

Research on the Impact of Infrastructure Construction on Bilateral Trade between Middle East and Central Asia Countries

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Abstract. The infrastructure can effectively help countries achieve the following goals. First at all, it can effectively reduce the transaction cost of the target country, thus contributing to market integration within the country and helping it integrate into the world economic system. Secondly, infrastructure construction can effectively improve people's living standards within a country. Thirdly, infrastructure construction can promote the industrial integration of target countries within a certain range, promoting the development of industrial clusters within the region, improve production efficiency, and promote economic development. Then, specific trade relations between countries with different income levels promote the clarification of the positioning of the industrial division of labor. Middle East and Central Asian countries still have problems such as weak infrastructure construction, uneven development, and poor terms of trade. To sum up, based on the actual situation of Middle East and Central Asian countries, this paper analyzes the different roles played by each country in regional economic integration and industrial division of labor based on the infrastructure level through the empirical research of the gravity model. To explore the construction of infrastructure in Central Asian countries to improve the development of the economy, improve people's living standards, promote the efficiency of trade construction, and provide a useful reference for the layout of infrastructure construction in the Middle East and Central Asian countries.

Keywords: Gravity model; Infrastructure construction; Principal component analysis.

1. Literature review

1.1. International trade cost theory

At present, international trade costs are mainly composed of two aspects: one is the "soft" cost represented by tariffs, including policy measures against import and export trade under the system of import and export prohibition, tariff barriers, licenses, etc.; the other is the "hard cost" of incomplete infrastructure construction or not in line with the actual needs of national import and export trade. With economic globalization and the increasingly clear international division of labor, the trade relations between countries are constantly close, and the phenomenon of regional economic integration between countries is gradually emerging. Therefore, in recent years, the "soft" cost of international trade has been decreasing, but this paper focuses on the "hard" cost of international trade in addition to the "soft" cost, namely, the construction of infrastructure. The Central Asian countries are all developing countries, and the infrastructure construction is either incomplete or very unbalanced. Compared with the past studies on trade costs, the hard cost such as infrastructure is directly regarded as an exogenous variable or even directly regarded as zero.

1.2. Introduction to the development of the trade gravity model

Through the Ricardian model between the two countries, Boughesdeduced that transport infrastructure would reduce consumer utility initially but increase consumer utility later. By studying the relationship between infrastructure and trade costs [1], Limo found that compared with coastal countries, infrastructure has a greater impact on the trade costs of landlocked countries [2].

Wilson studied the relationship between trade facilitation and infrastructure and found that the level of trade facilitation contributed the most to the overall APEC trade growth [3]. Nordas used the gravity model to focus on the relationship between infrastructure level and trade volume and also

believed that the improvement of terminal efficiency was very helpful to increase trade volume [4]. Francois used the data from the Asia-Pacific region from 1998 to 2003 and made an empirical analysis with the gravity model, which showed that a 1% improvement in transport infrastructure was equivalent to a tariff reduction. 5%, a 1% improvement in communications infrastructure is equivalent to a reduction in tariffs by 1.5%; For poor countries, the role of transport infrastructure is more obvious, while for developed countries, the trade promotion effect of communication infrastructure is more obvious [5].

Zheng Hefen conducted an empirical analysis on the impact of infrastructure input on service trade structure through transnational panel data, and the research results showed that economic infrastructure such as transportation, energy and communication were positively correlated with service trade structure. Among social infrastructure, R&D infrastructure has a positive effect, while medical, education and environmental protection infrastructure have a negative effect [6]. HeMing conducted an empirical analysis on the impact of infrastructure connectivity on China-ASEAN trade through the gravity model, and the results showed that in the three fields of transportation, communication and energy, communication infrastructure had the greatest impact on China-Asean bilateral trade, followed by transportation infrastructure implementation. The energy infrastructure is not so obvious as the bilateral trade between China and ASEAN. Based on McCallum's border effect model [7]. Liang and Zhang tested the border effect of trade between China and neighboring countries as well as the impact of infrastructure connectivity on the border effect. The results show that air infrastructure reduces the border effect the most, while rail infrastructure and communication infrastructure reduce the border utility to a lesser extent [8].

Compared with the existing literature, this paper analyzes the impact of infrastructure construction level on bilateral trade based on the current international background, which has the following innovations. Firstly, the analysis time interval is new, because the level of infrastructure construction is in the process of constant change, this paper focuses on the empirical analysis of infrastructure construction level and bilateral trade in the time interval from 2015 to 2020, which will also produce new findings; Secondly, the gravity model is new. By extending the original classical gravity model, this paper refines the level of infrastructure construction to the level of transportation infrastructure construction and communication infrastructure construction.

2. Principal component analysis

In recent years, with the increasing trend of the division of labor in the world, multinational companies around the world have increased the pace of foreign investment, which has led to the rapid development of global logistics, production, manufacturing, and trading system. Recently, international trade from the previous shipping liner transportation, gradually to sea, air, and land transport integration direction changed [9].

In this paper, principal component analysis is used as a method of dimensionality reduction. The three unrelated indicators, namely, the number of mobile phones for 100 people, the number of fixed-line telephones, and the Internet penetration rate, are fitted into one indicator, which is denoted as communication infrastructure. Then the SPSS software is used to determine the explanation rate of each principal component for the total sample, and the index fitting coefficient is used to score each country's communication infrastructure and transportation infrastructure as Table 1 shown. Based on the result of PCA, it is obvious that both communication infrastructure and transportation infrastructure only need to take the first principal component to effectively explain the total sample, and the explanation rates are 89.16% and 85.43% respectively.

Table 1. Eigenvalues of PAC

	Eigenvalues	Explained variance ratio	Eigenvalues	Explained variance ratio
1.	2.675	89.16%	2.563	85.43%
2.	0.225	96.66%	0.304	95.56%
3.	0.201	1	0.044	1

Resource from: Author calculated.

The component score coefficient matrix of the standardized data in the principal component is shown in the following table (Table 2).

Table 2. Component score coefficient

	Variable	Principal component	Score of components
1.	Volume of air freight	<i>TAL</i>	0.382
2.	Volume of Container shipping	<i>TAL</i>	0.391
3.	Volume of railway freight	<i>TAL</i>	0.354
4.	Number of mobile phones (per 100 people)	<i>ITC</i>	0.363
5.	Number of fixed-line phone(per 100 people)	<i>ITC</i>	0.374
6.	Internet penetration rate	<i>ITC</i>	0.400

Resource from: Author calculated.

To facilitate understanding of the level of communication infrastructure and transportation infrastructure of the Middle East and Central Asia. This paper contrasts using PCA their infrastructure score differences with those of the world's major economies in 2015-2020. (Table 3 &4)

Table 3. The comparison of transportation infrastructure score

Middle East (Average)	Central Asia(Average)	China	USA	EU(Average)
0.1486	0.0267	1.7352	0.6445	0.3453
	Eigenvalues	Explained variance ratio	Eigenvalues	Explained variance ratio
1.	2.675	89.16%	2.563	85.43%
2.	0.225	96.66%	0.304	95.56%
3.	0.201	1	0.044	1

Table 4. The comparison of communication infrastructure score

Middle East (Average)	Central Asia (Average)	China	USA	EU(Average)
0.7225	0.2975	0.4309	0.8456	0.8766

From the table above, it is obvious that the infrastructure in Central Asia is at the lowest level compared to other economies. Most countries in the Middle East are resource exporters, they have better transportation infrastructure is reasonable, and most of them are also high-income countries, a higher income level can support the purchase of more communication equipment. The same is true for the EU and USA. However, on transportation infrastructure, crude oil is transported by ocean shipping and pipeline. Despite the Middle East has some advantages in ocean shipping compared to some countries in the EU, it has disadvantages in railway and air freight when calculating the score. See the Appendix for country-specific scores. Central Asia is rich in natural resources and has huge market potential, but its economic development level is generally backward, and its social fluctuations are large. Its market environment is not as mature, standardized, legal, flexible and open as that of European and American countries [10].

3. Extended gravity model

The basic hypotheses of the gravity model are:

All commodities are produced in different regions.

Each region produces only one commodity.

Each commodity has a fixed supply.

Consumers have identical preferences and a utility equation with a constant elasticity.

Hence, if c_{ij} is used to represent the consumer goods imported by the consumer in region J from the region I, the utility of consumers in region j is formula (1).

$$\max = [\sum_{i=1}^r \beta_i^{\frac{1-\varphi}{\varphi}} c_{ij}^{\frac{\varphi-1}{\varphi}}]^{\frac{\varphi}{\varphi-1}} \quad 0 < \varphi < 1 \quad (1)$$

The budget constraint is $\sum_{i=1}^r p_{ij} c_{ij} = y_j$ (2)

In formula (1), φ is the elasticity of substitution across all products. β_i is allocation factor, p_{ij} is the nominal national income of country j, p_{ij} is the price of country j's import from country i $p_{ij} = P_i T_{ij}$, T_{ij} is all the transaction costs between the two countries. P_i is the mill price of country i. Hence, the nominal value of j's imports from i is $x_{ij} = p_{ij} c_{ij}$, total transaction cost is $(T_{ij} - 1) p_i c_{ij}$. To the country i, the total income is $y_i = \sum_j x_{ij}$.

Maximization of Equation (1) subject to the constraints of Equation (2), the first-order condition is

$$x_{ij} = \left(\frac{\beta_i p_i T_{ij}}{p_j} \right)^{(1-\varphi)} y_j \quad (3)$$

p_j is the CPI of country j

$$p_j = [\sum_{i=1}^r (\beta_i p_i T_{ij})^{1/(1-\varphi)}]^{1-\varphi} \quad (4)$$

$$\text{Then } y_i = \sum_j x_{ij} = \sum_j \left(\frac{\beta_i p_i T_{ij}}{p_j} \right)^{(1-\varphi)}$$

$$y_j = (\beta_i p_i)^{1-\varphi} \sum_j \left(\frac{T_{ij}}{p_j} \right)^{(1-\varphi)} y_j \quad (5)$$

Furthermore, suppose that the world nominal income is $y^w = \sum_j y_j$, the income share of country j is $\theta_j = y_j / y^w$, Equation(5) is substituted into Equation(3), then.

$$x_{ij} = \frac{y_i y_j}{y^w} \left(\frac{T_{ij}}{\pi_j p_j} \right)^{1-\varphi} \quad (6)$$

Furthermore

$$\pi_i = [\sum_j \left(\frac{T_{ij}}{p_j} \right)^{1-\varphi} \theta_j]^{1/(1-\varphi)} \quad (7)$$

Substitute it into Equation (4)

$$p_j = [\sum_i \left(\frac{T_{ij}}{\pi_i} \right)^{1-\varphi} \theta_i]^{1/(1-\varphi)} \quad (8)$$

If suppose that the transaction costs are symmetric ($T_{ij} = T_{ji}$), then $p_j = \pi_i$ and $p_j^{1-\varphi} = \sum_i p_i^{\varphi-1} \theta_i T_{ij}^{1-\varphi}$, then the gravity model is gotten.

$$x_{ij} = \frac{y_i y_j}{y^w} \left(\frac{T_{ij}}{p_j p_i} \right)^{1-\varphi} \quad (9)$$

To simplify the model, suppose that p_j, p_i and y^w are constants, and take the logarithm to Equation (9), then.

$$\ln(x_{ij}) = \ln y_i + \ln y_j + (1 - \varphi) \ln T_{ij} \quad (10)$$

Suppose the trade cost is equal to $T(\epsilon_{ij}, \epsilon_i, \epsilon_j, \mu_{ij})$, in it, ϵ_{ij} is the trade cost that is affected by the bilateral countries. This variable is decided by country i and country j. ϵ_i is the characteristic variable that is affected by unilateral country i. ϵ_j is the characteristic variable that is affected by unilateral country j. μ_{ij} is the unobservable variable, then.

$$\ln T_{ij} = \tilde{\alpha} + \tilde{\beta} \ln \epsilon_{ij} + \tilde{\gamma} \ln \epsilon_i + \tilde{\sigma} \ln \epsilon_j + w_j \quad (11)$$

This paper substitutes the above trade cost formula into the standard gravity model (10), then.

$$\ln x_{ij} = \tau_0 + \tau_1 \ln y_i + \tau_2 \ln y_j + \theta[\tilde{\alpha} + \tilde{\beta} \ln \epsilon_{ij} + \tilde{\sigma} \ln \epsilon_j + \omega_j] + \tau_{ij} \quad (12)$$

Then this paper substitutes the specific variable into the formula of trade cost $(\epsilon_{ij}, \epsilon_i, \epsilon_j, \mu_{ij})$, such as $Dis_{ij}, TAL_j, POP_i, POP_j$ and so on. Dis_{ij} is the distance between the capital of two countries. The distance will affect shipping costs. TAL_j is the tariff of country j, the higher tariff will also increase the trade cost, and so on. The specific explanation of the variables is shown in the below table (5).

Table 5. The explanation of variables

$\ln p GDP_j$	Log of GDP per capita in the host country
$\ln p GDP_i$	Log of export GDP per capita
$\ln Dis_{ij}$	Log of distance between the capitals of the two countries
$\ln pop_j$	Log of the total population of the host country
$\ln tarif_j$	(1 + average import tariff) logarithm
$\ln pop_i$	Log of the total population of the exporting country
$landlocked_i$	Whether the exporting country is a landlocked country
$\ln TAL_i$	Log of transport infrastructure index in exporting countries
$\ln ITC_i$	Log of the communication infrastructure index of exporting country
$\ln Institution_i$	Log of economic freedom index of the exporting country
$Lang_{ethno_{ij}}$	Whether the two countries have the same culture and language

Then the bilateral import and export trade, this paper replace it using import trade volume, because the import trade value of country i from country j is the export trade import of country j to country i. Also, add the variable of temporal trend (*year*). Then.

$$\begin{aligned} \ln IM_{ij} = & \tau_0 + \tau_1 \ln p GDP_j + \tau_3 \ln Dis_{ij} + \tau_4 \ln tarif_j + \tau_5 \ln POP_j + \tau_6 \ln POP_i \\ & + \tau_7 Landlocked_i + \tau_8 Lang_{ethno_{ij}} + \tau_9 \ln Institution_i + \tau_{10} \ln TAL_i \\ & + \tau_{11} \ln ITC_i + year + \tau_{ij} \end{aligned} \quad (13)$$

4. Regression

$\ln TAL_i$; $\ln ITC_i$ are key variables in this paper. $\ln Institution_i, Lang_{ethno_{ij}}, landlocked_i, year$ and so on are control variables. To further understand the requirements of different income levels of the Middle East and Central Asia countries on the level of infrastructure construction of exporters. Under the standard of the World Bank, the countries whose per capita income is above 12000 USD are high-income countries, the rest countries are low or middle-income countries.

In this session, the empirical regression analysis is further carried out at three levels: High-income countries import from low or middle-income countries (H-LM). Low or middle-income countries import from high-income countries (LM-H), and low or middle-income countries import from low or middle-income countries (LM-LM). The data sources and result of regression are shown in table 6 and table 7 respectively.

Table 6. Data sources

Data	Source
Bilateral trade data	UN Database
GDP per capita, Total population, Import tariff	World bank Database
Distance between capitals, Landlocked country or not	GoogleMap Database(Straight line distance)
Whether countries have the same culture	CEPII Database
Economic freedom index data	The Economic freedom of the world
The standard of high or middle-low-income country	UN Database

The landlocked country in this paper is shown as 1, if not a landlocked country is 0.

Some countries are missing a lot of data, such as Afghanistan, not included in this paper. The remaining missing data were completed by the imputation method.

Table 7. Regression result

Variable	All sample	H - ML	ML-H	ML-ML
$\ln p GDP_j$	1.235***	0.837***	1.437***	1.336***
T Statistic	35.672	25.876	7.276	12.357
$\ln p GDP_i$	0.754***	0.652***	1.774***	0.874***
T Statistic	17.653	11.425	8.740	6.433
$\ln Dis_{ij}$	-1.644***	-0.745***	-1.310***	-1.482***
T Statistic	-22.265	-8.419	-14.478	-25.159
$\ln tariff_j$	-3.735***	-2.687	-5.965	-4.984***
T Statistic	-4.354	-0.156	-0.654	3.165
$\ln pop_j$	1.948***	1.632***	1.946***	1.382***
T Statistic	32.789	27.485	7.541	45.228
$\ln pop_i$	1.637***	1.573***	0.478***	1.369***
T Statistic	32.789	27.485	7.541	45.228
$landlocked_i$	-1.598***	-2.341***	0.227*	-0.417
T Statistic	-5.149	-17.349	1.769	-1.433
$Lang_ethno_{ij}$	0.624***	0.2574**	0.7752***	0.371***
T Statistic	4.664	3.002	2.916	2.775
$\ln Institution_i$	5.224***	4.725***	0.853	2.871***
T Statistic	4.611	12.822	0.254	4.556
$\ln T AL_i$	0.105***	0.354	0.583***	0.088***
T Statistic	8.671	0.751	9.498	5.147
$\ln ITC_i$	1.564***	1.732***	0.752	2.448***
T Statistic	14.775	3.856	0.929	5.762

Note. The dependent variable is importing volume. The *, **, *** indicate significance at 1%, 5% and 10% respectively.

In this paper, the regression results will be interpreted from the following three aspects. From the perspective of influence degree, every 1% increase in the level of transportation infrastructure extracted by the principal component analysis method will promote the growth of import trade by 0.105%, while every 1% increase in the level of communication infrastructure extracted by the principal component analysis method will promote the growth of import trade by 1.56%. The regression results show that although transport infrastructure develops rapidly, its elasticity is no longer large, while the elasticity of communication infrastructure to the impact of trade becomes larger. Communication infrastructure can effectively reduce the cost of bilateral trade, and both parties can conduct more efficient and convenient transportation on the Internet and telephone. The

popularization of communication facilities can also make the coverage of information more extensive, effectively reduce the information asymmetry in bilateral trade, and improve the transaction efficiency of both sides.

Secondly, from the perspective of economic freedom, most Central Asian countries are developing countries, so there may be some shortcomings in the overall economic system, and the degree of economic freedom is not high. Therefore, the positive impact of economic freedom on trade is still very obvious. Therefore, it is necessary for Central Asian countries to continue to improve laws and implement policies. Greater economic freedom is useful to boost imports and exports.

Thirdly, from the perspective of imports between countries with different income levels, the imports of high-income countries from low or middle-income countries may be because most of the imports of high-income countries from low or middle-income countries are low-value-added products or primary products, so the transparency of products and information will be more important at this time. Therefore, some low or middle-income countries with better infrastructure construction are more likely to obtain goods orders from high-income countries.

When high-income countries import from low or middle-income countries, the impact of communication infrastructure is more significant, while when low or middle-income countries import from high-income countries, the impact of transportation infrastructure is more significant. This may be because the construction of communication infrastructure in high-income countries is relatively complete, while some of the high-income countries in the Middle East are resource-exporting countries, such as Saudi Arabia, the United Arab Emirates and other countries. Middle or low-income countries have a great demand for resources in these countries, so they have relatively high requirements for transportation infrastructure. Better transport infrastructure can effectively reduce trade costs. Both transportation infrastructure and communication infrastructure have a profound impact on the imports of low or middle-income countries, but relatively speaking, communication infrastructure has a more significant impact on trade. Considering that the imports and exports of low or middle-income countries are basically primary products, they are relatively substitutes for each other. Similar to imports from countries with high income and low or middle-income levels, it has high requirements on information transparency.

This paper adds the interactions to analyze the sample data. Mainly, the interaction items are the interaction of the transportation infrastructure index of exporters and their per capita income ($\ln T AL_i \times \ln p GDP_i$), the interaction of the communication infrastructure index of exporters and their per capita income ($\ln ITC_i \times \ln p GDP_i$), and the interaction of economic freedom index and their per capita income ($\ln Institution_i \times \ln p GDP_i$) to solve to problem of multicollinearity, this paper uses the mean centering method to deal data.

Table 8. The result of regression of interactions

Variable	Transportation infrastructure	Communication infrastructure	Economic freedom index
$\ln p GDP_j$	1.003***	1.076***	1.077***
<i>T Statistic</i>	(39.286)	(39.456)	(38.246)
$\ln p GDP_i$	0.454***	0.594***	0.557***
<i>T Statistic</i>	(8.187)	(10.574)	(10.746)
$\ln Dis_{ij}$	-1.557***	-1.357***	-1.103***
<i>T Statistic</i>	(-31.564)	(-31.765)	(-31.621)
$\ln tarri_{fj}$	-3.682***	-3.048***	-3.082***
<i>T Statistic</i>	(-2.527)	(-2.844)	(-2.359)
$\ln pop_j$	-1.204***	-1.282***	-1.247***
<i>T Statistic</i>	(71.581)	(72.418)	(71.561)
$\ln pop_i$	1.153***	1.289***	1.227***
<i>T Statistic</i>	(35.763)	(37.887)	(35.723)
$landlocked_i$	-1.201***	-1.068***	-1.119***
<i>T Statistic</i>	(-7.152)	(-8.165)	(-7.195)
$Lang_{ethno_{ij}}$	0.489***	0.421***	0.453***
<i>T Statistic</i>	(4.734)	(4.342)	(4.992)
$\ln Institution_i$	2.657***	4.123***	3.555***
<i>T Statistic</i>	(6.527)	(8.672)	(8.004)
$\ln T AL_i$	0.234***	0.111***	0.110***
<i>T Statistic</i>	(11.382)	(6.571)	(6.007)
$\ln ITC_i$	1.445***	1.581***	1.705***
<i>T Statistic</i>	(10.774)	(9.637)	(11.572)
$\ln tarri_{fj} \times \ln p GDP_i$	0.078***		
<i>T Statistic</i>	(10.239)		
$\ln ITC_i \times \ln p GDP_i$		0.013***	
<i>T Statistic</i>		(0.206)	
$\ln L nstitution_i$ $\times \ln p GDP_i$			1.086***
<i>T Statistic</i>			(4.096)
Temporal trend	Significant	Significant	Significant
R^2	0.697	0.692	0.692

Note. The dependent variable is importing volume. The *, **, *** indicate significance at 1%, 5% and 10% respectively.

5. Conclusion

The polarization of infrastructure construction is very serious in the Middle East and Central Asia. Taking communication infrastructure as an example, developed countries in the Middle East have better communication infrastructure conditions, while developing countries in central-Asia have faster growth. In terms of transportation infrastructure, countries that export resources, such as Saudi Arabia and the United Arab Emirates, have a good foundation. But, developed countries have a good foundation and developing countries have a fast growth rate. What is special is the development of mobile communication technology in recent years, which has gradually replaced fixed telephone communication. Therefore, the number of mobile phones for 100 people has a downward trend in most countries in recent years.

Infrastructure construction has a positive role in promoting trade volume, which is available in both communication infrastructure and transportation infrastructure. Compared with communication infrastructure, transportation infrastructure has a better role in promoting a country's import and export trade volume in the early stage, which can effectively reduce trade costs and improve the terms of trade. However, in the later stage, communication infrastructure can more effectively promote the country's import and export trade and improve the information asymmetry. On the other hand, communication infrastructure has a more significant impact on the import of high-income countries from low - and middle-income countries. This may be because high-income countries pay more attention to the information transparency and communication convenience of exporting countries, while transportation infrastructure has a more significant impact on the import of low - and middle-income countries from high-income countries. This also shows that middle-income and low-income countries pay more attention to how to reduce transportation trade costs and save their own freight when importing. The main factor for Central-Asia countries to promote their per capita income level is transportation infrastructure rather than communication infrastructure. Through the interactive comparison of economic freedom index, it is obvious that the middle or low- income countries are more sensitive to the institutional construction at the economic freedom level than the high-income countries.

In conclusion, this paper puts forward the following suggestions for the infrastructure construction of countries in Middle East and Central- Asia. Firstly, for middle-income and low-income countries, when a country's transportation infrastructure construction reaches a certain level, the marginal benefit of transportation investment continues to decrease, and the benefits brought by continuous transportation investment are not transferred to communication infrastructure. Especially when the trading partners of some middle-income and low-income countries are high-income countries, actively reducing the asymmetry of their own trade information and improving the convenience of their own communication conditions have become more efficient measures to promote their import and export trade. Secondly, Middle East countries are almost all resource-exporting countries, and they have a strong dependence on transportation infrastructure. Although the construction of transport infrastructure in these countries has been very good, it is still necessary to actively promote the coordinated operation of various transport infrastructures and promote hardware and software upgrading.

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Appendix

Communication infrastructure score and mean of the Middle East and Central Asia countries.

Country	2015	2016	2017	2018	2019	2020	Average
UAE	1.00009	1.09804	1.15530	1.22035	1.30318	1.37981	1.19280
Kuwait	0.62910	1.10603	1.09089	1.05895	1.22391	1.26403	1.06215
Saudi Arabia	0.83742	0.91914	0.91114	1.00182	1.06201	1.11572	0.97454
Qatar	0.81887	0.88187	0.95086	0.99423	1.06062	1.12743	0.97231
Bahrain	0.31193	1.06780	1.10166	0.92665	1.16669	1.19616	0.96182
Oman	0.80202	0.85920	0.88342	0.95505	1.01172	1.06904	0.93007
Kazakhstan	0.61733	0.95380	0.89787	0.92660	1.04344	1.07467	0.91895
Israel	0.60610	0.88133	0.93885	0.90848	1.02536	1.07684	0.90616
Turkmenistan	0.96210	0.58223	0.62699	0.81713	0.75683	0.82692	0.76203
Turkey	0.93045	0.58274	0.59612	0.79431	0.73687	0.79915	0.73994
Jordan	0.61084	0.63811	0.74791	0.74760	0.80085	0.86152	0.73447
Azerbaijan	0.30341	0.75634	0.76313	0.68178	0.82866	0.85144	0.69746
Kyrgyzstan	0.65196	0.60542	0.61282	0.70271	0.71964	0.76361	0.67603
Iraq	0.57429	0.62062	0.65121	0.69257	0.73687	0.78041	0.67599
Lebanon	0.68008	0.57756	0.59140	0.69497	0.69788	0.74470	0.66443
Syria	0.89901	0.45522	0.48012	0.69138	0.60637	0.66839	0.63342
Tajikistan	0.91290	0.44777	0.46663	0.68899	0.59741	0.65913	0.62881
Uzbekistan	1.00128	0.39878	0.43031	0.69074	0.56511	0.63451	0.62012
Egypt	0.50536	0.53405	0.53486	0.59120	0.62242	0.65582	0.57395
Yemen	1.05671	0.34145	0.31324	0.64806	0.48232	0.54379	0.56426
Pakistan	0.81608	0.31393	0.29058	0.53735	0.42376	0.47112	0.47547

Transportation infrastructure scores and mean values for Middle East and Central Asia countries.

Country	2015	2016	2017	2018	2019	2020	Average
UAE	0.32529	0.32174	0.32782	0.32409	0.32811	0.32285	0.32498
Qatar	0.21408	0.21413	0.21426	0.21438	0.21455	0.21428	0.21428
Turkey	0.15678	0.15626	0.15319	0.15169	0.15980	0.15555	0.15555
Saudi Arabia	0.09699	0.09480	0.09552	0.09559	0.09505	0.09669	0.09578
Egypt	0.09418	0.09750	0.09323	0.09438	0.09469	0.09480	0.09480
Oman	0.06421	0.06337	0.06147	0.06451	0.06878	0.06447	0.06447
Pakistan	0.05361	0.05525	0.05659	0.05660	0.05798	0.05601	0.05601
Israel	0.05528	0.05472	0.05518	0.05518	0.05719	0.05551	0.05551
Lebanon	0.03672	0.03727	0.03679	0.03679	0.03785	0.03708	0.03708
Kuwait	0.03672	0.03727	0.03679	0.03679	0.03785	0.03708	0.03708
Jordan	0.01525	0.01473	0.01461	0.01461	0.01479	0.01480	0.01480
Yemen	0.00440	0.00441	0.04142	0.00414	0.00414	0.00414	0.01044
Bahrain	0.00262	0.00262	0.00262	0.00162	0.00162	0.00162	0.00212
Syria	0.00173	0.00177	0.00177	0.00175	0.00175	0.00175	0.00175
Kazakhstan	0.00103	0.00128	0.00110	0.00115	0.00170	0.00126	0.00126
Uzbekistan	0.00126	0.00117	0.00103	0.00102	0.00112	0.00112	0.00112
Turkmenistan	0.00065	0.00068	0.00062	0.00067	0.00073	0.00067	0.00067
Azerbaijan	0.00043	0.00042	0.00037	0.00032	0.00025	0.00036	0.00036
Kyrgyzstan	0.00005	0.00005	0.00005	0.00004	0.00005	0.00005	0.00005
Tajikistan	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003
Iraq	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002