Observations on Changes in Russia's Comparative Advantage, 1994–2005

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Abstract: A senior Japanese specialist on Russia's economy and its oil- and gas-producing sectors calculates that country's Revealed Comparative Advantage (RCA), Revealed Comparative Disadvantage (RCD), and Trade Specialization Index (TSI) on the basis of foreign trade data compiled by Russia's Federal Customs Service. The focus is on changes in comparative advantage of Russia's major export and import commodities over the 1994–2005 period. The results of the analyses make it possible to test the assertion that the increasing competitiveness of oil and gas exports (and secondarily those of armaments, selected base metals, roundwood, and fertilizers) must compensate for declining competitiveness in (and increasing imports of) meat, plastics, and automobile production and stagnation in the machinery sectors. *Journal of Economic Literature*, Classification Numbers: F02, F14, 011. 4 figures, 8 tables, 11 references. Key words: Russia, Revealed Comparative Advantage, Revealed Comparative Disadvantage, Trade Specialization Index, Russian exports, Russian imports, Russia's competitiveness, Russian oil.

INTRODUCTION

Previously published works by this author (Tabata, 2000, 2006a, 2006b, 2006c) have emphasized that changes in Russia's comparative advantage have been one of the major factors determining its economic growth and transformations of the country's post-Soviet economic structure. In particular, I have regarded Dutch disease as one of the main causes underlying Russia's severe and persistent economic depression during the 1990s. The purpose of this research is to examine more systematically such changes in Russia's comparative economic advantage.

In an effort to accomplish that objective, I have calculated three indices using foreign trade data (classified by the two-digit Harmonized System [HS] classification) compiled and issued by the Federal Customs Service of Russia (FTS, various years):[2] the Revealed Comparative Advantage (RCA), Revealed Comparative Disadvantage (RCD), and Trade

[2]Readers should note, however, that one of the most significant shortcomings of such data is the fact that they do not include "shuttle trade" (informal trading activities by individuals who travel abroad on shopping trips and return to Russia to sell the acquired foreign goods), which has amounted to more than one quarter of Russia's imports in recent years.

Table 1. Russia's Exports to Non-CIS Countries by Commodity, 1994 and 2005[a]

HS	In bill. dollars		RI, pct.	In percent of total			IN, bill. dollars	CIN, pct.
	1994	2005		1994	2005	Change		
Total	49.2	208.6	424.0	100.0	100.0	0.0	159.4	100.0
27	20.0	139.6	698.2	40.6	66.9	26.3	119.6	75.0
28	1.1	3.4	302.9	2.3	1.6	-0.7	2.3	1.4
29	1.1	2.5	215.3	2.3	1.2	-1.1	1.3	0.8
31	1.1	3.8	337.4	2.3	1.8	-0.5	2.6	1.7
44	1.5	5.2	355.4	3.0	2.5	-0.5	3.8	2.4
71	6.2	6.7	106.7	12.7	3.2	-9.5	0.4	0.3
72	5.3	16.5	309.3	10.8	7.9	-2.9	11.2	7.0
74	1.0	2.4	239.7	2.1	1.2	-0.9	1.4	0.9
75	0.7	3.6	509.2	1.4	1.7	0.3	2.9	1.8
76	2.5	5.6	223.9	5.1	2.7	-2.4	3.1	1.9
84	1.0	2.3	220.2	2.1	1.1	-1.0	1.2	0.8
87	1.0	0.6	58.4	2.1	0.3	-1.8	-4.3	-0.3
Other	6.5	16.5	255.5	13.1	7.9	-5.2	10.0	6.3

[a]RI = rate of increase; IN = increment; CIN = contribution to increment.
Source: Author's calculations from various years of FTS.

Specialization Index (TSI). Because these data have been available since 1994, the present analysis is for the period from 1994 through 2005.

The analysis in this paper complements the work by Rudiger Ahrend (2004) and Julian Cooper (2006a, 2006b). While I utilize here the HS classification, Ahrend and Cooper used data compiled and reclassified according to the SITC classification by the United Nations Statistics Division (UNSD).[3] Whereas Cooper calculated the Balassa index of RCA, Ahrend used the revised RCA index, which is more similar to the TSI employed here.[4] Despite these differences, several observations are shared by these authors' works and the present paper.

Whereas Ahrend and Cooper calculated their indices for Russia's foreign trade with *all countries*, my indices were calculated to measure Russia's foreign trade with *non-CIS countries*, based on my contention that Russia's trade with the latter group reflects world market forces more appropriately, bearing in mind that trade among CIS countries is still governed to a certain degree by non-economic factors.[5]

COMMODITY STRUCTURE OF RUSSIA'S FOREIGN TRADE[6]

Table 1 compares the commodity structure of Russia's exports in 1994 and 2005, years that bracket a period in which Russia's exports increased more than fourfold. The share of

[3]The original data used by UNSD were actually HS classification data submitted by the FTS.

[4]The revised RCA is defined as $(X_i/X - M_i/M) \times 100$, where X_i and M_i are the export and import values of good i, and X and M are Russia's total exports and imports, respectively (Ahrend, 2004, p. 11).

[5]Interestingly, Cooper (2006b, pp. 409–411) revealed the competitiveness of certain machinery items that were exported mainly to CIS countries. One might be able to discern some interesting aspects specific to Russia's trade with CIS countries by calculating the above indices for Russia-CIS trade separately, but such an exercise is beyond the scope of this paper.

[6]As noted above, this refers to foreign trade with non-CIS countries only.

Table 2. Russia's Imports from Non-CIS Countries by Commodity, 1994 and 2005[a]

HS	In bill. dollars		RI pct.	In percent of total			IN, bill. dollars	CIN, pct.
	1994	2005		1994	2005	Change		
Total	28.3	79.6	281.0	100.0	100.0	0.0	51.3	100.0
2	0.9	2.9	306.6	3.3	3.6	0.3	1.9	3.8
3	0.2	0.9	550.2	0.6	1.2	0.6	0.8	1.5
8	1.0	1.7	176.5	3.4	2.1	-1.3	0.7	1.4
16	0.6	0.2	28.2	2.1	0.2	-1.8	-0.4	-0.8
17	0.8	0.9	109.7	2.8	1.1	-1.7	0.1	0.1
18	0.8	0.4	49.3	3.0	0.5	-2.4	-0.4	-0.8
21	0.6	0.7	115.4	2.2	0.9	-1.3	0.1	0.2
22	0.7	0.8	108.0	2.5	0.9	-1.5	0.1	0.1
24	0.3	0.8	256.2	1.2	1.1	-0.1	0.5	1.0
28	0.1	0.9	1138.7	0.3	1.2	0.9	0.9	1.7
29	0.2	0.7	433.9	0.6	0.9	0.3	0.5	1.0
30	1.2	4.3	352.1	4.3	5.4	1.1	3.1	6.0
32	0.1	0.9	614.0	0.5	1.1	0.6	0.7	1.4
33	0.3	1.4	471.9	1.1	1.8	0.7	1.1	2.2
38	0.4	1.0	277.2	1.3	1.3	0.0	0.6	1.2
39	0.5	3.3	683.3	1.7	4.1	2.4	2.8	5.5
40	0.1	0.9	604.7	0.5	1.1	0.6	0.7	1.4
48	0.2	1.8	728.9	0.9	2.2	1.4	1.5	3.0
64	0.6	0.6	88.0	2.2	0.7	-1.5	-0.1	-0.1
72	0.1	0.7	628.2	0.4	0.9	0.5	0.6	1.2
73	0.7	2.0	280.2	2.5	2.5	0.0	1.3	2.5
84	5.4	14.6	271.2	19.0	18.4	-0.7	9.2	18.0
85	2.4	9.5	388.2	8.6	11.9	3.3	7.1	13.7
87	1.0	10.8	1131.3	3.4	13.5	10.2	9.8	19.1
89	0.2	0.7	386.5	0.7	0.9	0.3	0.6	1.1
90	1.5	2.2	148.1	5.3	2.8	-2.5	0.7	1.4
94	0.7	0.9	131.7	2.3	1.1	-1.2	0.2	0.4
Other	6.7	13.3	198.5	23.5	16.6	-6.9	6.6	12.8

[a]RI = rate of increase; IN = increment; CIN = contribution to increment.
Source: Author's calculations from FTS, various years.

fuels (HS 27)[7] increased from 40.6 to 66.9 percent of total exports by value, accounting for 75.0 of the increment in export earnings. The shares of all other commodity groups decline, except for that of nickel (HS 75). The share of precious stones and metals (HS 71) decreased most precipitously by 9.5 percentage points. Next to fuels, which led contributions to the increment in export earnings, were the 7.0 percent produced by iron and steel (HS 72) and the 2.4 percent by wood (HS 44).[8]

Table 2 shows changes in the commodity structure of Russia's imports during the same period, when the level of the country's imports increased almost threefold. The share of

[7]The fuels category includes crude oil, petroleum products, natural gas, and coal.
[8]The wood category includes both logs (roundwood) and wood products.

Table 3. Five Groups of Commodities According to Trends in TSI, 1994–2005

Cluster	N^a	HS classification number
1	13	27 (fuels), 31 (fertilizers), 41 (raw hides), 44 (wood), 47 (pulp), 71 (precious stones and metals), 72 (iron and steel), 74 (copper), 75 (nickel), 76 (aluminum), 79 (zinc), 81 (other base metals), 93 (arms)
2	12	25 (salt), 26 (ores), 28–29 (inorganic and organic chemicals), 36 (explosives), 40 (rubber), 43 (furskins), 52–53 (cotton and textiles), 80 (tin), 88 (aircraft), 89 (ships)
3	11	3 (fish), 10 (cereals), 12 (oil seeds), 48 (paper), 49 (books), 51 (wool), 61–62 (apparel), 78 (lead), 82 (base metal tools), 86 (railway locomotives)
4	15	1 (live animals), 5 (other animal products), 14 (other vegetable products), 35 (albuminoidal substances), 39 (plastics), 50 (silk), 54–55 (manmade fibers), 68 (stone articles), 70 (glass), 73 (iron or steel articles), 87 (cars), 91 (clocks), 92 (musical instruments), 97 (works of art)
5	45	2 (meat), 4 (dairy products), 6–9 (vegetable products), 11 (milling products), 13 (lacquers), 15–24 (foodstuffs), 30 (pharmaceuticals), 32–34 (extracts, cosmetics, and soap), 37–38 (misc. chemicals), 42 (leather), 45–46 (articles of cork and straw), 56–60 (fabrics), 63 (other textiles), 64–67 (footwear and headgear), 69 (ceramics), 83 (misc. base metal articles), 84–85 (machinery), 90 (optical instruments), 94–96 (misc. manufactures)

[a]Included are commodities classified by the two-digit HS.

automobiles (HS 87) increased most dramatically (by 10.2 percentage points, to 13.5 percent of total imports), while the share of machinery (HS 84) decreased slightly. Autos, machinery, and electrical machinery (HS 85) in aggregate contributed more than 50 percent of the increment to Russia's import expenditures during the period. Pharmaceuticals (HS 30), plastics (HS 39), and meat (HS 2) yielded contributions to the increase of imports of 6.0, 5.5, and 3.8 percent, respectively. These six commodity groups represented Russia's largest import components in 2005.

Tables 1 and 2 tell us that the comparative advantage of the country's mining and mineral processing sectors of Russia increased sharply during the 1994–2005 period. Conversely, that of manufacturing (including machinery and chemicals) decreased quite considerably.

TRADE SPECIALIZATION INDEX

In this section of the paper, I present my calculations and analysis of the Trade Specialization Index (TSI) for 96 commodity groups classified by the HS for the period from 1994 to 2005.[9] As before, the focus here is on Russia's trade with non-CIS (as opposed to all) countries. All calculated TSIs underwent cluster analysis,[10] which produced the five commodity clusters segregated in Table 3 and depicted graphically in Figure 1. Cluster 1 included commodities that are almost exclusively export items, such as fuels (HS 27), wood

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[9]$TSI_i = (X_i − M_i)/(X_i + M_i)$, where TSI_i is the Trade Specialization Index of good i, X_i is the export value of good i, and M_i is the import value of good i.

[10]All cluster analyses performed in this paper were carried out by the Ward method using Euclidean distance.
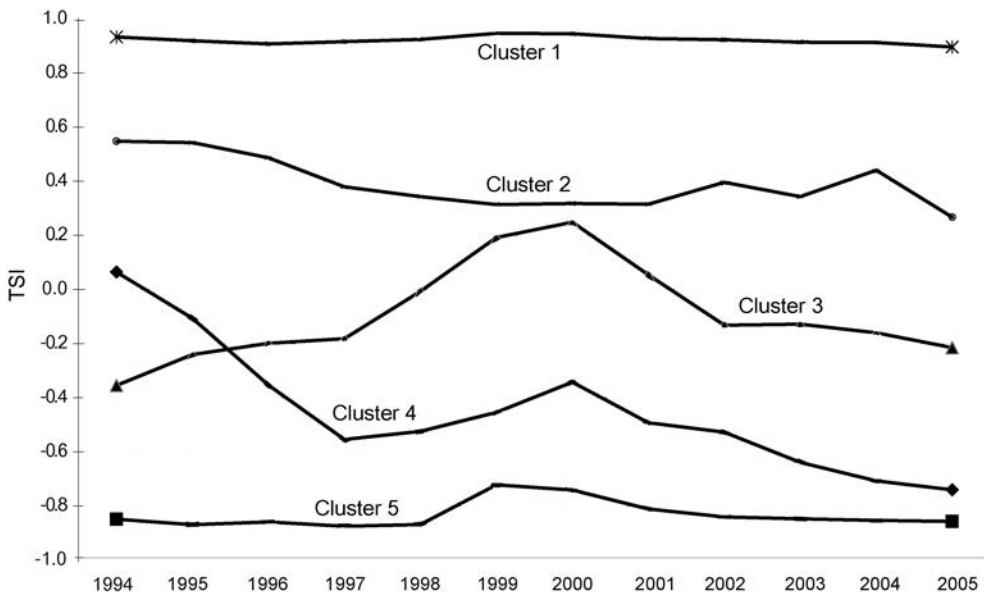
Fig. 1. Trends in TSI for five identified clusters, 1994–2005.

(HS 44), precious stones and metals (HS 71), and base metals and military armaments (HS 93). Cluster 2 consists both of commodities that are basically export items, as well as a few imports, namely various raw materials, some chemicals, aircraft (HS 88), and ships (HS 89). As shown in Figure 1, the TSIs of items in this second cluster declined slightly in 1995–1997, and remained in the 0.3–0.5 range through 2005.

Cluster 3 consists of commodities whose TSI values increased and became positive in 1999–2001. These include fish (HS 3), cereal grains (HS 10), paper (HS 48), wool (HS 51), and apparel (HS 61-62). Exports of these commodities appear to have been stimulated by the devaluation of the ruble in 1998.

Cluster 4 groups together commodities, the competitiveness of which declined significantly in tandem with an appreciating ruble in 1994–1997. Their TSIs recovered slightly in 1999–2000, but resumed their decline in 2001. The cluster is represented most notably by automobiles (HS 87). Car exports exceeded imports slightly in 1994–1995, but imports increased significantly in 1997. Because the latter decreased considerably in 1999–2000, automobile export and import volumes were more or less in balance during 1999–2000. Since 2001, however, automobile exports have increased substantially each year. As a result, TSI for automobiles in 2000 fell to –0.89, with cars now representing one of Russia's most important import items. Other major commodities in cluster 4 are plastics (HS 39) and iron and steel products (HS 73).

Typical import commodities for Russia are grouped in Cluster 5, which includes 45 of the 96 two-digit HS categories. Among them are meat (HS 2) and various foodstuffs, pharmaceuticals (HS 30), and machinery (HS 84). Indicative of the present situation in Russia's manufacturing industries are the low TSI values for (non-electrical) machinery (HS 84) and electrical machinery (HS 85), –0.73 and –0.77, respectively, in 2005. It is worth noting that the aggregate TSI for this cluster increased in 1999–2000 as well.

In summary, a declining trend in TSI is apparent in clusters 2 and 4. In three clusters (3, 4, and 5), some increase in TSI is evident in the late 1990s, extending to 2001 in some cases.

Table 4. Changes in the RCA of Major Export Commodities of Russia, 1994 and 2005

HS	1994	2005	Change
10	0.08	1.14	1.06
26	1.56	0.78	-0.78
27	6.75	8.72	1.97
28	3.18	2.36	-0.82
29	0.95	0.40	-0.55
31	8.17	6.60	-1.58
41	1.20	0.26	-0.95
43	1.76	0.41	-1.35
44	2.02	2.36	0.34
47	1.62	1.19	-0.43
52	1.27	0.08	-1.19
71	7.62	1.86	-5.76
72	4.60	2.66	-1.95
74	3.05	1.90	-1.16
75	12.59	8.51	-4.09
76	5.05	2.47	-2.58
79	1.86	0.33	-1.53
80	1.93	0.02	-1.91
81	6.68	2.25	-4.43
84	0.14	0.07	-0.07
87	0.22	0.03	-0.19
89	0.55	1.16	0.61
93	7.27	8.76	1.49

Source: Author's calculations.

These clusters mainly consist basically of import commodities that appear to have been affected by the ruble devaluation in 1998. It thus follows that Russia's competitiveness declined for almost all commodities, except for its long-term export items (cluster 1), and that exchange rates of the ruble have influenced these changes.[11]

REVEALED COMPARATIVE ADVANTAGE

I calculated the Revealed Comparative Advantage (RCA) for 96 commodity groups classified by the HS during the period from 1994 to 2005 covering Russia's trade with non-CIS countries.[12] Table 4 demonstrates the dominance of fuels (HS 27), fertilizers (HS

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[11]Ahrend (2004, p. 11) analyzed his revised RCA indices for the period 1997–2003. Some of his observations are similar to the ones provided here, including the increasing competitiveness of fuels and wood and the declining competitiveness of most of Russia's major import commodities (such as consumer electronics, automobiles, and pharmaceuticals). Ahrend similarly noted the influence of the currency devaluation (ibid., p. 14).

[12]$RCA_i = (X_i/X)/(X_i^w/X^w)$, where RCA_i is the RCA of good i, X_i is Russia's export value of good i, X is Russia's total exports, X_i^w represents the world's export value of good i, and X^w is the world's total exports. World trade data were obtained from UN COMTRADE (2006). Although the RCA was calculated for Russia's exports to non-CIS countries, X_i^w and X^w in the equation above (for world export data) include exports to CIS countries, as it was too complicated to exclude exports to CIS countries from these data. It should also be noted that the RCA and RCD indexes are used to compare the trade structures of *developed* countries, because of the dominance of these countries in world trade.
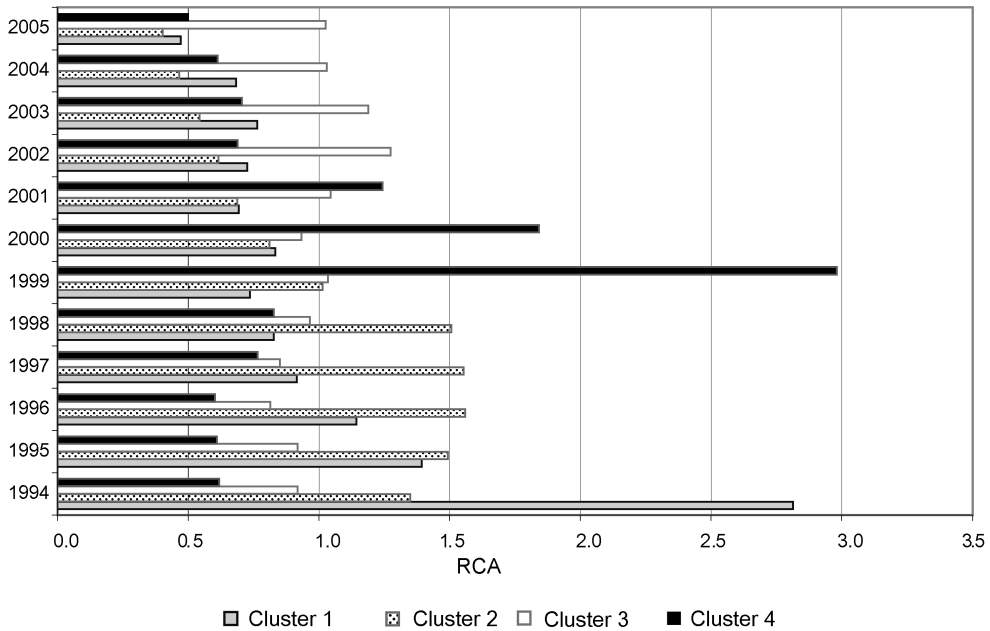
Fig. 2. Trends in RCA for four identified clusters, 1994–2005.

31), nickel (HS 75), and arms (HS 93) stand out. These commodities were characterized by Ahrend (2004, p. 11) and Cooper (2006b, p. 409) as resource-based or energy-intensive products at a low level of processing. Obviously, most other commodities (except for cereal grains [HS 10], wood [HS 44], and ships [HS 89]) experienced decreasing RCA between 1994 and 2005. Among the latter group, the decrease was significant in precious stones and metals (HS 71), nickel (HS 75), aluminum (HS 76), and other base metals (HS 81). This appears to indicate that even base metals lost some competitiveness as a result of the overwhelming increase in fuels exports. It is particularly worthy of note here that military goods, such as warships and armaments, gained in competitiveness.[13]

In order to analyze the trends in RCA for the period, a cluster analysis undertaken on RCA extracted four clusters of commodities shown in Figure 2 and Table 5.[14] Clusters 1 and 2 include commodities that demonstrate decreasing trends in RCA. Cluster 1 includes precious stones and metals (HS 71), and cluster 2 aluminum (HS 76) and ships (HS 89), among other items. Cluster 3 includes commodities that exhibit almost constant or slightly increasing RCA. Most commodities that Russia exports in significant volumes were included in this cluster, namely fuels (H 27), fertilizers (HS 31), wood (HS 44), iron and steel (HS 72), nickel

[13]Although export volumes of warships were not reported in the customs statistics, it could easily be estimated from the published data for commodity group HS 89 that ca. one-half of the export volumes of "ships" consist of warships. Detailed data have not been available for aircraft (HS 88). Furthermore, I could not confirm that all military exports are registered in customs statistics. It should be noted in this regard that prices of military goods registered in customs may be substantially lower than the contract prices of those goods.

[14]Due to significant differences in magnitudes of RCA, the RCA of each commodity was divided by its average over the period 1994–2005 prior to the cluster analysis. Five commodity groups (HS 13, 14, 45, 50, and 66) were excluded from the analysis because of the absence of reported export volumes in some years.

Table 5. Four Groups of Commodities According to Trends in RCA, 1994–2005

Cluster	N^a	HS classification number
1	15	1, 4, 16, 17, 24, 29, 43, 51, 52, 57, 60, 71, 91–92, 94
2	26	2, 12, 18–20, 22, 26, 30, 35–36, 39, 41, 49, 54–55, 62, 64, 67–68, 74, 76, 79–81, 87, 89
3	38	3, 5–8, 10–11, 15, 21, 23, 25, 27–28, 31, 34, 37–38, 40, 44, 46–48, 53, 56, 59, 63, 65, 72–73, 75, 84–86, 88, 93, 95–97
4	12	9, 32–33, 42, 58, 61, 69–70, 78, 82–83, 90

aIncluded are commodities classified by the two-digit HS.

(HS 75), and arms (HS 93). Cluster 4 includes very unique commodities that exhibit sharp increases in RCA in 1999 and 2000, probably due to the devaluation of the ruble. But they are mostly commodities that are imported and their total share in Russia's exports amounted to only 2.7 percent even at the zenith in 1999.[15]

In summary, because of the overwhelming competitiveness of fuels, the competitiveness of almost all other commodities has declined, with the exception of military hardware. Nonetheless, selected base metals, fertilizers, and roundwood appear not to have lost their competitiveness in any significant way.[16]

REVEALED COMPARATIVE DISADVANTAGE

In like fashion, I calculated the Revealed Comparative Disadvantage (RCD) of 96 commodity groups classified by the HS for the period 1994–2005 for Russia's trade with non-CIS countries.[17] Table 6 shows high levels of comparative disadvantage for food products, such as meat (HS 2), sugars (HS 17), and tobacco (HS 24).[18] On the contrary, the RCD of machinery (HS 84) generally has not been high, averaging 1.21 for the period 1994–2005. Even the RCDs for electrical machinery (HS 85) and automobiles (HS 87) averaged 0.65 on an annual basis, i.e., below the world average. Low levels of RCD for articles of apparel reflect insufficient coverage of the shuttle trade in the customs statistics.[19]

When changes in RCD over the period are examined, it becomes apparent that those commodities experiencing an increasing comparative disadvantage included live animals (HS 2), flowers (HS 6), products of the (grain) milling industry (HS 11), tobacco (HS 24), extracts (HS 32), and ships (HS 89). On the other hand, the RCD declined for such commodities as meat products, cereal grains, vegetables, and other food staples (HS 16, 19, 20, and 21, respectively), sugars (HS 17), cocoa (HS 18), drinks (HS 22), and ores (HS 26).

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[15]Nine of the 12 commodities included in cluster 4 are included in cluster 5 of Table 3, and regarded basically as import goods for Russia.

[16]Cooper (2006b, p. 412) basically pointed out the same trends in his analysis of the RCA indexes in 2000 and 2004, notwithstanding its shorter time span than the analysis in this paper.

[17]$RCD_i = (M_i/M)/(M_i^w/M^w)$, where RCD_i is the RCD of good i; M_i is the value of Russia's imports of good i; M is Russia's total imports, M_i^w is the value of world imports of good i, and M^w stands for total world imports. As in the calculation of RCA, M_i^w and M^w include imports from CIS countries, as it would be much too difficult to disaggregate these imports from those of the rest of the world.

[18]It should be noted here that, in the case of imports, the RCD of 19 commodities is higher than 2.0 and the RCD of 47 commodities is higher than 1.0; corresponding figures for exports (RCA) are 11 and 15, respectively.

[19]In the shuttle trade from China to Russia, most of the traded goods have been commodities classified in HS 42–43 (leather and furs) and HS 61–64 (apparel and footwear) (Feng, 2006).

Table 6. Changes in RCDs of Major Import Commodities, 1994 and 2005

HS	1994	2005	Change	HS	1994	2005	Change
2	3.72	5.71	1.99	35	0.41	1.85	1.44
3	0.59	1.87	1.28	37	1.07	0.80	-0.27
4	2.53	1.87	-0.66	39	0.54	1.27	0.73
6	0.28	2.25	1.98	40	0.46	1.08	0.62
7	1.44	1.85	0.41	43	2.12	1.38	-0.74
8	4.71	4.05	-0.66	48	0.47	1.72	1.25
9	3.21	2.71	-0.49	49	1.10	1.87	0.77
10	1.71	0.61	-1.10	55	0.39	1.36	0.97
11	0.54	2.11	1.57	56	1.62	1.66	0.03
13	2.20	1.47	-0.73	57	1.52	0.61	-0.91
15	1.67	2.47	0.79	59	1.88	1.35	-0.53
16	6.65	0.80	-5.85	63	1.15	0.88	-0.26
17	8.89	5.10	-3.79	64	2.04	0.92	-1.12
18	11.68	2.52	-9.16	68	0.72	2.03	1.31
19	4.82	1.00	-3.82	69	1.06	1.66	0.60
20	4.13	2.69	-1.44	70	0.49	1.35	0.86
21	7.08	3.31	-3.77	73	1.56	1.58	0.02
22	3.67	1.52	-2.15	82	0.54	1.27	0.72
23	0.88	2.13	1.24	84	1.31	1.35	0.05
24	2.77	4.40	1.63	85	0.68	0.81	0.14
26	3.21	0.11	-3.10	86	2.43	1.01	-1.42
28	0.36	1.64	1.28	87	0.36	1.53	1.17
30	3.86	2.05	-1.81	89	1.94	3.97	2.03
32	0.80	2.34	1.54	90	1.83	0.83	-1.00
33	2.27	3.33	1.06	94	1.95	0.78	-1.17
34	0.96	2.24	1.28				

Source: Author's calculations.

Perhaps more revealing is the picture for the six largest import commodities of Russia in 2005. Meat (HS 2), plastics (HS 39), and automobiles (HS 87) registered substantial increases in comparative disadvantage when compared to 1994, whereas RCDs for machinery (HS 84) and electrical machinery (HS 85) increased only slightly, and pharmaceuticals (HS 30) decreased.

In tandem with my analysis of RCA, I performed a cluster analysis focused on RCD to obtain six clusters, shown in Figure 3 and Table 7.[20] Clusters 1 and 4 include commodities with increasing RCDs (decreasing competitiveness). Most prominent in cluster 1 are automobiles (HS 87), while cluster 4 includes plastics (HS 39), among other commodities. The aggregate RCD of items in cluster 2, which includes Russia's major import commodities

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[20]As was the case in the cluster analysis on RCA, I divided each commodity's RCD by its average for the 1994–2005 period in order to standardize each magnitude.
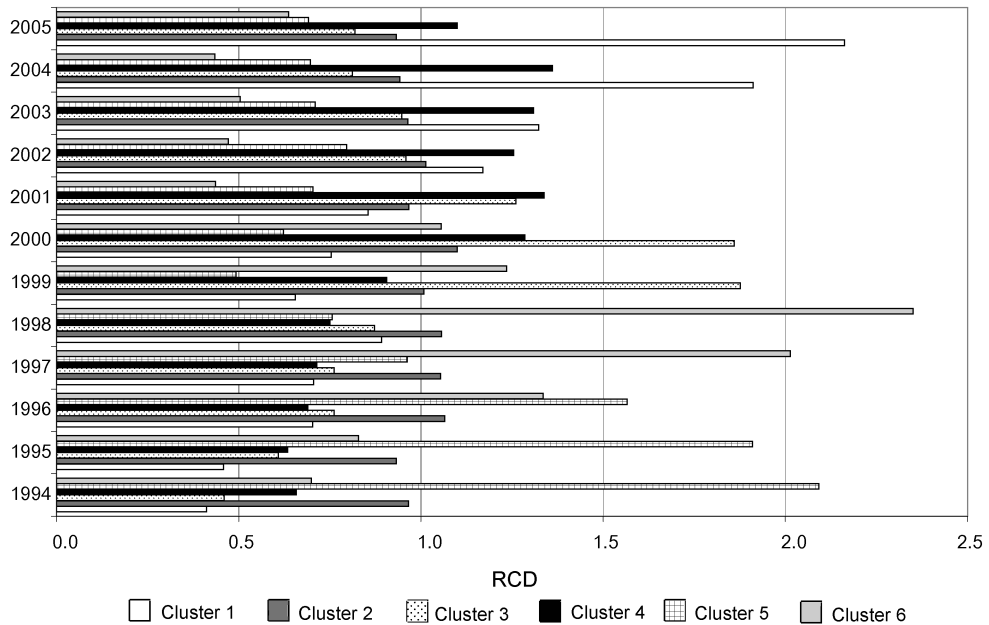
Fig. 3. Trends in RCD for six identified clusters, 1994–2005.

Table 7. Six Groups of Commodities According to Trends in RCD, 1994–2005

Cluster	N^a	HS classification number
1	7	1, 3, 6, 14, 36, 87, 97
2	29	2, 4, 8, 20–21, 24–25, 29–31, 33, 37–38, 41, 43–44, 49, 51, 59, 63, 67, 69, 72–74, 76, 84–85, 90
3	17	5, 7, 10–12, 15, 17, 23, 28, 35, 45, 47, 50, 52–53, 75, 80
4	26	9, 13, 32, 34, 39–40, 42, 46, 48, 54–56, 58, 60, 65–66, 68, 70, 81–83, 91–93, 95–96
5	13	16, 18–19, 22, 26, 57, 61–62, 64, 71, 79, 86, 94
6	4	27, 78, 88–89

[a]Included are commodities classified by the two-digit HS.

(meat [HS 2], pharmaceuticals [HS 30], machinery [HS 84], and electrical machinery [HS 85]), has remained nearly constant.[21]

Clusters 5 and 6 group commodities with diminishing RCDs. Cluster 5 includes several items in the food industry sector and cluster 6 features ships (HS 89). Cluster 3, which includes sugars (HS 17—an important import commodity) as well as other items not regarded as important imports, reflected a unique trend, with RCD increasing sharply in 1999 and 2000 (years following the ruble devaluation).

Interestingly, no clusters registered pronounced declines in RCD during the two-year period (1999–2000) that followed the devaluation, reflecting the overall decline in imports

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[21]Seventeen of the 29 commodities comprising cluster 2 are included in cluster 5 of Table 3 (i.e., commodities that are basically regarded as imports).

after the ruble's fall. Although Russia's overall imports declined by one-third during 1999–2000 in comparison with 1995–1997, only five commodities declined as a share of total imports by more than one percentage point (at most by 1.4 points).[22] On the contrary, four commodity groups increased their shares during the same period by more than one (but less than 2.0) percentage point.[23]

We may therefore conclude that meat, plastics, and automobiles are the three major import commodities that lost competitiveness during 1994–2005. Conversely, food industry products appear to have regained a certain level of competitiveness.[24]

CONCLUDING REMARKS

To the best of the author's knowledge, this brief paper represents the first attempt to analyze Russia's competitiveness in terms of TSI, RCA, and RCD using HS-classification foreign trade data at the two-digit level. One may summarize the conclusions obtained from the analyses as follows.

1. Due to the excessively strong competitiveness of fuels, all other export products have been losing ground (in terms of competitiveness). Exceptions are military goods, some base metals, roundwood, and fertilizers.

2. Meat, plastics, and automobiles are the three major import commodities that have lost competitiveness, while some products of the food industry have increased their competitiveness slightly (e.g., meat products, cereal grains, vegetables, sugars, cocoa, and beverages). It should be noted that machinery and electrical machinery, long-term import staples of Russia, have retained more or less the same level of competitiveness.

3. As a result of these changes, it is safe to say that the "monocultural" aspect of Russia's economy has been strengthened. Russia's exports have become increasingly concentrated in fuels, and as a result of such exports Russia has been able to import all the manufactured goods it needs from the rest of the world. The vertical division of labor rate (VDLR), which shows the degree to which a country's foreign trade is concentrated within a specific commodity, has increased dramatically, exceeding 88 percent in 2005 (Fig. 4).[25]

In closing, however, one of the serious defects in the presented analysis bears repeating—*the insufficient coverage of imports*. Russia's Customs Service data do not account for shuttle trade, and by 2005, the volume of the so-called "unregistered" imports,[26] most of which consist of shuttle trade, amounted to 26.5 billion dollars (i.e., 25.6 percent of total imports reported in the balance of payments; see Table 8).[27] Consequently, this analysis has

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[22]Reference is to meat products (HS 16), drinks (HS 22), machinery (HS 84), electrical machinery (HS 85), and furniture (HS 94).

[23]Sugars (HS 17), inorganic chemicals (HS 28), pharmaceuticals (HS 30), and aircraft (HS 88).

[24]Ahrend (2004, p. 11) also noted the rise in the competitiveness of Russia's food industry.

[25]VDLR = $\Sigma| X_i - M_i|/ \Sigma(X_i + M_i)$, where X_i is the export value of good i and M_i is the import value of good i.

[26]For a brief description of unregistered imports, see Appendix 6.2 of *Vestnik Banka Rossii,* No. 28–29, 2006, available from the website of the Central Bank of Russia [http://www.cbr.ru]. According to this source, the volume of unregistered imports was basically estimated from the imbalance between the volume of retail trade in domestic markets and the volume of registered imports of these goods flowing to Russia. The volume of unregistered imports may include both imports that are simply not declared to customs officials, and those whose volumes are erroneously or intentionally under-reported.

[27]Table 8 shows that in 1999 the share of unregistered imports in total imports was slightly lower (25.7 percent). This may be due to the devaluation of the ruble, and the exclusion of shuttle trade from the analysis could explain why the devaluation did not have a more pronounced effect on Russia's RCD.
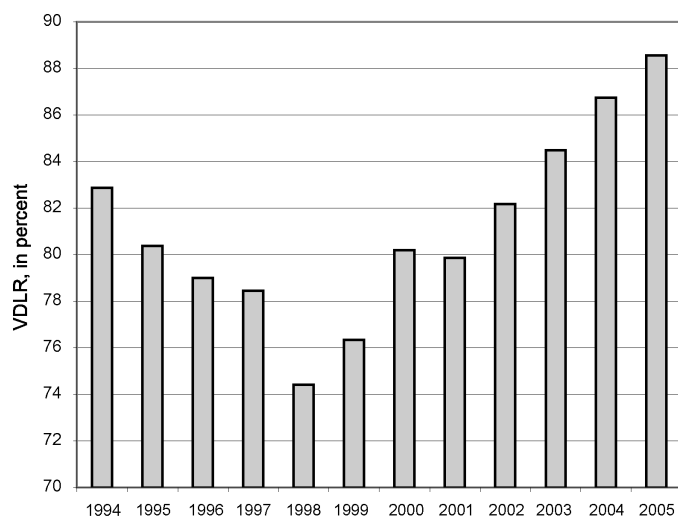
Fig. 4. Vertical division of labor rate, in percent, 1994–2005.

Table 8. Estimates of Unorganized Imports from non-CIS Countries, 1994–2005 (bill. U.S. dollars)

Year	Total imports in balance of payments[a]	Unorganized imports	Share in percent	Total imports in customs statistics
	A	B	B/A	C
1994	36.5	8.2	22.5	28.3
1995	44.3	10.8	24.4	33.1
1996	47.3	15.4	32.6	31.5
1997	53.4	15.6	29.2	38.8
1998	43.7	12.1	27.7	32.3
1999	29.2	7.5	25.7	21.9
2000	31.4	9.2	29.3	22.3
2001	40.7	10.6	26.0	30.7
2002	48.8	13.7	28.1	36.0
2003	61.0	18.2	29.8	44.2
2004	77.5	21.5	27.7	57.8
2005	103.5	26.5	25.6	79.6

[a]Amount of "Other" within "Coverage adjustments" in the category labeled "Adjustments to the Federal Customs Service data" for data on "Imports of goods" in the balance of payments.
Sources: Compiled by the author from Tsentral'nyy, 2006 (for A and B) and various years of FTS (for C).

been unable to consider one-fourth of all imports by Russia. If one were able to take into account this significant dimension of imports, which consist mainly of textile products (e.g., apparel and footwear), the TSI for textiles and RCD of all Russian commodities would have been altered to a certain degree. This shortcoming might be addressed by using mirror statistics of the partner countries in Russia's foreign trade.

REFERENCES

Ahrend, Rudiger, *Russian Industrial Restructuring: Trends in Productivity, Competitiveness, and Comparative Advantage*. Paris, France: OECD, Economic Department Working Papers, No. 408 [ECO/WKP(2004)31], October 2004.

Cooper, Julian, "Of BRICs and Brains: Comparing Russia with China and Other Populous Emerging Economies," *Eurasian Geography and Economics*, **47**, 255–284, 2006a.

Cooper, Julian, "Can Russia Compete in the Global Economy?," *Eurasian Geography and Economics*, **47**, 4:407–425, 2006b.

FTS, Federal'naya tamozhennaya sluzhba Rossii (Federal Customs Service of Russia), *Tamozhennaya statistika vneshney torgovli RF (Customs Statistics of Foreign Trade of the Russian Federation).* Moscow, Russia: Federal Customs Service, various years.

Feng, Anguan, "An Analysis on Statistics of Sino-Russian Trade: Discrepancies between the Foreign Trade Statistics of These Two Countries." Paper presented at the 5th Fall Convention of the Japan Association for Comparative Economic Studies, Kobe, Japan, October 28, 2006 (in Japanese).

Tabata, Shinichiro, "The Great Russian Depression of the 1990s: Observations on Causes and Implications," *Post-Soviet Geography and Economics,* **41**, 6:389–398, 2000.

Tabata, Shinichiro, "Observations on the Influence of High Oil Prices on Russia's GDP Growth," *Eurasian Geography and Economics,* **47**, 1: 95–111, 2006a.

Tabata, Shinichiro, "Price Differences, Taxes, and the Stabilization Fund," in Michael Ellman, ed., *Russia's Oil and Natural Gas: Bonanza or Curse?* London, UK: Anthem, 2006b, 35–53.

Tabata, Shinichiro, ed., *Dependent on Oil and Gas: Russia's Integration into the World Economy.* Sapporo, Japan: Slavic Research Center, Hokkaido University, 2006c.

Tsentral'nyy bank Rossii (Central Bank of Russia), *Platezhnyy balans Rossiyskoy Federatsii (Balance of Payments of the Russian Federation),* 2006 [http://www.cbr.ru/].

UN (United Nations), *United Nations Commodity Trade Statistics Database* (UNCOMTRADE), 2006 [http://unstats.un.org/unsd/comtrade/].