

India's Economic Relations with Afghanistan

A Study in the Context of Trade & Investment

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Abstract

Since Afghanistan is strategically crucial for India, a strong and vibrant economic relationship with Afghanistan is, therefore, of critical value and relevance for India. In view of India's relations with its close neighbour Pakistan, Afghanistan attaches further significance for India. Close and stable relations with Afghanistan are possible through sustained and growing trade and investment relations. Afghanistan is blessed with enormous resources and because of its geographical position will become an energy corridor (for TAPI gas pipeline) in the future that would be of considerable importance to India. As a growing and large economy, India needs more energy resources to sustain her high economic growth. In the prevailing scenario, India as the largest and important nation of South Asia, occupying a major expanse of territory with extensive resources and potential, require and sought to increase its commerce and friendship ties with Afghanistan. As a war torn economy, Afghanistan wanted India to establish extensive cooperation in energy, education, agriculture, infrastructure, security, banking, trade and commerce. Besides, Afghanistan is a bridge connecting South Asia with Central Asia, Middle East and beyond. More importantly, the paper has highlighted the bilateral trade potential and modest attempt has made towards in depicting Afghanistan as potential and important country for India in terms of geo-strategic, geo-political and geo-economic factors.

Keywords

India, Afghanistan, Economic Relations, Education, Energy Corridor, South and Central Asia.

Introduction

With the introduction of new economic policy of 1991 in India, a new opportunity opened up for her to forge relations with the wider world. After an initial period of economic crisis, the country in order to achieve economic stability, domestic democratization and preserve her acquired independence have adopted multi-vectored foreign policies to choose their international patterns, while in the economic sphere the country (India) has chosen different degrees for opening of her economy. Within

this framework India has attempted to forge diplomatic relations with various countries of the world including Afghanistan to rejuvenate her age old historical and cultural relations which at the same time has tuned by a desire to meet new contemporary imperatives. With the growing profile of Afghanistan at regional and international level, India has a significant place in Afghanistan's agenda of expanding its bilateral and multilateral ties with the outside world. In such a scenario, the hardest nut to crack is to overcome the crisis that is responsible for impeding the desired extent of economic relations between India and Afghanistan, through geo-economics has essentially been playing a major role in comparison to geo-politics.

Apart from energy and uranium resources, Afghanistan offers a relatively untapped market for Indian consumer goods, especially as consumers in the region have little choice between highly priced imported western products and cheap but lower quality Chinese manufactured goods. Over the years, Indian companies have acquired a foothold in some of the sectors of Afghanistan markets while the potential for Indian investment and expertise has been identified in the areas of energy, agriculture, security, banking, construction and food processing etc. Besides, the potential for Indian assistance to Afghanistan in developing its small and medium scale enterprises is immense as there is a tremendous opportunity in joint venture in different sectors also. Assistance in some of these areas is, however, being provided by India as part of its long running ITEC (Indian Technical and Economic Cooperation) program. After Soviet disintegration, Afghanistan holds a special place in India's foreign policy priorities. India and Afghanistan are rapidly growing economies, thereby have enormous vistas for bilateral cooperation. While India's trade with Afghanistan exhibits a positive trend, but there is a large scope to enhance it further as Afghanistan besides its strategic importance is rich in natural resources.

Why is Afghanistan Important for India?

The republic of Afghanistan is important to India because of its various dimensions, such as strategic location, geographical position, and natural resource base, connectivity as bridge between South and Central Asia, relations with Pakistan and other neighbors. However, the 'New Silk Road' initiative whereby Afghanistan will 'regain its historical role as a land-bridge between South Asia, Central Asia, the Middle East and Eurasia' has some traction¹ in India². However, with an improvement in

trade links with Pakistan, there is a hope in the possibility of Afghanistan to become the hub for trade, transportation and energy in the region (Summit on Afghanistan in Delhi, 2012)³. The major factors however, which makes Afghanistan important for India are:

a) Afghanistan's Strategic Location and India's Geo-strategic Interests

Afghanistan's geocentric location and its proximity to Iran on the west, Pakistan on the east, the Central Asian republics of Turkmenistan, Uzbekistan, and Tajikistan in the north, a small stretch of border with China in the northeast, enhanced the country's geo-strategic importance manifold. Several world powers became extremely active and grabbed the opportunity in seeking political and economic leverage. The sudden splurge⁴ of initiatives and activities from the international community made Afghanistan alive in the global scenario especially among Pakistan, Iran, Russia, China, United States, India etc. Sitting right towards Central and South Asia, India's objective is, to control and influence Afghan nation with a view to winning friendship, investment and political support and therefore the strategic interests of India has to enumerated as: 1) to deny Pakistan's any political (strategic) or economic influence in Afghanistan; 2) to maintain maximum presence of Indians in all sectors of Afghanistan, particularly in security and economic establishments; 3) to establish a counter front against China's economic and political ingress in Central Asian Republics (CARs); and 4) to provide alternate land route against Gawader (Karachi) sea port to Central Asian Republics (CARs) and Afghanistan (Embassy of India).⁵

Besides, strategic interests there are also some geo-economic and geo-political interests of India in Afghanistan which are as: 1) For India, Afghanistan is a potential route for access to Central Asian energy; 2) India is looking Afghanistan as a base to counter China's growing influence in Central Asian economic and energy sectors; 3) Afghanistan is potential market for Indian goods and business, because the bilateral trade between India and Afghanistan has reached \$ 8087.95 million in December 2017 (table-1) from \$ 25.79 in 1996 constituting a very high growth rate; 4) Ensure her presence and influence in any hydrocarbon pipeline project, which runs through Afghanistan's territory to Pakistan like TAPI and; 5) India is building a port in Chabahar in Iran, which could connect to the Iranian hinterland, and thereby transport Indian goods to Afghanistan, bypassing Pakistan completely. Besides the aforesaid mentioned interests, India would also like to exploit the

economic potential of Afghanistan through heavy capital-formation among various potentially productive sectors identified by India such as mining, infrastructure, telecommunication, agro-based and small-scale industries, and health, pharmaceuticals, education and information technology (Heart of Asia's Conference, Kabul, 2012)⁶ as it was estimated that Afghanistan's mineral wealth valued at \$1-3 trillion (Afghanistan Geological Survey, 2017).⁷

b) India's Energy Interests through and in Afghanistan

Afghanistan is India's gateway to energy rich Central Asia – a region which is considered an 'extended neighborhood'. For India, a stable Afghanistan would result in a viable route for transporting Central Asian energy resources to the Indian market. This will provide alternative energy source routes in the volatile Middle East region.⁸ Nevertheless, Afghanistan has vast hydrocarbon reserves potential (US Geological Survey, 2002)⁹ estimated 49.6 billion cubic meter or 1750.0 billion cubic feet of proved natural gas and 0.4-3.6 billion barrels of oil¹⁰ reserves with a very high reserve to production (R/P) ratio. Besides there are minerals like iron ore (2,200 million tons), copper (60 million tons), cobalt, lithium (substantially high deposits), niobium, uranium, chromites, granite, marble and other metallic and non-metallic minerals (Russian's conducted Survey 1980)¹¹ in the chest of Afghanistan. However, these reserves are likely to shape energy competition in the Central Asian region. China is also equally involved in this region and there has been a sudden increase in its economic and military influence. India and China are likely to compete in this arena and the over bidding for Petro – Kazakh is an example. Therefore, a stable and friendly Afghanistan would be to India's advantage as an alternative route of fuel supply in order to keep pace with its demand for hydrocarbons that is expected to rise by 2030 (World Energy Council, 2016).¹² On the other side Afghanistan is the gateway for India to reach and to control Central Asian energy market especially to have security for newly natural gas pipeline (TAPI) or India has the opportunity to bypass her biggest threat Pakistan for any insecurity in future.

Nevertheless, the estimated value of these natural resources would completely alter the economic and social profile of Afghanistan (Kirit, 2015).¹³ This can assist Afghanistan to achieve fiscal stability by adding considerable revenue to the economy, substantially lower its dependence on foreign aid, improve the balance of payment position due to increase

in exports, and attract Foreign Direct Investment (FDI) into the economy (Fig-2). As part of its policy of having inclusive growth, India will seek to help Afghanistan in reaping the benefits of the natural resources by assisting in building infrastructure, undertaking mining projects and developing the distribution network. India's resurgent economy, fiscal management and developed human capital resources can play a pivotal role in facilitating Afghanistan's journey towards fiscal stability.

Why Investment in Afghanistan?

Afghanistan is a fast growing emerging market of strategic importance close to some of the largest and fastest-growing markets in the world. Afghanistan is strategically located between the energy-rich republics of Central Asia and the major seaports in South Asia providing a key transit route for Central Asian hydrocarbons (oil and gas) to markets in South Asia as well as overseas. Afghanistan has also natural access to markets of neighboring countries including important fast-growing markets such as China, India and Pakistan. Importantly, India has geopolitical interest for which India has opted to pursue a soft power strategy to engage Afghanistan, preferring to contribute substantially in the civilian sector rather than in defense and security (www.dsafghan.in).¹⁴

India is active and efficient particularly in construction, infrastructure, human capital-formation and mining sectors, besides, also identified the telecommunications, health, pharmaceuticals, and information technology and education sectors for cooperation. However, within the framework of bilateral agreements, India has pledged over \$2 billion aid to Afghanistan and India has agreed to build 600km long Bamiyan-Herat rail link which will serve to connect the Hajigak mines to Herat and further to the Iranian port of Chabahar via the Delaram-Zaranj highway, which India had to constructed in 2009 (Fig-1)¹⁵ which could realize the full spectrum of connectivity – from culture to commerce, from traditions to technology, from investments to IT, from services to strategy and from people to politics, rather will mark a new chapter in regional cooperation & connectivity; and some of the important projects on which India has been invested in Afghanistan are: a) An air-freight corridor, b) Supply of 250,000 tons of wheat; c) Construction of the Parliament building (\$178 million); d) Construction of the Pul-i-Khumri to Kabul power line (\$120 million), e) Salma Dam power project (\$ 130 million); f) Construction of the Delaram-Zaranj road (\$150 million) and; g) Food assistance to primary

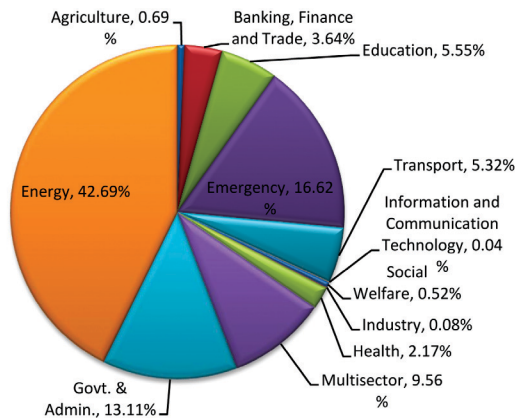
school children, and construction and rehabilitation of schools(\$ 321 million). Notwithstanding the fact, India has also committed Afghanistan to have long-term engagement in shaping its development assistance to rebuild energy sector, infrastructure, institutions, education and technical assistance which aimed at helping Afghanistan to achieve self-sufficiency in various sectors (Fig 2) in 2016-17.¹⁶

Hence, the aforesaid mentioned exercise and activities made India the fifth largest investor in Afghanistan's stability and quest for economic and social development.

Fig. 1
Proposed Rail-line of Hajigak-Zaranj-Zahedan-Chabahar



Fig. 2
India's Investment Contribution in Afghanistan in Various Sectors (2016-17)



Scope & Limitation of the Study

The study will provide the significant information about the opportunities of investment in Afghanistan for both domestic and foreign investors and the effective role of foreign direct investment to the economy of Afghanistan. This information can be used by the foreign and local investors by viewing the availability of strong low-cost and skilled human resources, large and growing domestic markets, availability of abundant land and natural resources, low cost raw materials, the available market of Afghanistan and its strategic location. Significantly, a good number of researchers across the world have theoretically investigated the trade potential between India and Afghanistan, but as such no one has empirically examined their gravity of trade. Thus, the absence of such kind of research is the core objective for this study. The present study, therefore, attempt to bridge this research gap with broader objectives to study: a) the potential of trade between India and Afghanistan; b) the gravitation of trade between India and Afghanistan; and c) the long-run trade relation and association between India and Afghanistan. Thus, on the bases of aforesaid literature framework and objectives, following hypotheses have been laid to carry out the investigation of: 1) India's economic relations with Afghanistan will grow in future in view of its (India's) huge export and investment potential; and 2) Given the economic mass, market size and geographical distance of India and Afghanistan, there exists huge bilateral trade potential between these two economies.

Database

The study is based on the panel data of fifty six years (1960-2017) and therefore, the data on imports, exports, GDP, population, distance and factors influencing trade flows between India and her trade partner(Afghanistan) has obtained from the Ministry of Commerce & Industries, Government of India; International Trade Centre (ITC); International Monetary Fund (IMF); and World Bank (WB). Nonetheless, the study used the secondary data which limit the degree of accuracy but there was lack of uniformity in the various organization's data hence the researcher was unable to accurately analyze all the variables. However, there are so many other factors which affect GDP growth, some which are quantifiable and others not. Hence, the study focused on certain reliable variables.

Theoretical Background of Trade

Writings on international trade can be traced from 17th century, where a group of men (merchants, bankers, government officials) wrote essays and pamphlets on international trade that advocated an economic philosophy known as Mercantilism. Mercantilists believed that a nation could gain in international trade only at the expense of other nations. They advocated restrictions on imports, incentives for export.

According to Adam Smith (1776), an English Economist, trade is based on absolute advantage and benefits both nations. That is, when each nation specializes in the production of a commodity of its absolute advantage and exchange part of its output for the commodity of its absolute disadvantage, both nations end up consuming more of both commodities. However, this theory cannot explain why countries which do not have absolute advantage still get benefited from international trade (Smith Adam, 1776).¹⁷

David Ricardo (1817), also an English Economist, answered this question in his book 'principles of political economy and taxation' in which he presented the law of comparative advantage theory which postulates that even if one nation is less efficient than the other nation in the production of both commodities there is still a basis for mutually beneficial trade. The less efficient nation should specialize in the production and export of the commodity in which its absolute disadvantage is less (Ricardo David, 1817).¹⁸

However, Gottfried Haberler, another economist, in 1936 explained the law of comparative disadvantage in terms of opportunity cost theory (Maneschi Andrea, 1998).¹⁹

Subsequently, a model given by two Swedish economists Eli Heckscher and Bertil Ohlin had extended the David Ricardo's theory and developed an influential theory of trade. Heckscher-Ohlin model is enhanced from the simple model of David Ricardo by adding capital and land alongside labor and fundamental factors. As one of the leading theories about the determinants of trade pattern of a nation, Heckscher-Ohlin theory or factor endowment theory which is considered the modern trade theory, explains comparative advantages in terms of factor endowment. This theory advocates that a nation will export the commodity whose production requires the intensive use of nation's relatively abundant and cheap factor and import the commodity whose production requires the intensive use of nation's relatively scarce and expensive factor (Heckscher Eli, 2006).²⁰

Obviously, the classical trade theory indicates that countries which are less similar tend to trade more. Therefore, it is unable to explain the huge proportion of trade between nations with similar factor of endowments and intra-industrial trade, which dominate the trade of developed economies. This is the motivation for new trade theories which has been established in the 1980s. New trade theories explain the world trade based on the economies of scale, imperfect competition and product differentiation thereby ease the strict assumptions of classical theory (Krugman Paul, 2005).²¹

However, recently a new model i.e., Gravity Model has been utilized intensively to explain bilateral trade flows between two countries which cannot be solved by other economic theories. In physics, according to Newton's universal law of gravitation, the gravitational attraction between two objects is proportional of their masses and inversely related to square of their distance. Thus in economics, Jan Tinbergen, a Dutch economist, first applied gravity model to analyze foreign trade flows in 1962. Krugman and Obstfeld in 2005 also utilize this (gravity) model for trade activities. After first research of Tinbergen, there have been many other economists applying gravity model with similar purposes related to different countries of the world.

Model Specification

The gravity model (Krugman Paul, 2015)²² has been used to analyze the bilateral trade which is directly proportional to the GDP and inversely proportional to the distance between two nations rather predicts that bilateral trade is a positive function of income and negative function of distance. If two countries are i and j, then gravity model can be represented as:

$$T_{ij} = A \left[\frac{(Y_i)^\alpha \times (Y_j)^\beta}{(D_{ij})^\gamma} \right] \dots \dots \dots (1)$$

Where T_{ij} is the total trade, Y_i is the GDP of country i(India); and Y_j is the GDP of country j(Afghanistan) and D_{ij} is the distance between the partner countries. Here, Alpha Beta & Gamma denote the parameters interpreted as coefficients of elasticity of exports with respect to changes in independent variables (GDP and distance). This change of dependent variable is not in absolute terms, it is rather relative change due to interpretation of log structure and percentage changes that persist in Alpha, Beta & Gamma coefficients. Beta measures

by how many percent trade increases when the partner country's GDP increases by one percent (keeping other things constant); Gama measures by how many percent trade decreases when the distance to the partner country increases by one percent (keeping other things constant). This can be seen by taking the partial derivatives of the gravity equation with regard to Y_j and D_{ij} and solve for Alpha & Bata.²³

As impact of geographical proximity on trade is negative, it suggests that distance affects trade in the opposite way $dT_{ij}/dD_{ij} < 0$ due to cost of transportation. Hence, the expected sign of parameter Gama for variable Distance is negative (Gama<0).

Solving for b we obtain:

$$b = \% \text{ change in } T_{ij} / \% \text{ change in } Y_j$$

That is, b is the elasticity of trade with regard to the partner country's GDP. Similarly, if we keep the home country's GDP and the partner country's GDP constant and solve for c we obtain:

$$c = \% \text{ change in } T_{ij} / \% \text{ change in } D_{ij}$$

This is the elasticity of trade with regard to the distance from the partner country. In the theory section of this paper, it was pointed out in the brief introduction the gravity model (Krugman) that the coefficients b and c are elasticity's of trade with regard to GDP and distance to the partner country.

Now, we can write equation (1) in the following form:

$$Trade_{ij} = A \cdot \left[\frac{(GDP_i)^\alpha (GDP_j)^\beta}{(Distance_{ij})^\gamma} \right] \dots \dots \dots (2)$$

Taking log on both sides, we get the following linear form of the mode:

$$\log(Trade_{ij}) = \log \left[A \cdot \frac{(GDP_i)^\alpha (GDP_j)^\beta}{(Distance_{ij})^\gamma} \right] \dots \dots \dots (3)$$

$$\log(Trade_{ij}) = \log [A \cdot (GDP_i)^\alpha (GDP_j)^\beta] - \log [(Distance_{ij})^\gamma] \dots \dots \dots (4)$$

$$\log(Trade_{ij}) = \log(A) + \log(GDP_i)^\alpha + \log(GDP_j)^\beta - \log (Distance_{ij})^\gamma \dots \dots \dots (5)$$

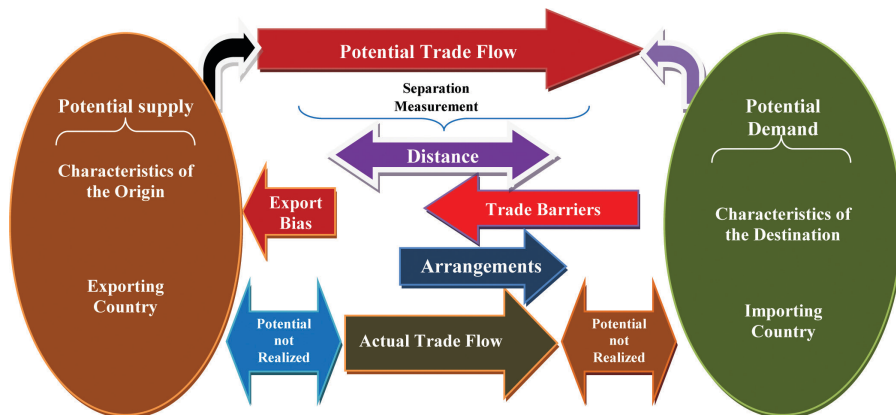
$$\log(Trade_{ij}) = \alpha_0 + \alpha \log(GDP_i) + \beta \log(GDP_j) - \gamma \cdot \log(Distance_{ij}) + \mu_{ij,t} \dots \dots \dots (6)$$

The above gravity model equation (6) can also be extended by using other variables that could help to measure economic strength of a country in a better way. These variables are as Population (POP), GDP per capita (GDP/POP) or combination of all mentioned. The extended gravity equation can also be written in the following form:

$$\begin{aligned} \text{Log}(\text{Trade}_{ij}) = & \alpha_0 + \alpha \log(\text{GDP}_i) + \beta \log(\text{GDP}_j) + \delta \cdot \log(\text{POP})_i + \varepsilon \cdot \log(\text{POP})_j + \theta \cdot \log \left[\frac{\text{GDP}_i}{\text{POP}_i} \right] \\ & + \pi \cdot \log \left[\frac{\text{GDP}_j}{\text{POP}_j} \right] - \gamma \cdot \log(\text{Distance}_{ij}) + \mu_{ij} \dots \dots \dots (7) \end{aligned}$$

Parameter μ_{ij} accounts for all other unobservable variables (also known as dummy variables) that are not explained directly through gravity equation. Importantly, the GDPs of both countries acts as a proxy for the production capabilities as countries with higher GDP are likely to have a greater demand for goods in the international market. However, the variable distance²⁴ is a proxy for cost of transportation. There are also several more frictions such as tariff, non-tariff barriers, culture, language, boarder dispute, attitudes, national or international policies that vary across geography and time; have directly influence on trade (subsidies to industries) and some may support trade indirectly (such as policies towards creating adequate infrastructure for transportation).

Graphical Design of Gravity Model



Pattern of Trade between India-Afghanistan

The total bilateral trade of India and Afghanistan has reached to \$ 8087.95 million in 2017 (table 1). It increased from \$ 25.79 million in 1996 to \$ 79.23 million in 2000 representing a growth of about 89.13%. It further grew to register a three digit figure in 2007 and crossed the figure of 300 to reach at \$588.74 million in 2009 which represents a twenty twofold increase. Since then it has been showing a continued growth to touch the figure of \$ 834.5 million in 2015 but has declined afterwards and stopped at \$ 632.7 million in 2017 (table 1, Fig.3, Fig. 4). The question arises why trade has gone down by high percentage, the answer is, it is because the law of demand of either sides of the two nations.

Table 1
Trend of total and Bilateral Trade Balance Between India and Afghanistan (1996-2017)

(US \$ in Millions)

S. No	Years	Exports (US \$ in Millions)	% Share	% Growth	Imports (US \$ in Millions)	% Share	% Growth	Trade Balance (\$US)	Total Trade (\$US)	% Share	% Growth of Total Trade
1.	1996	22.74	0.069	-	3.05	0.0078	-	19.69	25.79	0.318869	-
2.	1997	21.25	0.0611	-6.57	10.7	0.0258	250.42	10.55	31.95	0.395032	23.88523
3.	1998	12.81	0.0386	-39.71	28.14	0.0664	163.01	-15.33	40.95	0.506309	28.16901
4.	1999	33.2	0.0902	159.23	21.06	0.0423	-25.18	12.14	54.26	0.670875	32.50305
5.	2000	25.86	0.058	-22.11	26.59	0.0526	26.27	-0.73	52.45	0.648496	-3.33579
6.	2001	24.37	0.0556	-5.77	17.52	0.0341	-34.1	6.85	41.89	0.517931	-20.1335
7.	2002	60.77	0.1153	149.36	18.46	0.0301	5.33	42.31	79.23	0.979605	89.13822
8.	2003	145.47	0.2279	139.98	40.51	0.0518	119.5	140.96	185.98	2.29947	134.7343
9.	2004	165.44	0.198	13.73	47.01	0.0422	16.03	118.43	212.45	2.626747	14.23271
10.	2005	142.67	0.1384	-13.76	58.42	0.0392	24.29	84.25	201.09	2.486291	-5.34714
11.	2006	182.11	0.1441	27.64	34.37	0.0185	-14.16	147.74	216.48	2.676574	7.65329
12.	2007	249.21	0.1528	36.85	109.97	0.0437	219.92	139.24	359.18	4.440928	65.91833
13.	2008	394.23	0.2128	58.2	126.24	0.0416	14.8	267.99	520.47	6.435129	44.90506

14.	2009	463.55	0.2593	17.58	125.19	0.0434	-0.83	338.36	588.74	7.279224	13.11699
15.	2010	422.41	0.1691	-8.88	145.03	0.0395	16.64	277.38	567.44	7.015869	-3.6179
16.	2011	510.9	0.167	20.95	132.5	0.0271	-9.26	378.4	643.4	7.955044	13.38644
17.	2012	472.63	0.1573	-7.49	159.55	0.0325	20.42	313.08	632.18	7.816319	-1.74386
18.	2013	474.34	0.1509	0.36	208.77	0.0464	30.84	265.57	683.11	8.446022	8.05625
19.	2014	422.56	0.1362	-10.92	261.91	0.0585	25.46	160.65	684.47	8.462837	0.199089
20.	2015	526.6	0.2008	24.62	307.9	0.0808	17.56	218.7	834.5	10.31782	21.91915
21.	2016	506.34	0.1836	-3.85	292.9	0.0762	-4.87	213.44	799.24	9.881861	-4.22528
22.	2017	397.39	0.2387	-21.51	235.31	0.0914	-19.66	162.08	632.7	7.822749	-20.8373
	Total	5676.85	-	-	2411.1	-	-	3265.75	8087.95	-	-

Source: Authors calculation on the basis of the data and information provided by the Ministry of Commerce and Industry, Department of Commerce, Government of India.

Trade Potential Between India & Afghanistan

Importantly, we noticed that bilateral trade between India and Afghanistan has shown a declining trend in the last couple of years because of varied factors. On the basis of this information we tried to find out the potential of trade with the help of Gravity model (table-3). However, the coefficient of GDPs of India and Afghanistan are both positive and significant while the coefficient of distance is negative and significant at 0.05% level of significance respectively. The results show that an increase in India's GDP by 1% would increase bilateral trade of India with Afghanistan by 28.7%. Increase in the GDP of Afghanistan by corresponding amount (%1) would increase the bilateral trade by 2.34%.

Fig. 3
Trend of Bilateral Trade between India and Afghanistan
(1996-2017)

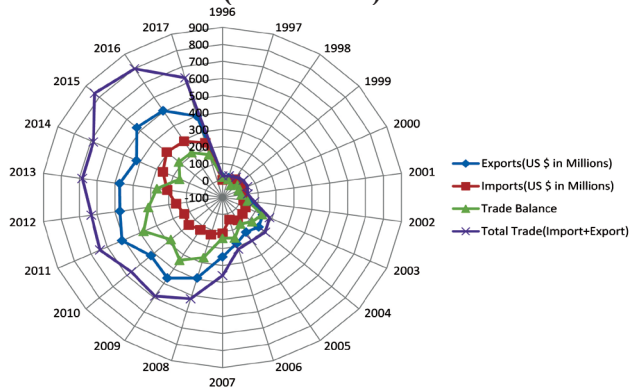


Fig. 4
% Growth of Imports/Exports/Total Trade of India and Afghanistan
(1996-2017)

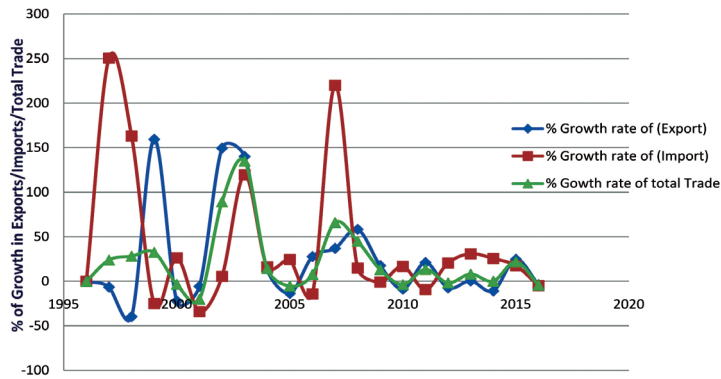
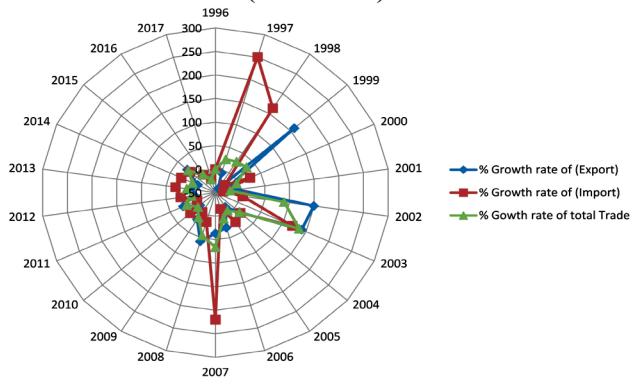


Fig. 4
% Growth of Imports/Exports/Total Trade of India and Afghanistan
(1996-2017)



When the distance between the two countries increases, trade will not fall substantially. But, if there is any increase in the distance say by 1%, trade will not fall by any percent predicted by the value of D_{ij} (0.001%). Nevertheless, if there is 1% increase in the per capita income of India there will be 26.82% increase in trade with Afghanistan and the corresponding increase in per capita income of Afghanistan, the trade of Afghanistan will increase by 3.29% with India. Moreover, if there is 1% increase population in India, there will be 36.45% increase of India's trade with Afghanistan and in corresponding increase in the population of Afghanistan, the trade of Afghanistan will increase by 3.29% with India. The output elasticity coefficients of GDP_i and GDP_j ($a + b + c = 28.45 + 2.34 - 0.001 = 30.79 > 1$) is greater than one which signifies that both the countries have great potential of further bilateral trade as it is being justified by the high value of R-squared (0.874239826) which expresses that 87% of trade has been explained by these independent variables in the model. Significantly, the regression equation of the gravity model is depicted as:

$$\begin{aligned} \text{Log}(\text{Trade}_{ij}) = & -140.51 + 28.76 \log(GDP_i) + 2.34 \log(GDP_j) + 36.45 \log(POP_i) \\ & + 2.11 \log(POP_j) + 26.82 \log\left[\frac{GDP_i}{POP_i}\right] + 3.29 \log\left[\frac{GDP_j}{POP_j}\right] \\ & - 0.001 \log(Dis_{ij}) \dots \dots \dots (8) \end{aligned}$$

or

$$\begin{aligned} \text{Log}(\text{Trade}_{ij}) = & -140.51 + \log(GDP_i)^{28.76} + \log(GDP_j)^{2.34} + \log(POP_i)^{36.45} + \log(POP_j)^{2.11} \\ & + \log\left[\frac{GDP_i}{POP_i}\right]^{26.82} + \log\left[\frac{GDP_j}{POP_j}\right]^{3.29} \\ & - \log(Dis_{ij})^{0.001} \dots \dots \dots (8) \end{aligned}$$

or

$$\begin{aligned} \text{Log}(\text{Trade}_{ij}) = & -140.51 [\log(GDP_i)^{28.76} \log(GDP_j)^{2.34} \log(POP_i)^{36.45} \log(POP_j)^{2.11} \log\left[\frac{GDP_i}{POP_i}\right]^{26.82} \log\left[\frac{GDP_j}{POP_j}\right]^{3.29} \\ & - \log(Dis_{ij})^{0.001}] \dots \dots \dots (8) \end{aligned}$$

or

$$\begin{aligned} \text{Log}(\text{Trade}_{ij}) = & -140.51 [\log(GDP_i)^{28.76} \log(GDP_j)^{2.34} \log(POP_i)^{36.45} \log(POP_j)^{2.11} \log\left[\frac{GDP_i}{POP_i}\right]^{26.82} \log\left[\frac{GDP_j}{POP_j}\right]^{3.29} \\ & / \log(Dis_{ij})^{0.001}] \dots \dots \dots (9) \end{aligned}$$

Table 2
Estimation of Gravity Model Results

<i>Variables</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t. Stat</i>	<i>P-value</i>
Intercept	-140.5166247	52.22856294	-2.6904172	0.00991254
Ln_POPI	36.45028091	27.1344888	1.34331924	0.01575861
Ln_GDPi	28.76121928	26.41564408	-1.0887949	0.02819158
Ln_POPj	2.116411859	1.113997376	1.89983559	0.05373422
Ln_GDPj	2.34599988	1.747934356	1.3421556	0.01861327
Ln_Dij	0.001	0.00021	1.65535	0.00000000
Ln_(GDP/POP)i	26.82180401	26.07611627	1.02859658	0.03004769
Ln_(GDP/POP)j	3.292310	0.00001	1.65535	0.00000000
Multiple R:	0.935007928			
R-square:	0.874239826			
Adj. R Square	0.817091981			
Std. Error:	0.094030376			
Obs.:	52			

Source: Authors have calculated it on the basis of the data given by the World Bank, Ministry of Commerce and Industry, Department of Commerce, Government of India and Afghanistan.

Potential Index

If the trade potential index²⁵ is at 1, then the actual trade is exactly equal to the estimated potential trade given the GDP and the distance between the trading countries. If the trade potential index is less than 1, then the actual trade is more than the potential trade. If the trade potential index is more than 1, it implies that actual trade is lower than the potential trade. However, it has been analyzed that the trade potential index of India is more than 1 ($a + b = 28.45 + 2.34 = 30.79 > 1$) which means that the actual trade is less than the potential trade of India; it may be because that India has to face various security challenges of bilateral trade with Afghanistan. In spite of this, there is every scope to improve its trade with Afghanistan in future. In fact, there is also scope and opportunities in enhancing the trade, which implies that there is an increasing gap between the actual and prospective trade. However, it has also been observed that there is perfect positive correlation among all the variables (table 4).

Table 3
Correlation Matrix of India & Afghanistan
Trade Potential Variables

<i>Variables</i>	<i>(Trade)_{ij}</i>	<i>Pop_i</i> <i>(in millions)</i>	<i>GDP_i at</i> <i>(FC)</i>	<i>Pop_j</i> <i>(in millions)</i>	<i>GDP_j at</i> <i>(Fc)</i>	<i>(Dist)_{ij}</i> <i>in Km</i>
(Trade)_{ij}	1					
Pop_i	0.76254405	1				
GDP_i at (FC)	0.79532633	0.8448603	1			
Pop_j	0.89507465	0.838137526	0.9488203	1		
GDP_j at (FC)	0.82728467	0.730082911	0.967919773	0.935860188	1	
(Dis)_{ij}	-1.439E-16	-6.17842E-16	0	-4.78775E-16	3.0166E-16	1

Source: Authors have calculated this on the basis of the data given by the World Bank, Ministry of Commerce and Industry, Department of Commerce, Government of India and Afghanistan.

Potential Areas for Future Cooperation

The emerging economy of Afghanistan displays all the signs of being the new market of the future. Since the nature of competition has undergone a significant change, there is need for concerted and focused efforts to ensure that all Indian and South Asian organizations act cohesively in tapping the opportunities offered by this region. It is important to take note of some potential areas in order to improve the possibilities of trade between India and Afghanistan. Some of the important areas have potential to invest, could enhance the trade corridor between the two countries such as: Infrastructure, education corridor, mining and industrial sector etc. Notwithstanding the fact that India is investing in Afghanistan in order to bypass Pakistan rather India should have a rational understanding with Pakistan on the outstanding Kashmir issue for the collective benefits (including Kashmir) such as India will get security from Pakistan to realize the dream of Turkmenistan Afghanistan Pakistan India (TAPI) natural gas pipeline to pass it through Pakistanian territory without any future threat. However, if such an investment would be utilized & invested in J&K State, India will certainly realize the dream of ‘New Switzerland’ in Kashmir and therefore, to what extent they would remain in abusing and accusing each other on the cost of Kashmir, instead of this they should re-examine & rethink over the outstanding issues because the countries that perform excellently in economic, industrial and trade domains, will have greater impact on other economies than those possessing bigger military and weaponry systems.

More importantly, a strong economic and human interaction among the countries is going to be a major strength for any country in the near future. Two Asian economies have joined hands to form an Economic Corridor which is known as China-Pakistan Economic Corridor (CPEC) to achieve their shared objective of mutual growth. The proposed corridor impacts relations between India and Pakistan, as it passes through the Gilgit Baltistan area of J&K State. No doubt that there are conflicts between India and Pakistan, but when the people of both sides will be engaged in economic activities and progress, this could completely minimize the conflict and stakeholders some time may think over the peace of both the regions. This would be rather a step towards the commercialization of Line of Control (LOC) Trade. Hence, if both the countries will harmonize with the idea, then CPEC can be extended to India through supplementary links from Punjab and Kashmir thus, turning the mutual security threat suspicion to benefits such as, CPEC has the capacity to materialize a faster culmination of Iran-Pak-India gas pipeline to fulfill the energy needs of India. So India should live with the game otherwise India's role would be vanished in future decisions of any economic activity among themselves.

Conclusion

From the above analysis, it follows that with the passage of time, India's economic relations will grow as there is a large trade potential between the two countries which is also clear from the predicted variables (for economic strength were presented with GDP_{ij} and distance was analyzed through the changes in import prices of oil) of the gravity model. It was also proved that expected parameters defined in theoretical gravity model assumed positive correlation between economic strength and exports of trading partners. This assumption was empirically tested and proven using correlation matrix. Demand for Indian export products is almost perfectly correlated with the changes in Afghanistan's GDP which arises from the similarity of trade structures of both trading partners. Low inelasticity of exports in respect to changes in transport costs (oil prices) was achieved according to regression output. Variable 'Distance' didn't give expected parameter's value (negative) although its regression coefficient was close to zero. Nevertheless, results of an empirical test conducted on a set of data for India shows that gravity model serves as a good explanation for trade flows and patterns of international trade. Furthermore, in view of the Afghanistan's geo-

economic scenario, India's increasing investment must continue for its stable, vibrant economic and overall relations with Afghanistan.

References & Endnotes

1. A way of treating a broken bone in a body that involves using special equipment to pull the bone gradually back into its correct place.
2. Although, there is also widespread skepticism of its feasibility.
3. India hosted an Investment Summit on Afghanistan in Delhi in June 2012, inviting other 'Heart of Asia' countries, which sought to highlight the opportunities for investing in Afghanistan.
4. To spend a lot of money on something that you do not really need.
5. Embassy of India, Kabul's website: <http://eoi.gov.in/kabul>.
6. At the 2012 Kabul 'Heart of Asia's conference, India offered to lead two confidence-building measures, intended to support Afghanistan and integrate it into the regional economy. Within India there is confidence that it can 'take a lead in facilitating trade and commercial opportunities for Afghanistan and the region'.
7. Afghanistan Geological Survey. (2017). Information Resources at AGS: Kabul, Afghanistan, Ministry of Mines/available at <http://www.bgs.ac.uk/AfghanMinerals/info.htm>.
8. For example, the Turkmenistan, Afghanistan, Pakistan, and India (TAPI) pipeline that was tipped to carry gas from the Daulatabad fields in Turkmenistan to India and Pakistan via Afghanistan is backed strongly by the US as an alternative to the Iran-Pakistan-India (IPI) pipeline.
9. As mentioned in a report by the US geological survey in 2002.
10. Both resources are concentrated in the Amu Darya basin in the West and the Afghan-Tajik basin in the East.
11. Afghanistan is well endowed with natural resources. Surveys conducted by the Russians during the 1980s and further refined by the US Geological Survey (USGS) post 2000 have conclusively established the presence of large deposits of minerals in Afghanistan.
12. World Energy Council, 'World Energy Resources, 2016.
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22. The gravity model of trade (Krugman et al., 2015) predicts that trade increases with the partner country's GDP: the bigger your trade partner's GDP, the more you trade with that partner country. The model also predicts that trade decreases with the distance to the partner country: the further away your trade partner, the less you trade with that partner country.
23. If we are not familiar with calculus (and we needn't be for this course) the same argument can be made by using the following approximation. We will remember from our macroeconomics classes that when three variables are in a multiplicative relationship: $Z = X \times Y$. Then, following approximation holds for small percentage changes: percentage change in $Z =$ percentage change in $X +$ percentage change in Y (= means: is approximately equal to). Use this property to express the gravity equation in terms of percentage changes: Percentage change in $T_{ij} \approx$ percentage change in $A + a \times$ (percentage change in Y_i) + $b \times$ (percentage change in Y_j) – $c \times$ (percentage change in D_{ij}). As A is assumed to be a constant, the percentage change of A is zero. If we keep the home country's GDP and distance constant, we obtain: percentage change in $T_{ij} = b \times$ (percentage change in Y_j).
24. How to measure distance is a key question in setting gravity model properly. One way is to use great circle distance between capital cities of trade partners (country i and country j). The other way is to use auxiliary variables that represent changes in prices that occur in process of trade between countries i and j . These can be measured either using real exchange rate or the price of oil. The latter is chosen as a suitable representative of transport costs in empirical part of the study. Due to the mentioned transport costs it is impossible to hold Heckscher-Ohlin's assumption that international trade will equalize prices of all trade-able goods in countries that participate in trade. Transport costs inhibit trade and discriminate prices in both trade partners as well.
25. $(\text{Trade Potential Index})_t = (\text{Predicted total trade})_t / (\text{Actual bilateral trade})_t$.