

Revealed Comparative Advantages: India and Kazakhstan in Post-Cold War Era

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Abstract: Keeping in view the importance of Kazakhstan as an energy exporter and the largest trade partner of India in Central Asia region, the structure of comparative advantage enjoyed by India and Kazakhstan in each other's market has been examined for the period of 1995- 2010. For this Balassa's Revealed Comparative Advantage (RCA) has been used. Indian exports enjoying a comparative advantage in Kazakhstan are textiles; chemical products; coffee, tea etc. On the other hand, republic has a comparative advantage in primarily two sectors only i.e. mineral products and metals. While increasing trade cooperation during the study period reveals the opportunity for higher bilateral trade in future. This would reduce cost and enhance the benefits for both the countries. Therefore, just before fully utilizing India's potential to contribute in transition of Kazakhstan and Kazakhstan's ability to provide the energy resources to India, it is required that the process of bilateral cooperation gets a boost.

Keywords: Bilateral trade, Trade specialization, Revealed comparative advantage, Energy resources, Kazakhstan, India

Today, the former Soviet republics of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan (together termed as Central

Asia or Middle Asia) have been the center of global attention due to its location, minerals and natural resources. The region has a great location surrounded by some high-growth-large-economies and major markets of the world. Central Asia has been roughly 12,000 kilometers (km) away from United States, the world's greatest economy and 6,000 km away from Europe. It has Russia on the North, China on the East, India on the South and Iran on the West. Central Asia has a treasure of natural resources that need to be tapped; exploited and converted into value-added products.

Among these five Central Asian Republics (CARs), Kazakhstan and Turkmenistan are thus richer than others due to the exports of oil and gas. As per British Petroleum (B.P.) Statistical Review of World Energy (June 2011) Kazakhstan has 3 percent of world's proven oil reserves and has about 4 percent of total world coal reserves. It also has second largest reserves of natural gas in Central Asia. The republic has also an expanding mining sector. According to B. P. Statistical Review of World Energy (June 2011) in 2000, Kazakhstan has produced 35.3million tons of oil (700,000 barrels per day) which increased to 81.6 million tons (more than 160, 0000 barrels per day) in 2010. In 2010, it has produced 2.1 percent of total world oil production. Kazakhstan has the capacity to be world leader in oil exports. Though Kazakhstan's economic future is linked to oil and gas development; it has also the World's precious natural reserves like uranium, chromium, lead, zinc, manganese and copper. "Kazakhstan has World's second largest uranium, chromium, lead and zinc reserves, the third largest manganese reserves and the fifth largest copper reserves" (ICG, 2007). It has the largest silver, zinc and nickel markets in West Asia. The republic also exports iron and diamonds. It also has enormous agricultural potential with its vast grassland. The republic has ranked 6th in global production of cereals and thus enjoy self-sufficiency in food (Jadraliyev, 2010).

According to the World Energy Outlook (2010-11), the global energy consumption would be increased by 50 percent from 2005 to 2030. Among the emerging economies, the highest demand was expected to occur in Asia, particularly in India and China. Today in world scenario, energy plays an important role in the formation of a country's foreign and security policy. India is also looking for the nuclear energy option and sources beyond the Middle East. *Country's steady engagements with Japan, Eurasia, Africa and Latin America and nuclear agreement with U.S.A. ought to be seen in this perspective* (Sachdeva, 2010). With rapidly growing economy, India has been emerged as a major importer of energy and diversification of energy supplies is a key component of India's energy security policy.

According to World Energy Outlook 2010-11, India's energy consumption in 1990 was 7.9 quadrillion british thermal unit (btu) which increased to 19.4 quadrillion btu in 2010. On account of growing demand of energy, India's dependence on import has also increased. In 2010, according to Petroleum Ministry of India, the country was the world's fifth largest net importer of oil, importing total 163.59 million tones of crude oil. More than 63 percent (104 million tones) of that imported crude oil was from the OPEC countries such as Saudi Arabia, Oman, Kuwait and United Arab Emirates (UAE). It is projected to be growing this oil imports to 91.6 percent by the year 2020. Thus, India will have to find more alternative source of oil. CARs (Kazakhstan particularly) are best option due to good cultural, historical and geo-political relations with India.

Further, natural gas demand is also expected to grow considerably, largely driven by demand in the country's power sector. According to estimates of the Energy Information Administration (EIA) of US, India produced approximately 1.8 tcf of natural gas in 2010, and it is 63 percent increase over 2008 production levels. Despite this steady increase in natural gas production, demand exceeds supply. Thus, the

country has been a net importer of natural gas since 2004. According to Petroleum Ministry, country's net imports of natural gas have reached an estimated 429 billion cubic feet (bcf) in 2010. Hence, *"an improved access to Central Asia's energy resources could play an important role in meeting India's energy needs, particularly in the prosperous northern India which is far from the sources of energy in India and could be the entry point for energy imports from Central Asia by land"* (Agarwal, 2006).

Country's uranium deposits are, also, not sufficient and it has to depend on France and Russia to meet its civil nuclear energy requirement. But the amount imported is not sufficient. Australia, Canada and Kazakhstan are three biggest producers of uranium in world. Australia sells Uranium only to a country with Nuclear Non-Proliferation Treaty. On the other hand, Canada keens to sell uranium to India, but there are some legal obstacles that could or could not be solved in near future. Therefore, India has to increase trade with Kazakhstan, the only remaining best alternative.

Kazakhstan's industrial sector depends mainly on the extraction and processing of the natural resources and also on heavy industry specializing in construction equipment, tractors, agricultural machinery and military products. The manufacturing activities are limited to textile, chemical products and fertilizers. The former Soviet republic is in transitional phase. There have been required huge imports in pharmaceuticals, tea, food processing, machinery and equipments, paper and paperboards, consumer durables and services. On the other hand, India has a proficiency to provide these requirements. Thus, it has two-fold significance for India.

Indo-Kazakhstan bilateral relations have a glorious past. During the Kushans (first to the third century A.D.), there was widespread trade of goods, men, ideas and culture between the two (Agarwal, 2006; Kaur, 2013). These relations continue till Central Asia's merger in socialist

USSR. After the incorporation *‘the bilateral trade relations had almost been frozen’* (Kaur, 2011). The Kazakh-India relations have been rebounded in post Cold War era during the visit of President Nursultan Nazarbayev to India in February 1992. Several inter-governmental agreements were concluded during that visit. But still today India holds an insignificant place in Kazakhstan's external trade. Since 1995, both countries have a little share (nearly less than 1 percent) in each others' trade basket.

Table 1 shows the direction of India's trade with Central Asian countries during 2010. It reveals that during 2010 India's total exports to world have a value of US\$ 220408.50 million whereas total imports have worth of US\$ 350029.39 million. However, India's exports to these five countries combined had a volume of US\$ 272.33 million, which was just 0.12 percent of India's total global exports. India's imports to these five republics have stood at US\$ 217.81 million, which was a meager 0.06 percent of India's total imports for the same year. It has been found that during 2010, nearly 80 percent of India's total trade (exports and imports combined) with Central Asia is captured by two countries, viz. Kazakhstan and Uzbekistan. Kazakhstan, the largest trade partner of India in region, alone makes up more than half (62 percent) of country's total trade with the region. Though, Central Asia is a very weak trade partner of India but there is huge potential for increasing trade. India and Central Asia both are economically complementary to each other in terms of resources, manpower and markets.

Table 1: Direction of India's Trade with Central Asian Countries (2010)

Country	Exports (US\$ millions)	Imports (US\$ millions)	Total Trade (US\$ millions)	Share of India's Trade with Central Asia (%)	Share of India's Global Trade (%)
World	220408.50	350029.39	570437.88	-	-
Kazakhstan	146.21	157.50	303.71	61.96	0.05
Kyrgyzstan	24.32	1.03	25.36	5.17	0.00
Tajikistan	16.35	22.41	38.76	7.91	0.01
Turkmenistan	28.85	12.78	41.63	8.49	0.01
Uzbekistan	56.59	24.09	80.68	16.46	0.01
Central Asia	272.33	217.81	490.14	100.00	0.09

Source: UN Comtrade, 2011.

Indian tea, drugs, pharmaceuticals and fine chemicals already have a fine market in the Central Asian countries. However, the region with more than 55 million consumers has huge untapped potential in many other areas like energy and mining, power generation, telecommunication equipment, healthcare and medical industry, agri-business, tourism, IT sector, food processing and packaging, housing and construction, banking and financial services (Agarwal, 2006). Former Prime Minister Dr. Manmohan Singh's visit to Kazakhstan, in April 2011, reflects the importance of this former Soviet republic for India. During that visit India and Kazakhstan signed seven pacts, including a framework agreement in civil nuclear field and a stake-sharing treaty in oil sector. Both countries decided to boost the bilateral trade through increasing engagement of governments and business communities. Diversifying to non-energy sectors like pharmaceuticals, agriculture and IT was also in agenda. *Kazakhstan already committed for supplying*

2,100 tons of uranium to India by 2014 (Roy, 2011). To sum up- the strategic significance of Kazakhstan and its increasing role in the region and beyond makes it an important country for India to form long term engagement with.

Keeping in view the importance of Kazakhstan as an energy exporter and the largest trade partner of India in Central Asia region, the present study examines the structure of comparative advantage enjoyed by India and Kazakhstan in each other's market. The analysis of comparative advantage has been undertaken using the *Balassa (1965)* index of revealed comparative advantage for the two digit level of HS classification.

Objectives

This paper is an attempt to analyze the following aspects:

- The pattern of comparative advantage for India and Kazakhstan in each other's market.
- What are the leading manufacturing industries of India and Kazakhstan in terms of their revealed comparative advantage in each other's market?
- To what extent is the pattern of specialization as observed in India and Kazakhstan competitive or complementary?

Databases and Methodology

The study mainly covers the period of 15 years i.e. 1995 to 2010. Keeping in mind the nature of study, secondary data has been collected from the UN Comtrade database at four points of years i.e. 1995, 2000, 2005 and 2010.

The degree of trade specialization of India and Kazakhstan is calculated by using the Balassa's Revealed Comparative Advantage

(RCA) (1965) at four points of time i.e. 1995, 2000, 2005 and 2010; for all manufactured goods. Balassa (1965) proposed the revealed comparative advantage (RCA) index which is calculated at commodity level. A variation of his formula was further interpreted by Donges & Riedel (1977); Kunimoto (1977); Bowen (1983) and Vollrath (1991). It is also more critically reviewed by Lapadre (2001). RCA in present study is defined as the share of a commodity in the total exports of a given country, divided by the share of the same commodity in total world exports, i.e.

$$RCA_{ij} = (x_{ij}/X_{it}) / (x_{wj}/X_{wt})$$

Where,

RCA_{ij} - Revealed Comparative Advantage for country i's exports of commodity j

x_{ij} - Value of country i's exports of commodity j

x_{wj} - Value of world's exports of commodity j

X_{it} - Country i's total exports

X_{wt} - World's total exports

It takes a value between 0 and $+\infty$. A country is said to have a revealed comparative advantage if the value exceeds one. If other things remain the same, the higher the ratio of RCA above one, the stronger is that economy's comparative advantage in a particular commodity. Likewise, the lower the RCA below one, the weaker is that economy's comparative advantage in that commodity. When RCA equals one, the country's specialization in a commodity is identical with the world specialization in that commodity. In present study, there has been calculated bilateral comparative advantage between India and Kazakhstan. It is a modified form of RCA used by Sahoo et.al (2009). This index will reflect the competitiveness of both countries in each

other's market in comparison to the rest of the world. The RCA of India and Kazakhstan in each other's market can be calculated as follows:

$$\text{RCA}_{ijk} = (x_{ijk}/X_{itk}) / (x_{wjk}/X_{wtk})$$

$$\text{RCA}_{kji} = (x_{kji}/X_{kti}) / (x_{wji}/X_{wti})$$

Where,

RCA_{ijk} - India's RCA in Kazakhstan

RCA_{kji} - Kazakhstan's RCA in India

x_{ijk} - India's exports of commodity j to Kazakhstan.

X_{itk} - Total exports of India to Kazakhstan

x_{wjk} - World's exports of commodity j to Kazakhstan

X_{wtk} - Total exports of world to Kazakhstan.

X_{kji} - Kazakhstan's exports of commodity j to India

X_{kti} - Total exports of Kazakhstan to India

x_{wji} - World's exports of commodity j to India

X_{wti} - Total exports of world to India.

RCA suffers from the problem of asymmetry. It cannot be compared on both sides of unity. Dalum et al. (1998) suggested a methodology to make the index symmetric and the new index is called 'revealed symmetric comparative advantage' (RSCA). Mathematically, it is;

$$\text{RSCA} = (\text{RCA}-1) / (\text{RCA}+1)$$

This measure varies between -1 and +1. A commodity is said to have comparative advantage in its exports if the corresponding RSCA value is positive and vice versa. In the present study, the RSCA is used to find India and Kazakhstan's comparative advantage in each others' markets.

Implications

Table 2 presents a summary of the Revealed Symmetric Comparative Advantage (RSCA) of the Indian and Kazakhstan commodities in each other's market. The pattern of India's RSCA in Kazakhstan's market shows that there is a move up in the number of commodities having a positive value or advantages. Table depicts that the number of commodities having $RCA > 1$ or $RSCA > 0$ is excellent during the period 1995-2010. Since Indian exports to Kazakhstan have been increasing over the period but the share of Kazakhstan in India's total exports has almost remained constant. An increase in the number of commodities being exported to Kazakhstan is an indication of the fact that India is taking interest to exploit the unexploited sources of Central Asia. The same trend has not found for Kazakhstan. The number of commodities having RCA greater than one remains almost constant over the period but their share has been increasing slightly.

Table 2: Summary of Revealed Symmetric Comparative Advantage for India-Kazakhstan Bilateral Trade

Year	India in Kazakhstan				Kazakhstan in India			
	1995	2000	2005	2010	1995	2000	2005	2010
No. of Commo dities	11	36	55	58	9	4	5	9
Share in total exports (%)	100	97.8	98.71	99.98	97.23	99.09	90.81	99.57

Source: Author's calculations based on UN Comtrade, 2011.

India's exports to Kazakhstan: Table 3 discloses India's top ten commodities with highest revealed symmetric comparative advantage in Kazakhstan market, for 1995, 2000, 2005 and 2010. Table reveals that

India has an advantage to export textile products to Kazakhstan market, since 1995. Also, Indian coffee/tea and pharmaceutical products have a strong hold in Kazakhstan during the study period. In 1995, Indian coffee, tea, mate & spices (0.9998); pharmaceutical products (0.9989) and tobacco & manufactured tobacco substitutes (0.9972) has a near to perfect advantage in Kazakhstan market.

Table 3: India's Top Ten Commodities with Highest Revealed Symmetric Comparative Advantages in Kazakhstan

HS Code	Commodity	1995	2000	2005	2010
61	Articles of apparel & clothing accessories-knitted or crocheted	0.9548	0.9996	0.9996	0.9997
09	Coffee, tea, mate & spices	0.9998	0.9998	0.9998	0.9997
42	Articles of leather, saddler & harness etc.		0.9999	0.9998	0.9990
62	Articles Of apparel & clothing accessories-not knitted or crocheted	0.7746	0.9988	0.9979	0.9985
30	Pharmaceutical products	0.9989	0.9967	0.9979	0.9976
63	Made-up textile articles nesoi, needlecraft sets, worn clothing, rags		0.9907	0.9945	0.9953
13	Lac, gum, resin etc.				0.9934
29	Organic chemicals		0.9903		0.9918
69	Ceramic products				0.9882
50	Silk, Inc. yarns & woven fabrics thereof			0.9989	0.9863
97	Works of art collectors' pieces, antiques			0.9997	
58	Special woven fabrics, tufted textiles, laces			0.9952	
24	Tobacco & manufactured tobacco substitutes	0.9972		0.9926	
59	Impregnated, coated, covered or laminated textile products, textile products for industrial use		0.9891		
08	Ed. fruits & nuts, peel of citrus/ melons		0.9890		
33	Oils & resinoids, perfumery, cosmetic or toilet preparations	0.9885	0.9881		
96	Miscellaneous manufactured articles	0.9960			
20	Preps of vegetable fats, oils & waxes	0.9634			

90	Optical, photographic, cinematographic, medical or surgical instruments etc	0.8096			
39	Plastic & articles thereof	0.7633			

Note: Blank cells indicate that the particular item is not included in India's top ten exports to Kazakhstan in the particular year.

Source: Author's calculations based on UN Comtrade, 2011.

However, during 2000-2005 articles of leather & saddler has highest advantage; whereas it has tendency to decline from 0.9999 in 2000 to 0.9990 in 2010. During 2010, articles of apparel & clothing accessories- both knitted & not knitted (with RSCA values 0.9997 and 0.9985 respectively) have been enjoying a highest advantage. Indian coffee, tea (0.9997) and pharmaceutical products (0.9976) also have maximum return in Kazakhstan market in 2010. Table reveals that during 2010, the advantage range is found incredibly high i.e. 0.99. In other words, it is near to perfection. There have been some slight changes in India's revealed comparative advantage graph in Kazakhstan market, in last decade. However, composition of products has changed relatively. New products have introduced and simultaneously old ones have lost their position in top ten. It has been found that the composition and RSCA both remain almost unchangeable. It indicates that since 2000, Indian products have a strong hold in Kazakhstan market. However, in India's top ten disadvantage areas no commodity of previous year can be obtained a place in list in succeeding year.

The RSCA analysis of India's top ten export commodities to Kazakhstan shows that coffee, tea, mate & spices and pharmaceutical products is the top most commodity group in the Indian export basket to Kazakhstan, over the period. With a perfect RSCA (+1) coffee, tea, mate & spices has its share more than 77 percent of total exports to Kazakhstan in 1995. The second most important export commodity group is pharmaceutical products followed by residues from food industries, animal feed; miscellaneous manufactured articles etc. India has a slightly constant and near to perfect RSCA (0.99 almost) for

pharmaceutical products in the Kazakhstani markets during 1995 to 2010. In 2010, it has become the top most commodities in Indian export basket to Kazakhstan. On the other hand, coffee, tea mate & spices has a perfect RSCA since 1995 and also it is among the top exports to Kazakhstan, however its share in total exports to Kazakhstan has declined from 77.2 percent in 1995 to 29.3 percent in 2010.

Kazakhstan's exports to India: Table 4 analyses the competitiveness of Kazakhstan in Indian market, during the study period. Large positive values for zinc & articles; lead & articles; base metal nesoi, cermetes and iron & steel has been indicating that metal, the traditional sector of Kazakhstan in world market has also gained advantage in India, during the study period. However, country has a disadvantage if it exports copper & articles; nickel & articles and aluminum & articles in Indian market. Table discloses Kazakhstan's top ten commodities with highest revealed symmetric comparative advantage (RSCA) in Indian market, for 1995, 2000, 2005 and 2010. RSCA measure for Kazakhstan's exports to India indicates that the republic has an advantage to export metal products, since 1995. In 1995, Kazakhstani zinc & articles (0.9670); tobacco & manuf. tobacco substitutes (0.9242) and lead & articles (0.9802) have greatest advantage in Indian market.

During 2000, there were only four commodity having advantages in Indian market. It has included zinc & articles thereof (0.9172); iron & steel (0.8469); tobacco & manuf. tobacco substitutes (0.7441) and pearls, stones, precious metals etc. (0.5594). In 2005 commodity composition changed again. Tobacco (0.9590) and raw hides/skin (0.9202) dominated in that year. However, during 2010 lac, gum, resin (0.9432) has joined the highest return list; while the RSCA value for lead & articles has declined to 0.7920. The top advantages products of Kazakhstan in Indian market also have a place in its top ten exports to India. Over the period, almost all metals except zinc have a

turned down in advantages. The product namely zinc & articles has gained an advantage from 0.9670 in 1995 to 0.9951 in 2010, resulted in an impressive increase in its share of total exports. However, the highest decline has found in pearls, stones, prec. metals (from 0.56 in 1995 to 0.008 in 2010).

Table 4: Kazakhstan's Top Ten Commodities with highest Revealed Symmetric Comparative Advantages in India

HS Code	Commodity	1995	2000	2005	2010
79	Zinc & articles thereof	0.9670	0.9172		0.9951
25	Tobacco & manuf. Tobacco substitutes	0.9242	0.7441	0.9590	0.9494
13	Lac, gum, resins etc.				0.9432
78	Lead & articles thereof	0.9802		0.4740	0.7920
41	Raw hides & skins & leather	0.3203		0.9202	0.7563
72	Iron & steel	0.7886	0.8469	0.8787	0.7257
81	Base metals nesoi, cermets, articles etc.	0.7496		0.4067	0.7030
28	Inorganic chem. org/inorg compounds of precious metals, isotopes				0.6305
71	Pearls, stones, precious metals, imitation Jewellery, coins		0.5594		0.0086
76	Aluminum & articles thereof	0.7163			
51	Wool & fine or coarse animal hair, inc. yarns & woven fabrics thereof	0.7145			
39	Plastic & articles thereof	0.0560			

Note: Blank cells indicate that the particular item is not included in top ten lists in the particular year.

Source: Author's calculations based on UN Comtrade, 2011.

An analysis of the RSCA values of the top ten commodities exported from Kazakhstan to India reveals that sector 'metals' have been on apex accounting for five out of total nine exports to India in 1995. The competitiveness of this sector has found very high. Kazakhstan has a

significant improvement in its competitiveness in commodity namely salt, sulphur, earth & stone, lime & cement. However, it has been losing its competitiveness in certain commodity groups such as nuclear reactors, boilers, machinery; plastic and articles thereof; articles of iron and steel etc. Sector-wise, republic has a comparative advantage in primarily two sectors only i.e. mineral products and metals. Thus, the republic still in transition phase and needs to expand its industrial and manufacture sectors to improve its position in Indian as well as international market. An improvement in RCA between India and Kazakhstan, during the study period is an indication of the fact that there is a huge potential for bilateral trade. Both countries can earn benefits, in long term, by utilizing this potential.

To sum-up, though there is low increase in merchandise trade between India and Kazakhstan is mainly due to the changing demand structure and comparative advantages in certain different commodities in various sectors. Kazakhstan has been specializing in a few energy products while India in primary goods and heavy industry products. Also, both the countries have advantages in different products from same sectors which reveals the opportunity for higher intra-industry trade in future, which would reduce cost and enhance the benefits for both the countries. Thus, there are enormous complementarities in bilateral trade that need to be tapped. There is required to overcome the geographical, political and other hurdles to increase two way flows of goods. Just before fully utilizing India's potential to contribute in transition of Kazakhstan and Kazakhstan's ability to provide the energy resources to India, it is required that the process of bilateral cooperation gets a boost.

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Received 23 May 2016, Screened 1 Jul 2016, Accepted 23 Oct 2016