004 to 2006 was significantly faster than India's growth over the initial period. Since then, however, India has slightly outperformed China, reaching an index of 124 in contrast to China's 119.

Figure 3: Net agricultural production in China, 1977-2010



Source: FAOSTAT (2012) Note: Index, 2004-2006 = 100

As indicated in Table 1, China produces nearly one-quarter of the world's agricultural output by value. And this is reflected where the main commodities and their global rankings of mostly number one or two are shown in Table 16. Most of these entries are familiar to Westerners, but the entry of 'other eggs' (mostly duck eggs) and the importance of garlic are quintessentially Chinese.

Table 16: Chinese agricultural production

Commodity	1995	2000	2005	2010	Rank
Pig meat	51 393	62 692	71 709	79 435	1
Rice	44 868	45 393	45 417	48 760	1
Vegetables, other	16 765	21 384	23 339	24 683	1
Hen eggs	11 364	15 685	17 451	19 762	1
Tomatoes	4 868	8 250	11 685	17 412	1
Chicken	8 635	12 903	14 180	16 807	2
Beef	8 874	12 920	14 431	16 796	3
Wheat	15 209	14 301	14 050	16 170	1
Apples	5 928	8 643	10 157	14 068	1
Other eggs	9 758	9 520	10 629	12 039	1
Cow milk	1 898	2 694	8 687	11 245	3
Potatoes	5 171	8 847	10 701	10 675	1
Garlic	2 829	3 940	5 833	9 768	1
Maize	3 276	1 488	5 508	9 438	2
Mushrooms, etc.	2 181	4 345	6 152	8 807	1

Source: FAOSTAT (2012)

The destination of China's agricultural exports is shown in Table 17. Unlike Russia and India, China's biggest trading partner in agricultural products is Japan and not the EU. Again, if Africa were a country it would be ranked at number six and increasing quite fast (as are both the US and Vietnam). Export destinations are becoming slightly less concentrated, but these ten countries still take up three-quarters of all the exports.

Table 17: Chinese agricultural exports by destination, 1995-2011

	1995	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
Japan	3554	29.53	4506	6690	6401	7608	9052	18.61
EU	1379	11.46	1486	2760	4203	5031	6008	12.35
United States	466	3.87	814	1988	3421	4088	4921	10.12
Hong Kong	2531	21.03	1545	2246	2849	3465	4508	9.27
South Korea	581	4.83	1263	2061	2014	2426	2873	5.91
Africa	214	1.78	455	652	1482	1641	2132	4.38
Vietnam	133	1.11	89	294	923	1294	1919	3.95
Indonesia	281	2.34	405	408	972	1605	1895	3.90
Malaysia	207	1.72	441	660	1054	1452	1802	3.70
Russia	494	4.11	179	699	1046	1365	1754	3.61
World	12034	100.00	13134	22618	32037	39695	48643	100.00
Top 10 as % of total	81.80		85.10	81.60	76.10	75.50	75.80	

Source: Global Trade Atlas, 2012

Table 18 highlights that most of China's export growth, with the exception of the largest item (garlic) is in non-traditional exports. Even fish and mollusc exports are at HS codes 1604 and 1605 (processed fish products) rather than the larger HS chapter 03 (marine fish). Much of the trade is from China's burgeoning freshwater aquaculture sector rather than from marine fishing. The top ten exports make up only a quarter of total exports, showing China's diverse export portfolio.

Table 18: Chinese agricultural exports by commodity, 1995-2011

	1995	Share	2000	2005	2009	2010	2011	Share
	$m	%	$m					%
Garlic	80	0.66	136	563	1087	2319	2069	4.25
Fish	635	5.28	830	924	1066	1311	1635	3.36
Molluscs	106	0.88	219	729	730	971	1470	3.02
Mushrooms	0	0.00	0	211	333	768	1235	2.54
Animal guts	279	2.32	318	510	791	832	1106	2.27
Chicken offal	0	0.00	274	640	605	803	1089	2.24
Apple juice	0	0.00	0	459	647	736	1068	2.20
Dried vegetables	163	1.35	211	421	524	834	1055	2.17
Shrimps	5	0.04	104	727	639	828	1046	2.15
Tomato paste	43	0.36	68	303	813	814	952	1.96
Total	12034	100	13134	22618	32037	39695	48643	100
Top 10 as % of total	10.90		16.40	24.30	22.60	25.70	26.20	

Source: Global Trade Atlas, 2012

Table 19 shows China's main import sources, with Africa in aggregate holding eleventh position. India has been the big mover, followed by a similar growth path from Indonesia, Argentina and, at number two, Brazil.[7] New Zealand, aided by the recent FTA with China, is at number ten while the USA, Malaysia and the EU have lost market share. China's sources of imports are highly concentrated and becoming even more concentrated over time, with these ten countries responsible for almost 85% of all China's agricultural imports.

[7] We note from recent 2012 Brazilian data a steep decline by almost 80% in Brazil's agricultural exports to China – chiefly as a result of a dramatic decline in imports of soybeans and related products. This is confirmed from Chinese import data.

Table 19: Chinese agricultural imports by source, 1995-2011

	1995	Share	2000	2005	2009	2010	2011	Share
United States	3400	29.39	2510	6375	13444	17897	22148	25.06
Brazil	652	5.64	585	3010	8442	10726	15597	17.65
EU	1270	10.98	1095	1792	3179	4636	6794	7.69
Australia	768	6.64	1356	2380	2467	3884	6338	7.17
Argentina	228	1.97	757	2984	3466	5695	5400	6.11
Malaysia	779	6.73	435	1356	2971	3422	5046	5.71
Indonesia	158	1.37	288	885	2211	2863	4015	4.54
India	34	0.29	83	341	805	2377	3548	4.01
Canada	1110	9.60	691	981	2490	2789	2839	3.21
New Zealand	230	1.99	302	638	1274	2110	2813	3.18
World	11568	100	10040	25768	48604	67594	88372	100
Top 10 as % of total	74.60		80.70	80.50	83.80	83.40	84.30	

Source: Global Trade Atlas (2012)

China's economic growth and the concomitant income growth has spurred huge changes in the demand for food, and as people become more able to afford animal protein, the demand for animal feeds (soybeans, palm oil and soybean oil) increases – these two items now constitute nearly43% of China's agricultural imports, compared to less than 8% just 17 years ago (Table 20). Wine is notable in the tenth position, from virtually nothing to $1.27 billion in 2011. France and Australia dominate these imports, with South Africa supplying a minnow's share of $20 million.

Table 20: Chinese agricultural imports by commodity, 1995-2011

	1995	Share	2000	2005	2009	2010	2011	Share
Soybeans	75	0.65	2270	7777	18790	25089	29840	33.77
Cotton	1378	11.91	74	3193	2114	5658	9469	10.71
Palm oil	790	6.83	451	1737	3852	4544	6539	7.40
Wool	362	3.13	646	1114	1336	1805	2619	2.96
Hides & skins	0	0.00	0	929	1081	1451	1897	2.15
Fish meal	328	2.84	574	1083	1303	1668	1752	1.98
Sugar	778	6.73	96	324	307	780	1680	1.90
Cassava	68	0.59	22	421	889	1202	1388	1.57
Soybean oil	931	8.05	114	873	1843	1200	1322	1.50
Wine	1	0.01	5	40	377	657	1274	1.44
Total	11568	100.	10040	25768	48604	67594	88372	100
Top 10 as % of total	40.70		42.40	67.90	65.60	65.20	65.40	

Source: Global Trade Atlas (2012)

4. Agricultural support policy

The policy framework and, in particular, the extent of support to the agricultural sector in these three countries and the changes in recent years have been analysed in two seminal studies recently: one by the World Bank by Anderson and Martin (2009) and the other by the continuing work of the OECD (in particular OECD 2011) and the online OECD database. This research provides the foundation for the agricultural policy analysis for China and Russia, with supplementation from other sources. Data for India is more difficult to source and interpret.

Table 21: Agricultural support to the BRICS, 1995-2010

	1995	2000	2003	2005	2006	2007	2008	2009	2010
	Producer support estimate (PSE) %								
Brazil	-6.8	6.4	5.8	6.8	6.1	4.9	4.1	6.5	4.5
Russia	14.5	5.5	19.2	14.6	17.2	18.2	21.9	22.1	21.4
China	5.9	3	10.1	8.5	12.3	10.1	3.3	13.2	17.4
South Africa	14.9	5.8	7.1	6.2	9.2	4.2	3.1	4.3	2.2

Source: OECD. [Online]. Available: http://stats.oecd.org/Index.aspx?DataSetCode=MON20123_1

The general picture for support to agriculture in BRICS is presented in Table 21, drawn from the 'live' online OECD database. It shows the degree to which governments support (positive value) or tax (negative value) agriculture using the Producer Support Estimates (PSE) as a measure of the net transfers to the sector as a percentage of total production. Thus, the measures are directly comparable through years and across different countries. South Africa had the lowest PSE in 2010, indicating that support to agriculture in this country is very low, while Brazil's 4.5% is still low by international standards (the OECD average is 18.8%). These two BRICS countries join New Zealand's 0.8%, Australia's 3.0% and Chile's 3.5% as the least subsidised agricultural producers. Both China and Russia subsidise at around the OECD average, and in China the support for agriculture is increasing. There do not seem to be any recent and definitive estimates for support to Indian agriculture, but the OECD, World Bank (Pursell et al. 2009) and the International Food Policy Research Institute (IFPRI) (Mullen et al. 2005) all indicate that the level is around that of the OECD average. This would also put it on a par with China but possibly just below Russia.

In China, transfers to specific commodities vary widely, with the highest support given to cotton and sugar, where it may exceed half of the value of farm receipts. The lowest levels of support are for rice and eggs, where support is actually negative as state purchases are at prices below import parity, implying a net tax on producers (OECD 2012). In India, the tension between the desire to raise food prices for the benefit of farmers and to lower them for the benefit of consumers leads India to intervene heavily in the farm sector with multiple policy instruments. In Russia, the OECD (2011) reports that supports have increased through a tightening of border protection and an increase in budgetary transfers to the sector as a result of progressive policies aimed at import substitution. In particular, the OECD is concerned at the increasing debt and interest rate concessions in Russia as this may divert resources from what they consider to be the more important priority of sustainable development. As Russia is now a member of the WTO it will be intriguing to watch Russian agricultural policy as the country seeks to establish a competitive agricultural sector.

Related to agricultural policies is the issue of farm structures. Here, Brazil, Russia and South Africa all exhibit dualistic farm structures while in both China and India (very) smallholdings dominate. Also interrelated with policies is the issue of technology in the agricultural sector. Here the performance of India's agricultural sector has been erratic over the past decades: output recorded a quantum jump in growth during the Green Revolution of the 1960s to the 1980s in response to the widespread adoption of new seed and fertilizer-based technologies, but in recent years agricultural

growth has slowed while the agricultural population has continued to increase. In China, once the overall enabling policy framework was in place, the agricultural expansion was driven by technology. This has been mainly new plant varieties, augmented by the associated increases in inputs. Production rose sharply, poverty fell dramatically, and the level and quality of food consumption improved significantly.

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