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RESEARCH PAPER

An Analysis of the Impacts of COVID-19 and Freight Cost on Trade of the Economic Belt and the Maritime Silk Road

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ABSTRACT
The Coronavirus Disease 2019 (COVID-19) epidemic in China has been controlled periodically. However, we are now in a period of rapid outbreaks worldwide, the situation of epidemic prevention and control in all countries is still tense. Due to the COVID-19 outbreak, objectively, international trade has a higher risk of infection. At this stage, the prevention and control of the epidemic have become a responsibility for the countries worldwide. This study aims to measure the potential economic impacts of COVID-19 on trade volume between China and One Belt One Road countries (OBOR). The economic impacts assessments of (COVID-19) on trade are based on a Gravity model and speed of convergence (SC) method by changes in trading behavior and cost of (COVID -19) outbreak by in affected countries. The results reveal that potential trade values between China and European Union (EU) will drop by 11.5%, China and East Asia and Pacific (EAP) by 6,7%, China and the Middle East and North Africa (MENA) by 8.9%, China and South Asia (SAR) by15%, China and Europe and Central Asia (ECA) by 9%.

KEYWORDS: *OBOR Countries; COVID-19; Gravity model; Freight cost.*

1. Introduction

Trade is very susceptible to shocks, such as epidemics [5]. Corona Virus Disease COVID-19 is having a main impact global economy [22]. At the end of December 2019, the Covid-19 outbreak rapidly spread from Wuhan in China to other parts of the country and many countries [23]. The covid-19 outbreak had eventually appeared in 170 countries [7]. One Belt One Road initiative (OBOR) was formally announced in 2013, the Initiative is comprising more than 65 countries in Europe Countries (EU), East Asia and Pacific (EAP) Economies, and Europe and Central Asia (ECA), both Middle East and North Africa (MENA) and South Asia (SAR), OBOR aims to steps forward cross-border infrastructure in order to reduce transportation costs across an enormous geographical area between China to other OBOR countries, [31] and [36]. as well to conquer world markets by opening up the markets of emerging and developing economies to deal with (i) China's excess production capacity, (ii) inadequate Chinese domestic demand, and (iii) bottleneck in further expanding the saturated export markets in developed economies Cheng, L.K., 2016 OBOR Countries and China are important trading partners for each other; therefore, the impact of Covid-19 outbreak will affect the trade. In 2019, China was the major trade country of goods globally with a share of 17% of world trade. China's trade volume in 2019 was 10.97 trillion dollars [35]. The total volume of China's trade with OBOR countries was 1.89 trillion, Germany (EU), Vietnam (EAP), Saudi Arabia (MENA), India (SAR) and Russia (ECA) are large partners of China. Figure1 represents the total volume of China with OBOR countries groups, as can be seen (EU) has been by far the highest value then (EAP), [30].

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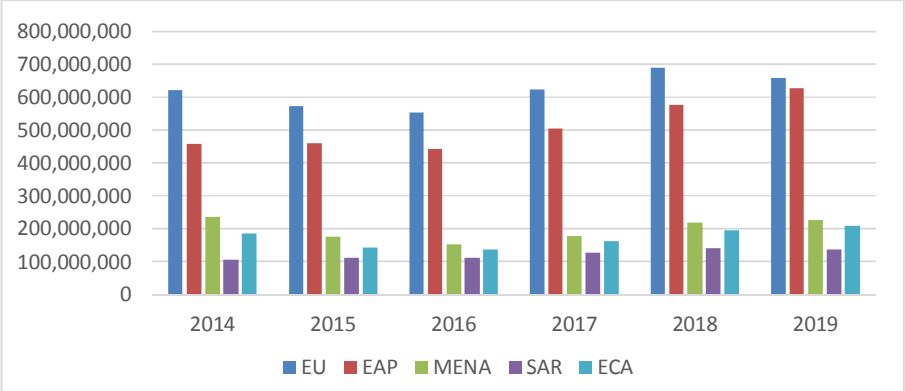

Fig. 1. Trade values between china and groups of OBOR countries2014-2019(1000 $)
Source: General Administration Custom, China .2019.

The impact of the Covid-19 outbreak along the OBOR won't stop the infrastructure development, many countries remain isolated because the trade is choked-off by epidemics. This article looks at the impact of Covid-19 outbreak on trade along the One Belt One Road countries by estimating the trade values potentials might be raised. Gravity model and speed of convergence (SC) method are applied to measure the trading behavior changes and cost of (COVID -19) outbreak by in affected countries on OBOR Countries.

This study organized as follows: section 2 summarizes the related literature, section 3 Methodology, section4 Estimation Results and Discussion, section 5 Trade potentials and section 6 Conclusion

2. Literature Review

China is the second-biggest economy worldwide, and it is a vast market to distribute goods [29]. Adams, Gangnes, and Shachmurove described that Chinese export has been rapidly growing, the fastest growth has been noted for high tech products [1], in contrast, the biggest consumer markets are located in Europe and America [29]. Thus, nowadays, the most significant production facilities are in Asia, and at the same time, Asia is a big and promising consumer market. The COVID-19 epidemic is one of the most severe trade factors; the COVID-19 epidemic in China has been controlled periodically. However, we are now in a period of rapid outbreaks worldwide, the situation of epidemic prevention and control in all countries is still tense; at this stage, the prevention and control of the epidemic have become the responsibility of the countries over the world. Due to the COVID-19 outbreak in countries worldwide, objectively international trade has a higher risk of infection.

A few studies provided some assessments of the economic impacts of an epidemic such as [18], [19], [21] and [20], but these studies focused on estimating the impacts of epidemic on travel and the marketing service and didn't give a full picture because they ignored international trade and capital flows. The study was conducted by Grace. M. LEE focused on the impact of the epidemic on the employment and human resources in tourism and industry sectors; they concluded that the epidemic having a short-term impact [11].Another study by Grace. M. LEE examined the impacts of the epidemic on employment and unemployment; the paper hypothesized that the highest impact would be on worker power [11].

A study by Lee J and McKibbin constructed his study by using the G-Cubed model to estimate the economic impacts of the epidemic outbreak by concentrating on the impacts on consumption and investment; the empirical results revealed the economic interdependence has been increased and improved the variations in the behavior of consumption and investment and have extensive for the global economy [14]. Elci C, estimated the main economic problems of the epidemic cost to affected countries and evaluated the economic impact on the government administrations and extended to include the global level by using forecasting models; the results recommended the collaboration of the global arena, with increased worldwide combination the monetary accountability will be to the global world. The expenses growing can be seen in terms of equipment, resources, transport costs, that are asked to save control of the epidemic outbreak. The influence will evaluate the GDP and demonstrate the losses of trade and Administration spending in controlling the epidemic outbreak [16]. Another study

conducted by Chou and Peng offered by applying a multi-regional comparable general equilibrium model on several facilities and industrial divisions in China, Taiwan, and the GDP of more than fifteen areas to determine the impacts of the outbreak costs. The results revealed according to two periods, short-term outbreak results compared with and long-term outbreak, the simulation model calculates losses to the gross domestic product of the facility and industrial divisions of 67% in Taiwan, 20% in China, and 1.6% in Hong Kong. If the outbreak still existed for a long time, a deficiency of transparent revelation about the outbreak of the outbreak in China could decrease an extra 1.6% to China's gross domestic product [18].

3. Methodology

The worldwide exchange depends on numerous elements, such as economies of scale, rivalry, and a decent variety of items [25]. While there are a few ways to deal with survey the impact of worldwide exchange costs, for example, the worldwide outcomes of significant of major disease outbreaks, most of the assessments dependent on the gravity model which the exchange esteems between two nations (i and j) should be related to their markets extent, proxy by $GDP(Y_{i(j)})$ and inversely related to the costs of transportation mode, proxy by distance (D_{ij}). The gravity model is currently used to clarify two-sided trade [8]. As per the law of attraction, the fascination between two things is connected of their masses and conversely identified with their separation. The gravity model is encapsulated as follow:

$$F_{ij} = G\frac{M_i M_j}{D_{ij}^2} \tag{1}$$

Where: Fij is the gravitational fascination, MiM_j, are the mass of two articles, D_{ij} is the distance. The gravity model was at first introduced as a natural method for understanding exchange streams. In its most essential structure, the gravity model can be composed as follows:

$$\ln X_{ij} = b_0 + b_1 \ln(GDP_i) + b_2(GDP_j) + b_3 \ln(\tau_{ij}) + e_{ij} \tag{2}$$

$$\ln \tau_{ij} = \ln(\ DISTANCE\ _{ij}) \tag{3}$$

Where X_{ij} shows exports from nation i to nation j. GDP is each country's gross domestic product. τ_{ij} Represents to exchange costs between the two nations, distance is the geological separation between them as a perceptible intermediary for exchange costs. e_{ij} is a random error term. b_0 is a regression constant, and the b terms are coefficients to be estimated.

In the early gravity model literature, some authors used dependent variables such as the logarithm of total trade for a country pair (the sum of exports and imports) or the average of exports in both directions. The model applies to unidirectional export flows, which means that each line in a gravity database should represent a single flow. Thus, exports from country i to country j are recorded in one line of the database, and exports from country j to country i are recorded separately. The last part of the model that needs to be specified for estimation purposes is the trade costs function τ_{ij}^k . In econometric literature, trade costs are captured by several expressions; transport costs are generally captured by proxies such as distance, landlocked, and border dummies. Information cost, which usually are capture by proxies such as a common language. But in our study, we generally specify the trade costs function as follows:

$$\ln T_{ij} = \ln(Dis_{ij}) + \ln(COVID\_19_{ij}) + (border_{ij}) + (comlang_{ij}) + (colony_{ij}) + (landlocked_{ij}) + (ex_{ij}) \tag{4}$$

So, the estimation equation is specified as follows:

$$\ln T_{ij} = b_0 + b_1 \ln(GDP_i) + b_2 \ln(GDP_j) + b_3 \ln(N_i) + \ln b_4(N_j) + \ln b_5(Dis_{ij}) + \ln b_6(COVID\_19_{ij}) + b_7(controls_{ij}) \tag{5}$$

$$b_7(control_{ij}) = b_{7.1}(border_{ij}) + b_{7.2}(comlang_{ij}) + b_{7.3}(colony_{ij}) + b_{7.4}(landlocked_{ij}) + b_{7.5}(ex_{ij}) \tag{6}$$

For this study, the model is specified below, with the global consequences of major disease outbreaks COVID-19 for the log of variables in the OBOR countries. This study's model is

further enhanced by adding the variables of population, exchange rate, border, and language, colony, and landlocked that affect bilateral trade between China and the partner countries. Therefore, the baseline equation will look like the following:

$$\ln T_{ijt} = b_0 + b_1 \ln(GDP_i) + b_2 \ln(GDP_j) + b_3 \ln(N_i) + b_4 \ln(N_j) + b_5 \ln(DIS_{ij}) + b_6 \ln(COVID\_19_{ij}) + b_{7.1}(border_{ij}) + b_{7.2}(comlang_{ij}) + b_{7.3}(colony_{ij}) + b_{7.4}(landlocked_{ij}) + b_{7.5}(ex_{ij}) + \varepsilon_{ij} \quad (7)$$

GDP, population, distance, and COVID-19 are in logarithms, exchange rate, border, common language, landlocked and colony are not in logarithms. The dependent variable is trade (exports plus imports) of China and some of its partners.

Where *i-j*: refer to trade values from country i to partner j. *lnT i-j* t represents log of country's trade i with partner j in year t. *ln_GDPi :* represents log of GDP of country i in year t. *ln_GDP j*: represents log of GDP of the partner country j in year t. *ln_N i* represents log of country i population in year t. *ln_N j* represents log of Population of country j in year t. $\ln\_Dis_{i-j}$ represents log of the geographical distance between China and partners .*ln*_COVID-19*i-j* represents log of disease outbreaks between China and partners. Other control variables are exchange rate, landlocked, border, language, and colony are dummy variables perceptively, where: EX_{i-j} is a dummy variable, represents Exchange rate between countries i and partner in year t. Landlocked i-j is a dummy variable, represents landlocked dummy variable between country $\ln\_Dis_{i-j}$ and partner. $Border_{i-j}$ is border dummy variable between country i and partner. $Comlang_{i-j}$ is common language dummy variable between country i and partner. ε_{i-j} is Error term.

The dependent variable of the models is straight-forward $\ln T_{ijt}$ represents the aggregate exports and imports.

3.1. Sample size and data description

The data represents the economic variables of 76 countries divided to five main groups.

- Group I: European Union (EU).
- Group II: East Asia and Pacific (EAP).
- Group III: Middle East and North Africa (MENA).
- Group IV: South Asia (SAR).
- Group IV: Europe and Central Asia (ECA).

Data of imports, exports, and factors influencing trade flows between China and trade partners is in the form of panel data available at the World Bank database. I collected different World Bank Development indicators, which proxy for infrastructure, and used several different databases, namely SEARATES for sea transportation, ROME2RIO, and Google Maps. Regarding our purpose variable, bilateral trade, we use data from a variety of sources, International Trade Centre (ITC), World Health Organization (WHO), International Monetary Fund (IMF), World Bank (WB) and UN Com-trade database. Table 1 summarizes the variables and their source.

Tab. 1. Variables and their source

Variable	Description	Source
Exports and imports	Unilateral export and import flows between china and OBOR Countries.	UN Com trade database
GDP i	Gross domestic product of China	World Bank Group
GDP j	Gross domestic product of OBOR Countries	World Bank Group
Population	Population of OBOR Countries	World Bank Group,UN Com trade database
distance (dist)	Distance measures the distance between two countries applying the great circle formula which takes into account the most Important cities and their population size.	ROME2RIOand Google Maps
COVID-19	Confirmed, suspected and expected cases	WHO
Border	Border is a dummy which is equal to 1 if two countries share a common border and 0 otherwise.	World atlas website http://www.worldatlas.com/

landlocked	Landlocked is a dummy that takes the value 1 if a country is landlocked and 0 otherwise	CEPII Geo-dist database and CIA (The World fact-book)
Common language	Common language is a dummy that takes the value 1 if in two countries at least 9% of the population speak the same language and 0 otherwise	CEPII Geo-dist database and- CIA (The World fact-book)
Colony	Colony is a dummy that takes the value 1 if there was any colonial relationship between two countries and 0 otherwise.	CEPII Geo-dist database and CIA (The World fact-book)
Exchange rate	Exchange rate between china and partner countries	World Bank Group, and Data on the exchange rates are available in national currency per US dollar for all countries

4. Estimation Results and Discussion

Our study has 6 variables to check the relationship between trade and other explanatory variables, and we have 5 dummy variables, our data from 2013 to 2019.The gravity model allows estimating the predicted trade between countries based on the data. The idea is to use the predicted trade based on the status quo and compare it with the OBOR simulation's prediction to detect potential changes in trade from China to Other OBOR Countries. At first the results from OLS and PPML regressions are presented:

Tab. 2. The results from the OLS and PPML regressions

Independent variable	OLS	PPLM
Ln_Yit	0.802***	0.502***
	(0.0256)	(0.0685)
Ln_Yjt	0.953**	0.706***
	0.00921	(0.0332)
Ln_Nit	0.108***	0.108***
	(0.0149)	(0.0492)
Ln_Njt	0.179***	0.179***
	(0.049)	(0.0583)
Ln_Disij	-0.650***	-0.350***
	(0.0135)	(0.0371)
Ln_COVID-19	-0.747***	-0.669***
	(0.0360)	(0.0389)
Border	0.789***	0.483***
	(0.233)	(0.478)
Common language	0.629***	0.346*
	(0.0774)	(0.232)
Colony	0.788***	-0.0644
	(0.236)	(0.278)
landlocked	0.729***	0.672***
	(0.0880)	(0.239)
Exchange rate	0.0654	-0.0254
	(0.0373)	(0.0778)
R-Square	0.7825	0.8344
Constant	-15.19***	-12.49***

***, **, * indicates 1%, 5% and 10% significance level respectively.

The variables which influence China's bilateral trade are: economic size of both China and partner country (Yit, Yjt), China's market size (Nit), foreign market size (Njt), distance (Disij), (COVID-19), borders (Borderij), common language (Comlangijt), colony (Colonyij) and exchange rate (Exijt) and Landlocked (Landlockedij). The OLS regression shows The growth in GDP of China and partners will help to increase total trade value. The estimated

coefficients of these two variables have statistical significance and show positive influences, in line with expectations when constructing the model. An increase of 1% in foreign partner's GDP will enhance trade value by approximately 0.9% and the same increase in China's GDP will enlarge that value by approximately 0.8%. This also shows that China and foreign economic size have influence where China and foreign market size are statistically significant with a positive impact. If China and partner countries' population increases by 1%, the bilateral trade value will step up by 0.1% and 0.17%, respectively. Distance also shows the expected negative sign and is also highly significant at the 1% level. With an increase by 1% of distance, the trade value will decrease by 0.65%, and COVID-19 negatively impacts bilateral trade and is highly significant. If COVID-19 increase by 1%, bilateral trade is decreased by 0.74 %. The control dummies are also all significant at the 1% level. Sharing a common border (Borderij) increases bilateral trade by 7.8 %. landlocked increases bilateral trade by 7.2 %. If the population in two countries share a common language (Comlangijt) bilateral trade increase by 0.6 %. Also, the fact having a colonial relationship (Colonyij) has a strong impact on trade. Bilateral trade increase by 7.8 % in this case. The exchange rate is statistically significant, bilateral trade increase by 0.06 % in this case.The second column reports the results from the PPML estimation. At first it is striking that R-Square raised from 0.7825 to 0.8344. The coefficients for GDP's are much lower compared to the OLS estimation and not anymore close to unity but remain significant at the 1% level. Also, the coefficients for distance and COVID-19 react similar, the impact is lower compared to OLS but still highly significant. Sharing a common border (contig) is still significant at the 1% level however its impact is also lower compared to OLS. Sharing a common language is with the PPML estimation still positive. The colony dummy becomes negative but insignificant under PPML estimation. Landlocked remains significant at the 1% level but is also lower compared to OLS. The exchange rate and colonial relationship are not statistically significant under PPML.

5. Trade Potentials

Calculating trade potential is an intensive part of the gravity model study. The point estimated coefficients had been applied for the data of independent variables to measure trade potential from the gravity model. Potential trade will be compared with the actual trade to consider whether bilateral trade flows between two countries have been overused or underused. However, recent studies have pointed out the error of applying this method to calculate the potential of bilateral trade, acquiring criticisms about the uncertainty of the point estimates method, recommended a method of speed of convergence (SC) (Egger, 2002) as follows:

$$(SC) = \frac{Average\ rat\ of\ potential\ trade}{Average\ rat\ of\ actual\ \ trade} \times 100 - 100 \quad (8)$$

The method of speed of convergence acknowledges the convergence if the growth rate of potential trade is smaller than that of actual trade and as a result the speed of convergence will be negative. In the opposite case, we have the divergence. The effectiveness of this method is that it exploits the flexible structure of the data during the estimation process, in other words it provides more accuracy than the point estimates method. However, we have found that the negative speed of convergence cannot reflect the convergence of potential and actual trade. We need to consider the difference between potential trade value and actual trade value. In particular:

$$\Delta T = Potential\ trade - Actual\ trade \quad (9)$$

If SC and ΔT are unlike signs, there will be the convergence between potential trade value and actual trade value. If SC and ΔT are like signs, we will have the divergence.

5.1. Clarification the results

5.1.1. European union countries (EU)

According to the simulation the most disadvantaged country within the EU countries is Luxembourg with a reduction of trade potential by -43.5 % followed by Poland(-36.5%), Bulgaria(-29%), Slovenia(-27%), Spain (-20%), Estonia (-18.6%), Croatia(-14.5%), and Malta (-11.5%).OBOR Countries with a loss of their potential trade with China are among the disadvantaged even though they are official members of the OBOR initiativeTable3,Fig2.

Tab. 3. European countries (EU)

Country	Partner	Actual trade	Trade potential	Difference Bilateral Trade	Δ Bilateral Trade potential (%)
Luxembourg	China	1,831,685	1,033,070	-798,615	0.436
Poland	China	27,816,133	17,663,244	-10,152,889	0.365
Bulgaria	China	2,718,344	1,932,743	-785,601	0.289
Slovenia	China	3,927,935	2,871,320	-1,056,615	0.269
Spain	China	35,479,013	28,489,647	-6,989,366	0.197
Estonia	China	1,221,104	993,979	-227,125	0.186
Croatia	China	1,541,530	1,318,008	-223,522	0.145
Norway	China	7,350,103	6,563,642	-786,461	0.107
Romania	China	6,900,226	6,161,902	-738,324	0.107
Lithuania	China	2,135,497	1,941,167	-194,330	0.091
Latvia	China	1,289,052	1,176,904	-112,148	0.087
Germany	China	184,882,148	173,234,573	-11,647,575	0.063
Hungary	China	10,216,786	9,583,345	-633,441	0.062
Sweden	China	17,681,508	16,585,255	-1,096,253	0.062
Denmark	China	11,705,627	11,050,112	-655,515	0.056
Ireland	China	16,748,579	16,095,384	-653,195	0.039
UK	China	86,303,706	85,699,580	-604,126	0.007
Belgium	China	25,094,850	24,718,427	-376,423	0.015
Finland	China	7,683,465	7,506,745	-176,720	0.023
Cyprus	China	635,992	615,640	-20,352	0.032
Netherlands	China	85,163,025	82,437,808	-2,725,217	0.032
France	China	65,572,187	63,342,733	-2,229,454	0.034
Greece	China	8,463,861	7,913,710	-550,151	0.065
Italy	China	54,235,327	51,089,678	-3,145,649	0.058
Portugal	China	6,689,811	6,114,487	-441,528	0.066
Austria	China	10,671,486	9,615,009	-843,047	0.079
Malta	China	1,517,806	1,343,258	-174,548	0.115

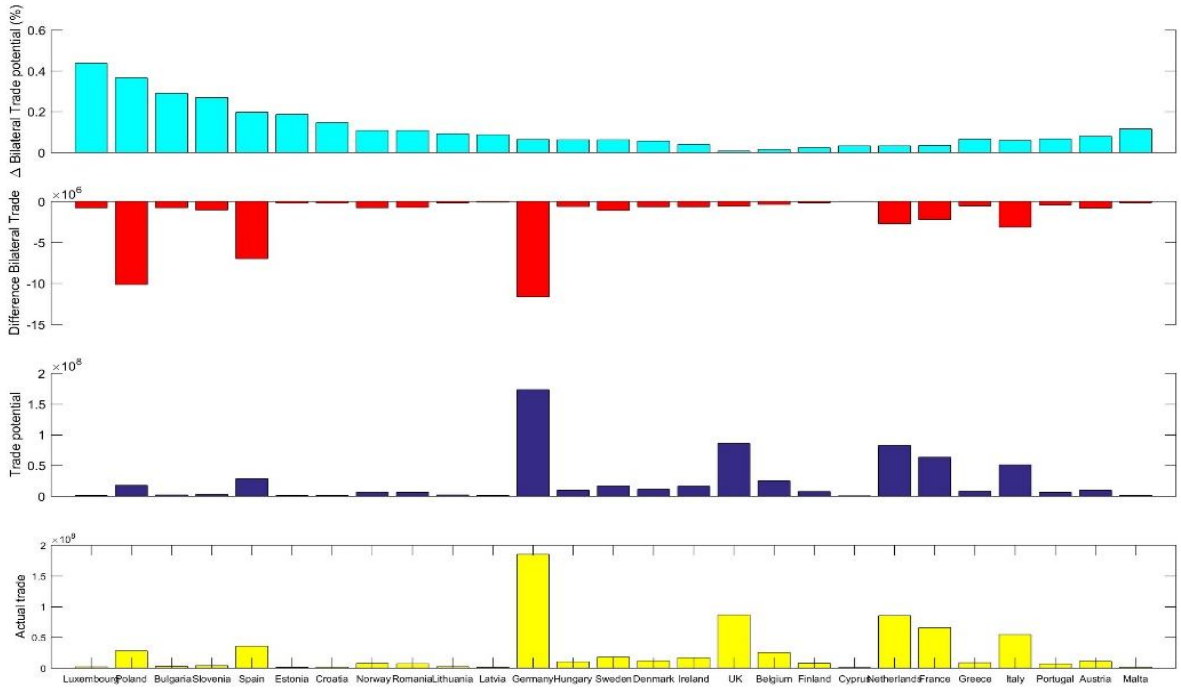

Fig. 2. European countries (EU)

Source: The author

In absolute volumes Germany will decrease its potential trade with China based on the OBOR simulation by (11.6 billion USD) followed by Poland (10 billion USD) and Spain (7billion USD) Similar to the relative change of trade potential also in volumes all EU Economies that are part of OBOR benefit the most in the simulation. The sum of all trade potentials between EU and China is 673 billion USD and its less than 2019 by 48.3 billion. Therefore, COVID-19 and transport cost would lead to decrease the potential trade due to OBOR considering the whole EU.

5.1.2. East asia and pacific (EAP)

According to the East Asia and Pacific countries (EAP). The predicted trade between the OBOR simulation will decrease its potential trade between China and (EAP) countries by (6. 7%). The most impoverished country in East Asia and the Pacific is Mongolia, with a reduction of trade potential by (-17.5 %) followed by the Philippines (-13.6%) Table4, Fig3.

Tab. 4. Countries in east asia and pacific (EAP)

Country	Partner	Actual Trade	Trade Potential	Difference Bilateral Trade	Δ Bilateral Trade Potential (%)
Mongolia	China	8,155,953	6,722,797	-1,433,156	0.175719
Philippines	China	60,952,074	52,630,836	-8,321,238	0.136521
Malaysia	China	123,962,052	115,745,475	-8,216,577	0.066283
Vietnam	China	162,003,720	153,276,256	-8,727,464	0.053872
Indonesia	China	79,705,032	75,604,686	-4,100,346	0.051444
Thailand	China	91,752,405	87,947,158	-3,805,247	0.041473
Singapore	China	89,940,790	86,692,938	-3,247,852	0.036111
Brunei	China	1,099,954	1,095,401	-4,553	0.004139
Cambodia	China	9,428,861	9,010,220	-418,641	0.0444

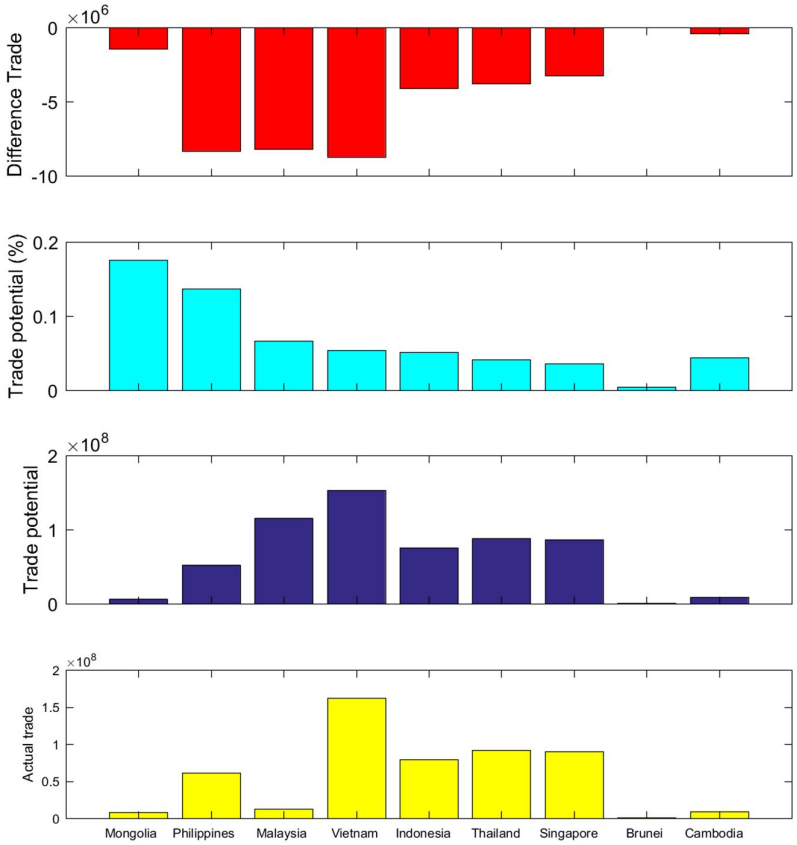

Fig. 3. Countries in east asia and pacific (EAP)

Source: The author

In absolute volumes, Vietnam will decrease its potential trade with China based on the OBOR simulation by (8.3 billion USD) followed by the Philippines (8.3 billion USD) and Malaysia (8.2 billion USD). The sum of all trade potentials between Countries in East Asia and the Pacific and China is 589 billion USD, and it's less than 2019 by 38.3 billion. Therefore, COVID-19 and transport cost would decrease the potential trade due to OBOR considering the whole Countries in East Asia and the Pacific.

5.1.3. Middle east and north africa (MENA)

According to the Middle East and North Africa (MENA). The predicted trade between the OBOR simulation will decrease its potential trade between China and (MENA) countries by (8. 9%). The most impoverished country within countries in Middle East and North Africa be Qatar, with a reduction of trade potential by (-22.2 %) followed by Israel (-19.2) Egypt (-16.6%) and Saudi Arabia (-16.1) Table 5, Fig4.

Tab. 5. Countries in the middle east and north africa (MENA)

Country	Partner	Actual Trade	Trade Potential	Difference Bilateral Trade Potential	Δ Bilateral Trade Potential (%)
Israel	China	14,767,459	11,922,183	-2,845,276	0.192672
Egypt	China	13,201,824	11,004,446	-2,197,378	0.166445
Oman	China	22,580,308	20,459,385	-2,120,923	0.093928
Jordan	China	4,112,341	3,743,645	-368,696	0.089656
Iraq	China	33,333,130	30,627,680	-2,705,450	0.081164
Palestine	China	82,274	77,284	-4,990	0.060649
Yemen	China	3,685,708	3,498,986	-186,722	0.050661
Iran	China	23,025,129	21,990,794	-1,034,335	0.044922
Lebanon	China	1,705,412	1,636,375	-69,037	0.040481
Kuwait	China	17,281,155	17,009,080	-272,075	0.015744
Bahrain	China	1,679,367	1,664,931	-14,436	0.008596
Syria	China	1,315,212	1,262,945	-52,267	0.03974
U A E	China	48,668,929	44,946,243	-3,722,686	0.07649
Saudi Arabia	China	78,037,901	65,444,145	-12,593,756	0.16138
Qatar	China	11,114,774	8,633,401	-2,481,373	0.22325

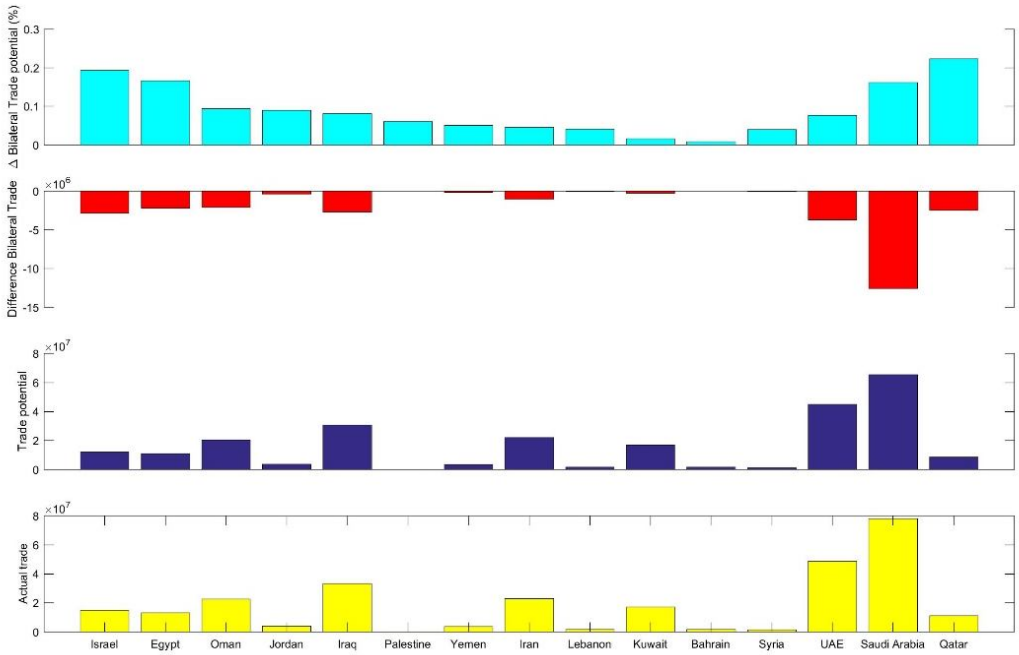

Fig. 4. Countries in the middle east and north africa (MENA)

Source: The author

In absolute volumes, Saudi Arabia will decrease its potential trade with China based on the OBOR simulation by (12.5 billion USD) followed by U A E (3.7 billion USD) and Israel (2.8 billion USD). The sum of all trade potentials between Countries in the Middle East and North Africa, and China is 244 billion USD, and its less than 2019 by 30.7 billion. Therefore, COVID-19 and transport cost would decrease the potential trade due to OBOR considering middle East and North Africa Countries.

5.1.4. Countries in south asia (SAR)

According to Countries in South Asia (SAR), the predicted trade between the OBOR simulation will leads to decrease of its potential trade between China and (SAR) countries by (15%). The most impoverished country within countries in (SAR) be Maldives with a reduction of trade potential by (-27.7 %)followed by Sri Lanka (-20%) India (-15.3%) and Pakistan (-13.5) Table 6,Fig5.

Tab. 6. Countries in south asia (SAR)

Country	Partner	Actual Trade	Trade Potential	Difference Bilateral Trade Potential	Δ Bilateral Trade Potential (%)
Maldives	China	381,726	275,751	-105,975	0.277621
Sri Lanka	China	4,487,500	3,581,568	-905,932	0.201879
India	China	92,814,703	78,542,400	-14,272,303	0.153772
Pakistan	China	17,973,434	15,537,477	-2,435,957	0.135531
Afghanistan	China	629,098	546,135	-82,963	0.131876
Bhutan	China	10,958	10,729	-229	0.020865
Bangladesh	China	18,363,561	18,171,845	-191,716	0.01044
Nepal	China	1,516,069	1,093,283	-422,786	0.27887

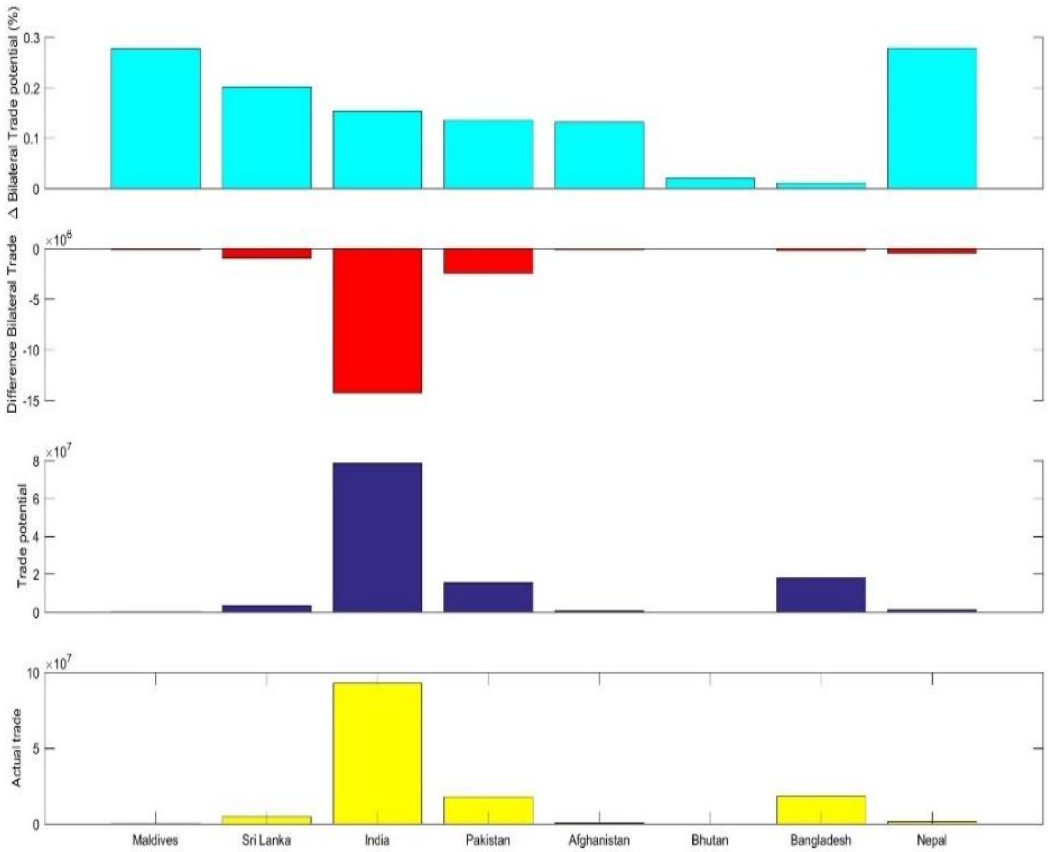

Fig. 5. Countries in south asia (SAR)

Source: The author

India's absolute volumes will decrease its potential trade with China based on the OBOR simulation by (14.2 billion USD) followed by Pakistan (2.4 billion USD). The sum of all trade potentials between Countries in South Asia (SAR) and China is 117.7 billion USD and its less than 2019 by 18.4 billion. Therefore, COVID-19 and transport cost would decrease the potential trade due to OBOR considering South Asia (SAR) Countries.

5.1.5. Europe and central asia (ECA)

According to Countries in Europe and Central Asia (ECA), the predicted trade between the OBOR simulation will leads to decrease of its potential trade between China and (SAR) countries by (9%). The most disadvantaged country within countries in (ECA)be Armenia with a reduction of trade potential by (-17.7 %) followed by Georgia (-15%), Russia (-14.5%), and Tajikistan (-12%) Table7, Fig6.

Tab. 7. Europe and central asia (ECA)

Country	Partner	Actual Trade	Trade Potential	Difference Bilateral Trade	Δ Bilateral Trade Potential (%)
Armenia	China	757,235	622,605	-134,630	0.177792
Georgia	China	1,482,742	1,259,397	-223,345	0.15063
Russia	China	110,794,173	94,685,254	-16,108,919	0.145395
Tajikistan	China	1,674,123	1,474,623	-199,500	0.119167
Turkey	China	20,814,405	18,925,914	-1,888,491	0.09073
Turkmenistan	China	9,116,902	8,504,447	-612,455	0.067178
Belarus	China	2,713,948	2,533,774	-180,174	0.066388
Serbia	China	1,392,991	1,319,894	-73,097	0.052475
Kyrgyzstan	China	6,346,213	6,028,706	-317,507	0.050031
Albania	China	704,060	676,155	-27,905	0.039635
Uzbekistan	China	7,213,866	7,015,773	-198,093	0.02746
B and H	China	192,126	189,309	-2,817	0.014663
Kazakhstan	China	21,990,658	21,758,261	-232,397	0.010568
Azerbaijan	China	1,485,594	1,483,256	-2,338	0.001574
Ukraine	China	11,913,538	10,000,581	-1,912,957	0.16057
Moldova	China	175,939	127,888	-48,051	0.27311

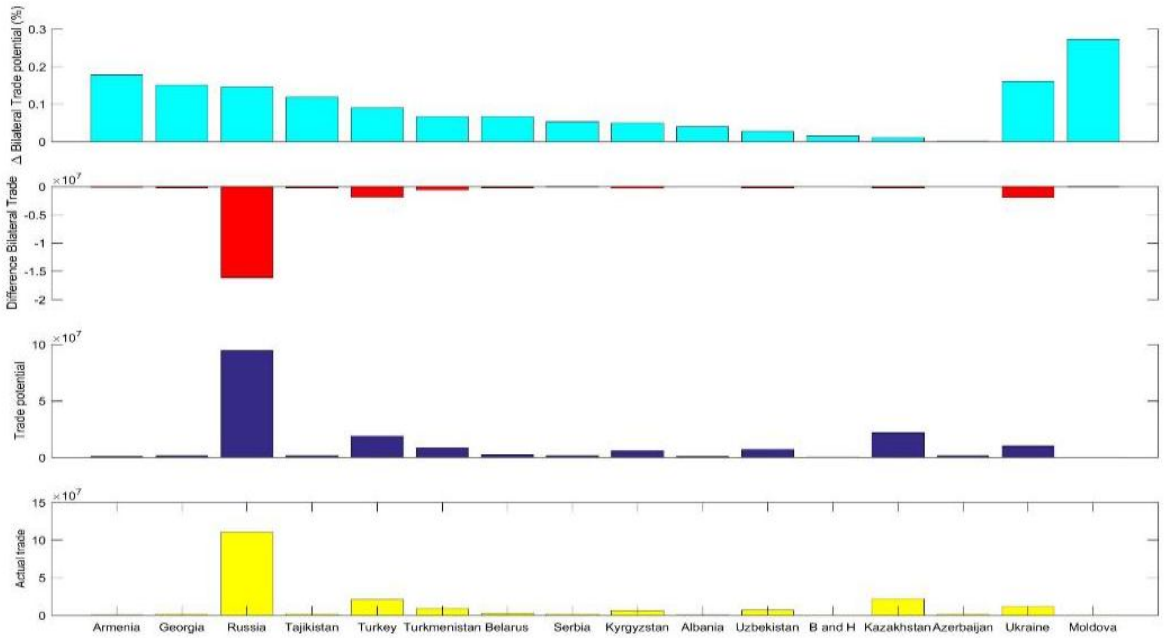

Fig. 6. Europe and central asia (ECA)

In absolute volumes, Russia will decrease its potential trade with China based on the OBOR simulation by (16.2 billion USD) followed by Ukraine (1.9 billion USD). The sum of all trade potentials between Europe and Central Asia (ECA)and China is 176.6 billion USD, and its less than 2019 by 22.1 billion. Therefore, COVID-19 and transport cost would decrease the potential trade due to OBOR considering the Europe and Central Asia Countries (ECA).

5.1.6 Speed of convergence between china and trade partners

The method of speed of convergence acknowledges the convergence if the growth rate of potential trade is lower than that of actual trade, and as a result, the speed of convergence will be negative. In the opposite case, we have the divergence. This method's effectiveness is that it exploits the flexible structure of the data during the estimation process; in other words, it provides more accuracy than the point estimates method. According to the statistics in the Table8, we found that China had the convergence in trade with 6 countries out of 76 countries.

Tab. 8. Speed of convergence (SC)

Country	Partner	Speed of Convergence (SC)	Difference (ΔT)	Situation
European Countries (EU)				
Luxembourg	China	-43.6	-798,615	divergence
Poland	China	-36.5	-10,152,889	divergence
Bulgaria	China	-28.9	-785,601	divergence
Slovenia	China	-26.9	-1,056,615	divergence
Spain	China	-19.7	-6,989,366	divergence
Estonia	China	-18.6	-227,125	divergence
Croatia	China	-14.5	-223,522	divergence
Norway	China	-10.7	-786,461	divergence
Romania	China	-10.7	-738,324	divergence
Lithuania	China	-9.1	-194,330	divergence
Latvia	China	-8.7	-112,148	divergence
Germany	China	-6.3	-11,647,575	divergence
Hungary	China	-6.2	-633,441	divergence
Sweden	China	-6.2	-1,096,253	divergence
Denmark	China	-5.6	-655,515	divergence
Ireland	China	-3.9	-653,195	divergence
UK	China	-0.7	-604,126	divergence
Belgium	China	-1.5	-376,423	divergence
Finland	China	-2.3	-176,720	divergence
Cyprus	China	-3.2	-20,352	divergence
Netherlands	China	-3.2	-2,725,217	divergence
France	China	-3.4	-2,229,454	divergence
Greece	China	-6.5	-550,151	divergence
Italy	China	-5.8	-3,145,649	divergence
Portugal	China	-8.6	-441,528	divergence
Austria	China	-9.9	-843,047	divergence
Malta	China	-11.5	-174,548	divergence
Countries in East Asia and Pacific (EAP)				
Mongolia	China	-17.5719	-1,433,156	divergence
Philippines	China	-13.6521	-8,321,238	divergence
Malaysia	China	-6.6283	-8,216,577	divergence
Vietnam	China	-5.3872	-8,727,464	divergence
Indonesia	China	-5.1444	-4,100,346	divergence
Thailand	China	-4.1473	-3,805,247	divergence
Singapore	China	-3.6111	-3,247,852	divergence
Brunei	China	-0.4139	-4,553	divergence
Cambodia	China	-4.44	-418,641	divergence
Countries in Middle East and North Africa (MENA)				

Israel	China	-19.2672	-2,845,276	divergence
Egypt	China	-16.6445	-2,197,378	divergence
Oman	China	-9.3928	-2,120,923	divergence
Jordan	China	-8.9656	-368,696	divergence
Iraq	China	-8.1164	-2,705,450	divergence
Palestine	China	-6.0649	-4,990	divergence
Yemen	China	-5.0661	-186,722	divergence
Iran	China	-4.4922	-1,034,335	divergence
Lebanon	China	-4.0481	-69,037	divergence
Kuwait	China	-1.5744	-272,075	divergence
Bahrain	China	-0.8596	-14,436	divergence
Syria	China	-3.974	-52,267	divergence
U A E	China	-7.649	-3,722,686	divergence
Saudi Arabia	China	-16.138	-12,593,756	divergence
Qatar	China	-22.325	-2,481,373	divergence
Countries in South Asia (SAR)				
Maldives	China	-27.7621	-105,975	divergence
Sri Lanka	China	-20.1879	-905,932	divergence
India	China	-15.3772	-14,272,303	divergence
Pakistan	China	-13.5531	-2,435,957	divergence
Afghanistan	China	-13.1876	-82,963	divergence
Bhutan	China	-2.0865	-229	divergence
Bangladesh	China	-1.044	-191,716	divergence
Nepal	China	-27.887	-422,786	divergence
Europe and Central Asia (ECA)				
Georgia	China	-96.4503055	-223,345	divergence
Russia	China	7654.069614	-16,108,919	convergence
Tajikistan	China	-4.340312257	-199,500	divergence
Turkey	China	157.4918206	-1,888,491	convergence
Turkmenistan	China	23.24881471	-612,455	convergence
Belarus	China	18.65033855	-180,174	convergence
Serbia	China	2.392595277	-73,097	convergence
Kyrgyzstan	China	-96.73916293	-317,507	divergence
Albania	China	-93.38192479	-27,905	divergence
Uzbekistan	China	-60.32140901	-198,093	divergence
B and H	China	-98.38275338	-2,817	divergence
Kazakhstan	China	29.91108515	-232,397	convergence
Azerbaijan	China	-98.28135344	-2,338	divergence
Ukraine	China	-60.14887037	-1,912,957	divergence
Moldova	China	-98.33553872	-48,051	divergence

Europe and Central Asia (ECA) countries are leaders of trade potential with 6/15 countries in Europe and Central Asia (ECA) (40%), For countries with convergence condition, the most potential partners are countries which have the larger magnitude of SC and smaller magnitude of ΔT. In other words, the larger speed and the smaller difference will more quickly bring the actual trade value to the potential one. Result of dividing ΔT/SC will give a value reflecting the time of convergence. Countries that have a smaller time of convergence will be potential partners of china in developing bilateral trade Table 9.

Tab. 9. Ranking countries from the smallest to the largest time of

Country	Group	Partner	Time Of Convergence (ΔT/SC)
Russia	(ECA)	China	2104.621438
Kazakhstan	(ECA)	China	7769.594411
Belarus	(ECA)	China	9660.628922
Turkey	(ECA)	China	11991.04177
Turkmenistan	(ECA)	China	26343.49353
Serbia	(ECA)	China	30551.34343

6. Conclusion

COVID-19 is, first and foremost, a humanitarian crisis. Many countries have suffered and will suffer from the unexpected losses around the world. It will have a profound impact on the world on its economy. China has the second-largest economy globally and has accounted for one-third of world economic growth in recent years. It exports many products of the global supply chain. China also imports goods from the global market. The purpose of this paper is to provide an assessment of the potential economic impacts of Corona Virus Disease (COVID-19) on trade between One Belt One Road countries (OBOR), as well as to provide a more comprehensive approach to estimating the consequences of major disease outbreaks (COVID -19). Our empirical estimates of the (COVID-19) economic impacts are based on a Gravity model and speed of convergence (SC) method to estimate the trading behavior changes by affected countries. Trade potential was calculated as the difference between predicted bilateral trade by the gravity model minus the real trade. The study shows that COVID-19 epidemic has a major impact on both the demand and the supply sides of the Chinese and OBOR economies that potential trade values will cause shrinkage between China and other OBOR countries. The results reveal that potential trade values between China and European Union (EU) will drop by 11.5%, China and East Asia and Pacific (EAP) by 6,7%, China and the Middle East and North Africa (MENA) by 8.9%, China and South Asia (SAR) by15%, China and Europe and Central Asia (ECA) by 9%.

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