8-25-2018

# How Chinese enterprises evaluate the investment value of seaports along the “One Belt One Road”

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## How Chinese Enterprises Evaluate the Investment Value of Seaports along the "One Belt One Road"

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A research paper submitted to the World Maritime University in partial fulfillment of the requirements for the award of the degree of

**MASTER OF SCIENCE**

**RESEARCH PAPER**

**International Transport and Logistics 2018**

***FORMAT OF THE DECLARATION***

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## ABSTRACT

With the rapid growth of the container business, the international port investment market is also booming. The terminals currently operated by international terminal operators are all over the world, and they are still doing their best to accelerate their expansion into the market. Over the years, the Chinese government has actively encouraged companies to implement the "going out" and "bringing in" strategies. From the domestic and international perspectives, the conditions for China's container port companies to enter the international port investment market have matured, but not enough. Overseas investment mainly solves the problem of investment locations and investment methods. The focus of this study is to solve two key issues of offshore investment terminals for large-scale port companies in China, and to provide countermeasures and suggestions for accelerating international development. And this article takes COSCO SHIPPING as an example. In order to achieve this goal, it first analyzes the current status and characteristics of COSCO's overseas investment terminals, expounds relevant theories of overseas investment location selection and entry modes, and elaborates overseas investment theory of port companies. It is Based on this theoretical basis, combined with the development goals of China's "One Belt and One Road" and the "21st Century Maritime Silk Road". A mathematical model was constructed, taking into account the trade flow and shipping distance between the ports, and based on the calculation results, it tried to find a suitable port location to provide reference for the location selection of the overseas investment hub port of COSCO SHIPPING.



**Key words**: Port  Investment; One Belt One Road; AHP

# CONTENT

# 1 Introduction

The trade between Eurasian nations has been prevalent for centuries. Some precursor trades were established as far as 4th millennium BCE (Gunder and William, 2005). The proper establishment of Silk trade route has been attributed to Han dynasty around 130 BCE. The trade encompassed the movement of various luxury goods like spices, silk and clothes from Asia towards Middle East and Europe. While, precious stones, horses, etc. moved from west to east. This route was prevalent both on road and sea. While, the road-based trade was majorly driven by silk, spices majorly drove the sea-based trade. The fall of Mongols and other major European and Islamic powers lead to the breakdown and disintegration of the trade route by 1720s (İnalcık and Quataert, 1994; Eom, 2017; Galli, 2017).

The initiative to restart this old trade route was started by China as One Belt and One Road initiative in 2013 under the aegis of Chinese President Xi Jinping. Consequently, the project has been renamed as Belt and Road Initiative (BRI). It focuses on covering around 60-70 countries in Asia, Africa and Europe. China's envision this massive initiative as a major fulcrum in enhancing regional connectivity, trade and development for brighter future (Xinhua News Agency, 2015; The Economist, 2016; XinhuaNet, 2017). This initiative is started at the backdrop of the severe global recession of 2008 and huge need for infrastructural development in both Eastern Europe and Asia. An estimate of 900 Billion US dollar per year investment in infrastructure development for at least a decade was proposed for Asia excluding China for accelerating the economic growth (World Bank, 2016). In such a backdrop, the China's effort to steer such initiative has been welcomed by several cash strapped and growth-oriented countries. It is estimated that the whole project would require an

investment of nearly 4-8 trillion US dollars (Green, 2018). The initiative is supposed to have both the land-based trade route and maritime-based trade route to link Asia with Europe.

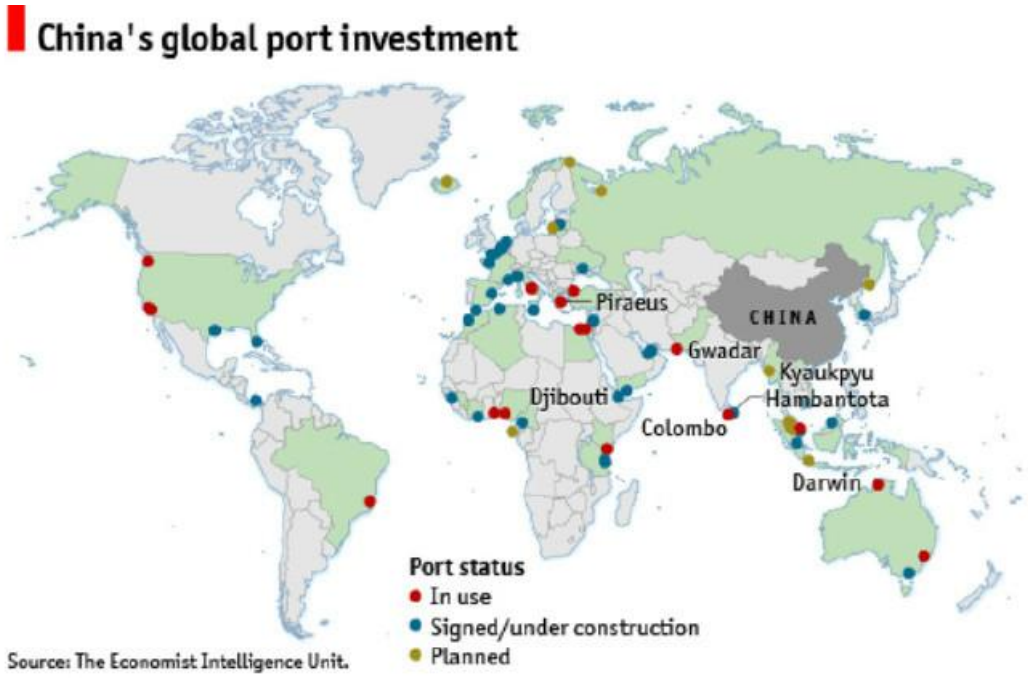


Fig. 1 China's global port investment

The maritime-based trade route is also known as Maritime Silk Road or Maritime Silk Route. This route focuses on establishing connection between China in the East and Europe in west while linking various other countries along the route primarily Southeast Asia, South Asia, Indonesian Archipelago, Middle East and Africa (namely Eastern and Northern Africa). This route is also considered as the 21$^{st}$ century Maritime Silk Route (MSR). This route significance lies in the fact that it is targeting the Indo-Pacific region, which is touted to maintain all the top ten busiest container ports in the World. Further, it is expected that Asia's economic share in total global economy to grow by nearly two third over two decades from 17 percent in 2010 to 28 percent in 2030. This reinforces the Indo-Pacific region trade route importance and

criticality for the future of global economic development (Green, 2018). In order to successfully implement and execute Maritime Silk Route project of BRI, the seaports are going to play a very significant role.

A seaport is a commercial facility, which possesses the wharves that allows the ships to dock. These docked ships could then load and unload the cargo as well as human passengers. A seaport could possess one or more wharves based on the port demand. The ports are normally present at the seashore or estuaries but in some cases like Hamburg, these ports could be established deep inside the land connected to the sea through a river or canal. In today's time, Asia is seen the powerhouse of seaports which has been witnessing exponential growth. Some of the largest and busiest ports are present in this continent like Singapore port, Shanghai port in China (Informa, 2017).

Owing to centuries of sea-based global trading, the sea routes and seaports have been well established and streamlined to ensure the most efficient sea-based transportation system between point A and B in a given geopolitical context. Thus, in order for the MSR to be executed and implemented successfully, it has to be very selective and careful in making the decision to establish seaport along the MSR. It has been argued that for any economically successful seaport, it should have considered three critical aspects namely:

1. Proximity to the existing and major shipping lane
2. Proximity to the prevailing seaports
3. Proximity to the deep inland areas

These three proximity aspects are considered by experts as make or break scenario for any decision-maker to select a location for establishing a seaport (Green, 2018).

Shipping lanes in the area are established based on the traditional seaports present in the given area. It is important for any seaport to be as close to the existing shipping lanes as much as possible as it is not possible and viable for ships to change their route repeatedly with the arrival of new port in the region. The proximity with the major shipping lane will provide an incentive for any ship to benefit from new seaports with as little digression from existing lane as much as possible.

The prevailing seaports were established keeping in mind the major shipping lanes. They could provide a strong competition for any new seaport owing to their established system. Further, there is a natural transition barrier that exists for any ship to shift from existing seaport to any new seaport as these ships has to readapt to the operations of the new seaport. Hence, the proximity of the new seaport from an existing seaport would be detrimental for its own growth if the existing seaport is fully operational and easily meeting the demand for the existing sea traffic as well as has the capability to meet the future demand. However, an existing seaport may sometimes be unable to meet the existing demands of the ships. Hence, proximity to such an existing seaport could also provide an advantage to the new seaport to develop an initial customer base.

A seaport is a vital point to connect the sea-based trade to various inland areas of the country. A seaport with well established transportation network to connect the major cities, industrial centers and raw material production center are very vital in enabling the seaport capability to accelerate national growth and development. A good and well-established road and rail transport to centers of production and consumption could enable accessibility of resources and efficient movement of resources. This is probably an important challenge for the new seaports, as they not only need to invest

in establishing the port but also the allied transport and communication connectivity infrastructure to enable utilization of the ports.

Fig. 2 Chinese enterprises invest in European port layout

## 2 Literature review

This section provides seeks to provide insights on the various related themes of seaport investments considered in the literature. Some of the major themes associated with the section are Foreign Direct Investment (FDI), seaport investment and factors associated with seaport investment.

### 2.1 Foreign Direct Investment (FDI)

The nations in MSR are primarily developing nations. Developing nations have full-fledged growth difficulties, it'd appear, in sempiternity. Because of varied factors each at intervals and out of their management, several nations have stagnated. Typically, this situation exists despite many nations possessing significant proportion of world's natural resources. The key to unlocking these and raising the state out of 'Developing' standing seems to be access to foreign direct investment, it's been shown in previous

studies that not solely will FDI have a long-lasting impact on GDP, it really causes growth (Hansen and Rand, 2006). This growth could raise both the developing nations and investors who took a comparatively higher risk in inserting FDI into a developing economy. However, FDI is a fickle tool to rely for growth as it seems to be each a driver and a traveller within the economic process witnessed in recent decades.

FDI spawns new growth and is spawned by new growth. It creates new markets and is made by new markets. It provides access to new technologies for developing countries and access to cheaper labor for developed, capital wealthy countries. It yields employment and economic process to the economically depressed and yields high returns to the economically precocious and swaggering. Or, it doesn't (Hansen and Rand, 2006; Fisher, 2009).

In context of MSR, China is working with various countries to establish new seaport in the respective countries. The MSR initiative is very well an FDI for the nations in whose territory the new seaport will be established. The FDI in any area could be performed either through mergers and acquisitions (M&E) of an existing business unit or setting up a new business unit. The FDI involved in setting up the new business unit is called Greenfield project (Fisher, 2009). The project of establishing a new seaport could be categorized as Greenfield project and is discussed in section below.

### 2.2 Seaport Investment

The transportation sector is one of the important parameter that plays role both in terms of economic and regional balanced development, as well as also having a great influence on national integration to the world economic market. Ports constitute an important form of transportation for nation especially costal areas. They provide some

of lowest cost of transportation means across the world (Berköz, 1999). Ports contribution in world level transportation of goods and merchandize by ships accounts for around ninety per cent of the world's merchandize and goods. This proportion has remained fairly constant over the last century; nonetheless the volumes have accumulated hugely within the last twenty years (Dwarakish and Salim, 2015).

(Jouili, 2016) review on port relevance identified the major socio-economic outcomes associated with ports. Firstly, seaports are seen as the factor that facilitates the progress of international trade. Secondly, seaports promote the exportation of products and supply services. Thirdly, ports are taken into account as a concentration for the regional development. They may still be used an indicator to gauze the development status of the urban areas surrounding them. Fourth, they are the hub of multitudes of employment generation activities related to port operations and logistics (like storage and distribution) (Ferrari, 2011). Fifth, the ports act as hub of multitude of activities including value addition activities and as a point of exchange of goods enable strong economic progress. A positive relationship is observed between the number of major seaports in the country and its Gross Domestic Product (GDP) growth (Sleeper, 2012). Sixth, the ports ability to act as the gateway for interaction with international market and as point of exchange for goods makes them the major driver of integration between domestic and international market. Seventh, as seaports act as major hub for commercial activities of trade, they act as important magnet for new industries establishment as well as other economic activities. (Ferrari, 2011) had shown that seaport have strong positive effect on tertiary sector of the region. In a Tunisian study, it was found that port investment has resulted in positive economic growth of the country (Jouili, 2016).

Thus, investments in seaport are known to have an important impact on the overall socio-economic well being of the nation. The investments for seaports could be obtained both domestically as well as through FDI. In resource constraint nations, FDI is an important source of investments to develop the seaports. MSR is one such initiative to facilitate investments for the seaports especially in the resources constraint settings (Green, 2018). The investments in the Greenfield projects are considered as high-risk investments as no previous records are available to help investors gauge the future performance of the seaport. M&A investments are desirable for FDI, but in case of many resources constrained countries, there is dearth of well-developed seaports, which require the investments to completely overhaul the seaport or establish new seaports (Fisher, 2009). Further, nearly 60% of total global private port investment of around 70 Billion US dollars is focused on Greenfield projects (UNCTAD, 2017). The development of seaport in developing countries is more badly affected by the complete overhaul of global system of port based trading that is focused on containerization, larger and faster ships (Laventhal, 2009; Kowalczyk, 2012).

Africa and Asia region accounts for majority of developing countries in the world but their ports alone account for nearly 70% of the total world port trade volume of 700 million TEUs (UNCTAD, 2017). This reflects that potential trade volume Asia and Africa ports could handle once they have been upgraded. This reflects the potential gain the world port trade as well as MSR region port trade stands to make with modernization and development of the Asia-African ports envisioned under BRI.

### 2.3 Factors Associated with Seaport Investment

Economic viability is important for seaports to attract FDI and enable country to

benefit from its socio-economic outcomes. The literature has identified various factors, which are considered to play role in the attracting the FDI for the seaport development.

Economic freedom is a factor, which focuses on the systems established in the nation to either promote or impede free trade (Heritage Foundation, 2018). The literature has shown that countries with better economic freedom are able to attract more FDI (Kapuria-Foreman, 2007) as well as generate more benefits from the FDI (Azman-Saini, Baharumshah and HookLaw, 2010). Economic policy is another factor that influences the FDI. Business friendly environment is seen as an important factor for FDI (Gönd ör and Nistor, 2012). Studies indicate that a nation attractiveness for FDI increases with promotion of port privatization, favorable tariff policies (Fisher, 2009) and trade agreements (Lim, 2001) and incentives (Chhibber and Dailami, 1990). Further, countries with better ease of doing business rating are more attractive for FDI (Fisher, 2009).

Political and economic stability of the nation are also considered as important factors in for FDI. (Shah, 2016) in the study of African nations found that national economic stability in terms of macro-economic parameters played an important role in attracting FDI. (Busse and Hefeker, 2007) had shown that factors associated to political stability like democracy, law and order, conflicts play vital role in determining the long term FDI in the nation. The nation with unstable political system is susceptible to poor FDI status. (Molaie and Ahmadi, 2013) has shown that both economic and political stability have different roles to play in FDI based on the nation involved and suggested that developing nations benefit from economic and political stability in terms of FDI.

The nation that holds significant amount of natural resources could attract FDI from other nations that seek those resources (Fisher, 2009). The nation with secure borders, better infrastructure to enable connection of port with the hinterland and past history of the nation's ability to integrate with world supply chain could be considered desirable for FDI. However, a study by (Fisher, 2009) did not find any significant influence of these factors on the port FDI. Balance of Payments is another parameter considered in the literature to play role in FDI (Fisher, 2009). However, the literature fails to address one important factor, which could hinder the trade between nations, i.e., the relevance government relationship between the host nation and FDI nation. Nations at loggerheads may not be interested to even engage in trade with each other.

## 3 Current Scenario of OBOR

OBOR in the context of MSR is the representative of China's vision of international presence through development of other nation rather than military establishment in other nations. China Merchants Port Holdings Company Limited and China Ocean Shipping Company, known as COSCO are two major Chinese companies involved in executing the MSR initiative across the globe through different activities involving investment in port development in foreign nations. However, the implementation of MSR vision has not been without its own set of challenges.

One of the main areas of focus for China's MSR trade route is Indian Ocean, in which most of the countries are not in the developed category. In general, a developing country is commonly associated with the risk of weak political stability and transparency, weak and corrupt governance structure, unfavorable regulatory environment and protectionist behavior, lack of adequate infrastructure, high

competition, high commodity dependent trade and poor marketing strategies (Dupasquier and N.Osakwe, 2006). Further, the shipping business itself has been undergoing a considerable change in business. The ships are growing in size and speed, which is reducing their port requirements. Further, the global supply chains are contested to have undergone drastic change post 2008 recessions with production system becoming more local than global. Such a need may render the seaport needs limited (Joc, 2016).

In context of China as an investor in MSR, certain unique challenges have been raised. The China's economic growth is slowing down and may not be able to satisfy the needs of ever-growing number of ports in the MSR. Further, the more ports provide more options for the ships to dock that increases the competition among the ports. The environmental concerns regarding the seaport emissions are increasing around the globe. This means that seaports have to be ready and plan for stricter emission norms (Joc, 2016). There is growing trend of creating Special Economic Zones and Free Trade Zones near the coast in developing countries to attract more investments and promote trade. Such trend is creating benefits for the seaports near such special zones while affecting the business of the ports present in normal areas (Joc, 2015).

China is a major global power and such global visions create a sense of concerns and insecurity among other major power blocks and countries in the world. Such concerns could transform the China's portrayal of development strategy into a greater national strategy. Further, the growing threat of surplus exit from China is forcing the Chinese government to create stricter rules for investment in foreign nations (The Economist, 2017).

**Table 1: COSCO Group's overseas investment port situation**

| Time | Domestic enterprises | Cooperative enterprises and profiles | Investment location | Investment model |
|---|---|---|---|---|
| 2001 | COSCO Americas | SSA | Long Beach Harbor, West Coast, USA | Joint venture |
| 2003 | COSCO Pacific | Singapore Port Group | Pasir Panjang | Joint venture |
| 2004 | COSCO Pacific | Antwerp Port Joint Venture | Port of Antwerp, Belgium | Mergers and Acquisitions |
| 2005 | COSCO Europe | Conateco | Port of Naples, Italy | Mergers and Acquisitions |
| 2006 | COSCO Pacific | Kawasaki Steamship, Yangming Shipping, Hanjin Shipping and ECT | Port of Rotterdam, The Netherlands | Joint venture |
| 2007 | COSCO Pacific | Maersk Group | Port Said, Egypt | Mergers and Acquisitions |
| 2009 | COSCO Pacific | Greece | Port of Piraeus, Greece | Franchise |
| 2012 | COSCO Pacific | China Shipping Terminal and China Merchants International | Taiwan Gaoming Container Terminal | Mergers and Acquisitions |
| 2013 | COSCO Group, China Merchants International | Gwadar Port, Pakistan | Gwadar Port, Pakistan | - |

**Table 2: China Merchants International Overseas Investment Ports**

| Time | Domestic enterprises | Cooperative enterprises and profiles | Investment location | Investment model |
|---|---|---|---|---|
| 2010 | China Merchants International | BSPD,PVSB | Vietnam Container Terminal | Joint venture |
| 2010 | China Merchants International | China-Africa Development Fund | Port of Thangan, Lagos, Nigeria | Joint venture, acquisition |
| 2011 | China Merchants International | Sri Lanka Port Authority | Sri Lanka Port Container Terminal | BOT mode |
| 2012 | China Merchants International | West Africa Togo Container Terminal | West Africa Togo Container Terminal | Mergers and Acquisitions |
| 2013 | China Merchants International | East Africa Djibouti Joint Venture Company | East African Djibouti Container Terminal | Mergers and Acquisitions |
| 2013 | China Merchants International | Port of Bagamoyo, Tanzania | Sonia Bagamoyo | Joint venture |
| 2013 | China Merchants International | Terminal Link | 15 terminals in 8 countries on four continents | Mergers and Acquisitions |

## 4 Construction of Investment Index System

Seaport development is a very challenging and investment intensive project. It has a very long gestation period and very long payback period. In such a context, it is critical for any investment nation or group to fully understand the prospect of any site, which is selected for the seaport development.

The site selection becomes the most important step in successful implementation of seaport investment as well as success of the MSR. A selection of site requires the simultaneous assessment and understanding of several factors ranging from social-economic to natural and technical challenges. The investment index needed for seaport site relevance is proposed to be composite index for easy interpretation and decision-making. This would entail a multi-criteria analytical framework.

The normal statistical and economic approaches rely on the high quality and large amount of data for making estimates regarding the potential of selecting a site for even a consideration. This could be a biggest hurdle for any transnational initiative like MSR.

One of the key challenges for implementing MSR is the amount of the data available in countries (Jain, Panse and Mishra, 2018). The literature have strongly suggested that data paucity is a critical issue for conducting any kind of field based decision-making in developing nations and third world nations. This has been attributed to the high cost involved in collecting the data and lower level awareness regarding the important of data collection. MSR has many of its countries in Asia and Africa region, which is known for its data paucity.

Another challenge for MSR is the quality of data available in the different countries

along the MSR (Jain, Panse and Mishra, 2018). The availability of data alone is not sufficient for utilizing the data for decision-making, the accuracy and reliability of data also plays a critical role in appropriately databased estimations. Some of the characteristics of good quality data are lack of missing data, mislabeled data and wrong data. The countries in MSR region are primarily developing in nature with resource constraints and prevalence of multi-dimensional development issues. Such a scenario forces the countries to re-evaluate their priorities and often tend to give lower priority to data collection and quality.

Further, another important challenge for any transnational project is the interoperability and mapping of data from different countries on common analytical framework (Solt, 2009). This could be caused due to some simple challenges like use of pound in one country and kilogram in another country to measure weight, availability of digital data in one country and book records in another country. In some cases the challenges could be more complex like collection of totally different data form for same purpose. Say, use of social-cost benefit ratio in one country and economic cost-benefit ratio in another country to estimate the project feasibility in an area. In such myriad diversity of data collected by different countries makes it a daunting task to transform data in an interoperable format. Now, when a country needs to set-up a seaport in its territory, it could avoid the issue of data interoperability and mapping on analytical framework as it could develop an analytical framework customized to its data. However, MSR cannot avoid this issue.

Seaport has primarily a localized externality in terms of socio-environmental context. The studies have shown that many national investment decisions could be halted due to resistance from the locals. However, despite local context being such an important

factor for many national and international development projects, it has been argued that regular collection of local factors related data at national level may not be feasible in terms of cost, manpower and resources (Abelson *et al.*, 2003). Thus, for initiatives like MSR with global impact but requiring local support, they need to be capable in tackling the issues of local factors related data.

In such a context, use of data driven investment indexes to ascertain the seaport site choice is a challenge for MSR initiative. The alternate suggested in the literature is to use tools that could be functional even in data paucity environment. One such tool is Analytic Hierarchy Process (AHP) that had been shown to work in data paucity environment. (Jain, Panse and Mishra, 2018) had found that the AHP based investment indexing showed positive correlation with actual investment in the wind energy sector in the Indian context.

### 4.1 Analytic Hierarchy Process (AHP)

AHP is multi-criteria decision-making tool used in situations where user wants to incorporate both the subjective as well as the objective information in decision-making proposed by Thomas L Saaty in 1970s (Saaty, 1980). AHP allows the use of intuition and private experiences whereas utilizing each quantitative and qualitative information during decision-making process. AHP provides systematic criteria-based prioritization supported by eigen-value technique. It permits the user's perspective-based criteria categorization into profit or value and consequently, needs maximization of profit criteria worth and step-down of value criteria worth (Jain and Rao, 2013).

AHP has been used for the multi-criteria decision-making for decades. Over 200 application of AHP had been reported and the number of applications is increasing by

the day (Zahedi, 1986). The framework adopted by this study to develop the investment index using the AHP is described following paragraphs. An AHP is a four-step process (Saaty, 1980) that needs to be implemented to derive the investment index of any seaport.

In the current study, the list of the seaports and nearby areas developed by China are given by (Degang and Zoubir, 2017). A total list of 25 ports is provided. From this list those ports were selected for the study, where China has the majority stake or was responsible for complete construction of the port. This criterion is used to ensure that major stakeholders for the port are only China and host nation. Accordingly, ten ports were found to meet this criterion and are selected for estimating their investment index. Among these ten, China purchased Greece and Turkey ports, while in other cases it is constructing new port. The list of ten selected seaports are as follows:

1. Gwadar, Pakistan lies in Southwest Asia region and project was initiated in year 2003.
2. Hambantota, Sri Lanka lies in Bay of Bengal region and project was initiated in year 2008.
3. Piraeus, Greece lies in Mediterranean region and project was initiated in year 2008.
4. Port Bagamoyo, Tanzania lies in Eastern Africa region and project was initiated in year 2013.
5. Kyaukpyu, Myanmar lies in Bay of Bengal region and project was initiated in year 2014.
6. Melaka Gateway, Malaysia lies in Pacific region and project was initiated in year 2016.

7. Doqm Port, Oman lies in Southwest Asia region and project was initiated in year 2016.
8. Kumport, Turkey lies in Mediterranean region and project was initiated in year 2016.
9. El Hamdania (New Central Port), Algeria lies in Maghreb region and project was initiated in year 2016.
10. Port Cabinda, Angola lies in Atlantic region and project was initiated in year 2016

### 4.1.1Criteria Selection for the Seaport

The first step involved in the AHP is the selection of the criteria. This is the step that initiates the process of AHP. A criterion in the AHP is defined as the parameter used to evaluate the solutions or alternatives available to the user. Further, AHP allows the criteria to be categorized and sub-categorized to create a hierarchy for better understanding and relationship building between the criteria. The lowest level of criteria in the hierarchy are categorized either as the benefit parameter or cost parameter based on the decision-makers perspective. For example, the environment mitigation funds are the cost from the perspective of industry investor but a benefit from the perspective of the environmentalist. Accordingly, in the current research three main criteria are selected for assessment of seaports. These three criteria are, namely, port characteristics (Criteria 1), business environment in the country (Criteria 2) and political relationship between the host country and China (Criteria 3). ‘Criteria 1’ is chosen because it has suggested that seaport characteristics are important in deciding its operational viability (Green, 2018). ‘Criteria 2’ (C2) is chosen business friendly environment has been attributed as an important asset for the nations to

attract foreign business at their shores (Corcoran and Gillanders, 2012). Since, MSR aims to attract and enhance the business growth of the country through the proposed MSR, the nation's business friendliness would go a long way in ensuring the practical impact of seaport on the MSR success. The indicator used for this parameter is 'ease of doing business' ranking of the country as provided by (World Bank, 2017). 'Criteria 3' is chosen because the seaport needs to established on a foreign territory by China. Hence, it is important that the China and the host country maintain a positive political relationship.

Sub-categorization of 'Criteria 1' and 'Criteria 2' is performed to create sub-criteria. This has created a hierarchy of criteria. The two sub-criteria used under 'Criteria 1' are 'Proximity to major shipping line' (C11) and 'Proximity to major seaport in country or neighboring country' (C12). These sub-criteria have been selected as they are considered as important criteria in literature (Green, 2018). It is necessary for any seaport to be as on the point of the present shipping lanes as doable because it isn't feasible and viable for ships to vary their route repeatedly with the arrival of recent port within the region. The proximity with the key-shipping lane can give associate degree incentive for any ship to learn about new seaports with as very little digression from existing lane the maximum amount as doable. Hence, 'Proximity to major shipping line' is selected. The indicator used in the study to measure this criterion is the number of existing seaports in country listed among the top 100 busiest seaports in the world. The data for the top 100 busiest seaports is obtained from (Informa, 2017).

Incumbent nature of existing port and closeness to major shipping lanes make them a powerful competitor for any new port in their region. Further, extra efforts needed for

any ship to shift from existing port to any new port, as these ships should readapt to the operations of the new port could dissuade them in berthing at new port. Hence, the new port proximity from an existing port would be damaging for its own growth if the present port is perfectly operational and meeting the present ocean traffic demand. Hence, 'Proximity to major seaport in country or neighboring country' is selected as sub-criteria. The indicator used in the study to measure this criterion is the volume of cargo (million Teu) handled by the major existing seaport either in host country or neighboring country. In case country has more than one major seaport, then seaport with highest trade volume is considered for the study. The major seaport considered are those listed among the top 100 busiest seaports in the world. The data for the top 100 busiest seaports and volume of cargo handled is obtained from (Informa, 2017).

The two sub-criteria used under 'Criteria 3' are 'Trade scenario between China and host country' (C31) and 'Prevalence of government relationship between China and host country' (C32). These sub-criteria were selected because trade and media portrayal of foreign country has been common associated with relationship a country share with the foreign country. Accordingly, the indicators were used to measure the sub-criteria used under 'Criteria 3'. The indicator used for sub-criteria 'Trade scenario between China and host country' is the balance of trade between China and host country. The foreign country could be more open to the China's debt if the existing balance of trade is not drastically tilted in favor of China. A too much balance of trade in favor of China is also known to put strains in the relation between the China and host country. For example, tensions between USA and China (Graaff and Apeldoorn, 2018; The Diplomat, 2018; Trading Economics, 2018). Hence, the less negative is the balance of trade for the foreign country, the higher likelihood for the country to

support China in MSR. The data for balance of trade is obtained from (Trading Economics, 2018). The indicator used for sub-criteria 'Prevalence of the government relationship regarding relationship between China and host country' is data on the conflict and cooperation between the nations provided by (GDELT, 2018) through analysis of world media news. The number of events initiated by China government towards the host country where port is established is counted. The categorization of those events as conflict or cooperation is noted. The percentage of cooperative events in the year before the project was started was calculated for the study. For example, Kumport, Turkey project start year mentioned in literature is 2016. The data for criteria C32 is obtained for year 2015.

Overall, five criteria is used in the study namely two in 'Criteria 1' and 'Criteria 3' and one in 'Criteria 2'. Such two-level hierarchy is less hard and time overwhelming and may be utilized by decision-makers with an improved understanding of the logic. All these criteria are quantitative in nature. Except sub-criteria C12, all other criteria are considered as benefits for the investor.

### 4.1.2 Criteria Weightages for the Seaport

The second step involved in the AHP is providing weightages to the criteria. In all the multi-criteria-based evaluation tools, the criteria used for evaluation are commonly part of different dimensions and domains. Further, it is not uncommon for any alternative or solution to perform well in some criteria and perform badly in another criteria. In such a scenario, it is important to determine the importance that needs to be given to the individual criteria in the overall assessment strategy.

In case of AHP, the strategy adopted to provide weights to these criteria is using pairwise comparison. The relative weights between any two criteria were given on the

scale of 1-9 where one represents equal weight and 9 represents extremely important. Accordingly, a pairwise comparison matrix is created. The separate matrix is created for each set of criteria and sub criteria. In the current case, three matrices are created consisting of (C1, C2, C3), (C11, C12) and (C31, C32). Consequently, the matrix normalized eigen vector is estimated for each matrix which represents the relative weights given to the criteria in a matrix (Saaty, 1980).

In order to ascertain the reliability of the priorities, the consistency index (CI) for each matrix is calculated. The reliability assessment is performed to avoid the cyclic priority like Apple more important than Banana, Banana more important than Orange but Orange more important than Apple, i.e. Apple>Banana>Orange>Apple. If the CI value is more than 0.1 for a matrix, the pairwise comparison exercise needs to be repeated for the matrix (Saaty, 1980).

The weights obtained for each matrix is local weights. The global weights for the criteria are obtained multiplying the local of weight of the criteria with local-weights of the criteria above hierarchy. For example, the global weight of C1 will be equal to local weight of C1 as it is criteria highest in the hierarchy. The global weight of C11 will be equal to the product of local weight of C1 and C11 (Jain, Panse and Mishra, 2018). The pairwise weights given to the criteria are based on the user's perspective. In the current context, the literature review and author experience are used to arrive at the pairwise weights.

### 4.1.3 Criteria Values for the Seaport

The third step involved in the AHP is providing values to each seaport for each criterion. The quantitative data is collected from various sources as mentioned in section "Criteria Selection for the Seaport". The collected data is normalized using the

benefit and cost equations mentioned in (Jain, Panse and Mishra, 2018). These equations enable in creating all the values of seaports between 0 and 1, where 1 represents the highest value a seaport could achieve and 0 represents the minimum value a seaport could achieve. Table 1 shows both the non-normalized and normalized values of the seaports for each criterion.

**Table 3: Non-Normalized and Normalized values of all seaports for each criterion**

| **Criteria** | **Sub-Criteria** | **Cost/Benefit** | **Name of Port*** | | | | |
|---|---|---|---|---|---|---|---|
| | | | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** |
| *Non-Normalized Values* | | | | | | | |
| C1 | C11 | Benefit | 2 | 1 | 1 | 0 | 0 |
| C1 | C12 | Cost | 2.8 | 2.1 | 5.7 | 0 | 2.3 |
| C2 | | Benefit | 60 | 147 | 111 | 163 | 171 |
| C3 | C31 | Benefit | -7759.34 | -3505.25 | -933.00 | -1939.31 | -317.00 |
| C3 | C32 | Benefit | 2015 | 2018 | 2014 | 2010 | 2017 |
| *Normalized Values* | | | | | | | |
| C1 | C11 | Benefit | 1.00 | 0.50 | 0.50 | 0.00 | 0.00 |
| C1 | C12 | Cost | 0.51 | 0.63 | 0.00 | 1.00 | 0.60 |
| C2 | | Benefit | 1.00 | 0.09 | 0.29 | 0.03 | 0.00 |
| C3 | C31 | Benefit | 0.00 | 0.57 | 0.92 | 0.78 | 1.00 |
| C3 | C32 | Benefit | 0.63 | 1.00 | 0.50 | 0.00 | 0.88 |

* 1: Kumport, Turkey, 2: Gwadar, Pakistan, 3: Hambantota, Sri Lanka, 4: Kribi, Cameroon, 5: Kyaukpyu, Myanmar

### 4.1.4 Investment Index of the Seaport

The final step in the AHP is to calculate the overall score of each alternative or solution. This overall score is used as the investment index value for each seaport under MSR. The investment index is obtained by using the mathematical equation given in (Jain, Panse and Mishra, 2018). The equation calculates the index by summating the product of the seaport evaluation criteria weightages and normalized criteria values for the seaport. The seaports could be ranked in the order of the investment friendliness based on the investment index score. The highest rank of one will be given to the seaport with highest investment index score.

### 4.1.5 Sensitivity Analysis of Investment Index of the Seaport

Sensitivity analysis is not the mandatory step in AHP to obtain the priority for the alternatives. However, it is a recommended step to determine the robustness and responsiveness of the tool to the change in criteria. This helps in better understanding behind the ranks of the solutions obtained during the study. Accordingly, the sensitivity analysis of investment index is performed by selective elimination approach.

In selective elimination approach, the scores of a selected single criterion are not considered while estimating the investment index. During this analysis, seaport ranking was analyzed by removing a criterion, which is side back whereas removing the other criterion. As an example, when criteria ‘Trade scenario between China and host country’ is removed from the set of criteria, it is added back in the criteria set when any other criteria is removed, say, ‘Prevalence of government relationship between China and host country’.

This approach could help in ascertaining the criteria that vie the most roles in ranks by

understanding the shifts in ranks. The priority allocated to the criterion and seaport values distribution for that criterion would determine the criterion criticality. The analysis will facilitate in determining the shift in ranking a seaport could expect by altering its value for the given criterion.

### 4.2 Relationship between Investment Index of the Seaport and Economic Status of the Nation

The study also tried to estimate the role of the economic status of the nation in determining its investment index. This is important as MSR is aimed at connecting and developing the infrastructure in the countries with poor economic status. The MSR could be able to achieve its objective only by strategically making those investment choices that are not dependent on the economic status of the nation, at least not positively. A seaport has been considered as one such strategic investment decision and has been traditionally known to uplift the region economy irrespective of the region economic status.

The dependency of the investment index outcome on the nation's economic status especially the positive dependency could severely undermine the basic vision of the MSR to uplift economic status of the laggard nations. Further, this could also questions the reliability of the investment index, as it will contradict the previous understanding of seaport role in the economic development of the area irrespective of the region economic status.

In such a scenario, it is important to determine the relationship between the investment index of the seaport and the economic status of nation. The indicator used for determining the economic status of the nation is the per capita Gross Domestic Product (GDP). The correlation between the normalized values of per capita GDP and

investment index are calculated to determine the association between the two parameters.

### 4.3 Source of Data

The data for all the ports used in the study is obtained from different sources as given below:

1. 'Proximity to major shipping line' (C11): The data used for this criterion is "number of major ports in the nation". The data is obtained from the report on Llyods list of top 100 major ports in the world (Informa, 2017).
2. 'Proximity to major seaport in country or neighboring country' (C12): The data used for this criterion is "Amount of trade volume handled by the nearby major port". The data about the major port is obtained from the report on Llyods list of top 100 major ports in the world (Informa, 2017). The country where port has to be established, if it has only one port in the list, then amount of volume traded by that port for year 2017 is used as the data. In case the country, where port has to be established, if it has more than one port in the list, then the port which traded the highest amount of volume for year 2017 is used as the data. In case the country, where port has to be established, if it has no port in the list, then the nearest major port in the neighboring country port for year 2017 is used as the data. The trade volume data is obtained from the report on Llyods list of top 100 major ports in the world (Informa, 2017).
3. Business environment in the country (C2): The data used for this criterion is "ranking of the country on the 'ease of business' index". The data is obtained from weblink source (World Bank, 2017).
4. Trade scenario between China and host country' (C31): The data used for this

criterion is “Balance of Trade between China and Port Nation”. The data is obtained from weblink source (Trading Economics, 2018).

5. ‘Prevalence of government relationship between China and host country’ (C32): The data used for this criterion is “percentage of cooperative events of total events initiated by the Chinese government in the year before the awarding of the project”. The data is obtained from weblink source (GDELT, 2018).

# 5 Analysis on the Investment Indexes of Seaports

The study has focused on developing the investment index for the seaports to determine their investment friendliness for MSR. The results of the study are described and discussed in following sections.

## 5.1 Weights for the Criteria Used in Investment Index of seaport

Accordingly, the study allotted the weights to each criteria and sub-criteria used for the investment index estimation in the study. The overall seaports are evaluated using the global weights of five criteria namely ‘Proximity to major shipping line’ (C11), ‘Proximity to major seaport in country or neighboring country’ (C12), ‘Business environment in the country‘ (C2), ‘Trade scenario between China and host country’ (C31) and ‘Prevalence of government relationship between China and host country’ (C32). The global weights and local weights obtained for the different criteria are shown in Table 2.

**Table 4: Local and global weights of the criteria used for Investment Index of seaport**

| Criteria* | Local Weight | Sub-Criteria* | Local Weight | Global Weight |
|---|---|---|---|---|
| Port characteristics (C1) | 0.22 | Proximity to major shipping line (C11) | 0.75 | 0.16 |
| | | Proximity to major seaport in country or neighboring country (C12) | 0.25 | 0.05 |
| Business environment in the country (C2) | 0.07 | | 1.00 | 0.07 |
| Political relationship between the host country and China (C3) | 0.71 | Trade scenario between China and host country (C31) | 0.67 | 0.48 |
| | | Prevalence of government relationship between China and host country' (C32) | 0.33 | 0.24 |
| **Total** | 1.00 | | | 1.00 |

* CI for matrix {C1, C2, C3} is 0.09 and CI value of remaining to matrices is zero.

In the study, the highest local weight in among the criteria C1, C2 and C3 is given to C3. The highest priority to criteria 'Political relationship between the host country and China' could be justified because political relationship between the nations has been a common and major stumbling block in any cooperative development. For example, the growing differences is affecting the relationship between China and USA (Graaff

and Apeldoorn, 2018). While, business environment is an important criterion but it less important than the port characteristics. This is attributed to the fact that ports may fail to create any significant development of the nation if it could not attract any shipping traffic (Green, 2018). Hence, 'Port characteristics' (C1) is given higher priority than 'Business environment in the country' (C2). The ratios among the three indicate that as compared to 'Business environment in the country', 'Political relationship between the host country and China' is almost 10 times more important and 'Port characteristics' is almost three times more important.

Among the sub-criteria 'Proximity to major shipping line' (C11) and 'Proximity to major seaport in country or neighboring country' (C12), C11 is given almost three times higher priority as compared to C12. Such a high priority is given to C11 over C12 as the absence of major shipping lines in the vicinity of the new seaport would prevent it from utilizing any benefit from existing shipping traffic (Green, 2018). In case of the sub-criteria 'Trade scenario between China and host country' (C31) and 'Prevalence of government relationship between China and host country'' (C32), C31 is given almost twice of the priority given to C32. Such a high priority is given to C31 over C32 as in today's globalized economy; trade is seen as an important factor in creating a more cordial relationship among the nations.

Overall, in terms of global weight, the most important criteria is C31 which almost ten times the least important criteria i.e. C12. While, business environment is not given very high priority, it still has higher priority the port characteristic sub criteria C12. This indicates that better business environment may help in negating the challenges due to proximity to a major seaport.

### 5.2 Investment Index of the Seaport

The investment index of the seaport is estimated as shown in Table 3. The study finds that the seaport of Melaka Gateway, Malaysia has the highest investment index and seaport of Kumport, Turkey has the lowest investment index. Such a ranking is observed as Malaysia has strongest balance of trade with China, which gives significant space for China and Malaysia to cooperate on the mutually beneficial projects. While, studies in past reflect that positive balance of trade may be deterrent for nation to attract more FDI (Fisher, 2009), in MSR region the positive balance of trade with China may not act as the deterrent. This is because positive balance of trade is not always high enough to saturate the FDI need. The estimated project cost of Melaka Gateway, Malaysia is around 7.2 billion USD (The Star Online, 2017) while positive balance of trade is around 8.1 billion USD (Trading Economics, 2018). This impact could also be gauged by the fact investment in Malaysian Port is higher than many other ports in the study. China invested 1.12 billion USD in Hambantota, Sri Lanka (Forbes, 2017), 1 billion USD in Kumport, Turkey (The Loadstar, 2015) and 456 million USD in Piraeus, Greece (Washington Times, 2018).

**Table 5: Investment index of the five seaports in the MSR**

| **Criteria** | | **Global Weight** | **Name of Port*** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Main** | **Sub** | | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** | ***6*** | ***7*** | ***8*** | ***9*** | ***10*** |
| C1 | C11 | 0.16 | 0.05 | 0.05 | 0.05 | 0.00 | 0.00 | 0.16 | 0.05 | 0.11 | 0.00 | 0.00 |
| C1 | C12 | 0.05 | 0.04 | 0.02 | 0.05 | 0.04 | 0.04 | 0.00 | 0.03 | 0.03 | 0.03 | 0.04 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C2 | | 0.07 | 0.05 | 0.04 | 0.02 | 0.05 | 0.07 | 0.00 | 0.02 | 0.02 | 0.06 | 0.07 |
| C3 | C31 | 0.48 | 0.13 | 0.20 | 0.18 | 0.23 | 0.22 | 0.48 | 0.25 | 0.00 | 0.20 | 0.38 |
| C3 | C32 | 0.24 | 0.22 | 0.24 | 0.24 | 0.24 | 0.22 | 0.13 | 0.24 | 0.00 | 0.24 | 0.19 |
| **Investment Index** | | | 0.41 | 0.63 | 0.49 | 0.56 | 0.55 | 0.56 | 0.54 | 0.78 | 0.59 | 0.16 |
| **Rank** | | | 5 | 3 | 9 | 4 | 6 | 5 | 7 | 1 | 3 | 10 |

* 1: Gwadar, Pakistan, 2: Hambantota, Sri Lanka, 3: Piraeus, Greece, 4: Port Bagamoyo, Tanzania, 5: Kyaukpyu, Myanmar, 6: Melaka Gateway, Malaysia, 7: Doqm Port, Oman, 8: Kumport, Turkey, 9: El Hamdania, Algeria and 10: Port Cabinda, Angola

### 5.3 Sensitivity Analysis of the Investment Index of the Seaport

The sensitivity analysis of the investment index of the seaport is performed and is shown in Table 4. All the criteria have an impact on the rankings of the ports in the investment index indicating that criteria are relevant to measure overall investment index. It is found that ‘Business environment in the country’ (C2) and ‘Proximity to major seaport in country or neighboring country’ (C12) had least effect on the ranking of the seaports based on the investment index. It shifted the ranks of only three out of ten seaports. This indicates that C12 is a critical parameter with regards to investment index of seaport in MSR. Such a behavior is possible as many countries in the current list have relatively very low business friendly environment.

**Table 6: Sensitivity analysis of Investment index of the five seaports in the MSR**

| Sensitivity Analysis Scenario | Ranking of the Port* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** | ***6*** | ***7*** | ***8*** | ***9*** | ***10*** |
| All Criteria considered | 9 | 4 | 6 | 5 | 7 | 1 | 3 | 10 | 8 | 2 |
| C11 is not considered | 9 | 7 | 8 | 3 | 4 | 2 | 5 | 10 | 6 | 1 |
| C12 is not considered | 9 | 4 | 8 | 5 | 6 | 1 | 3 | 10 | 7 | 2 |
| C2 is not considered | 9 | 5 | 4 | 6 | 7 | 1 | 3 | 10 | 8 | 2 |
| C31 is not considered | 2 | 3 | 1 | 6 | 7 | 8 | 4 | 10 | 5 | 9 |
| C32 is not considered | 9 | 5 | 7 | 6 | 4 | 1 | 3 | 10 | 8 | 2 |

* 1: Gwadar, Pakistan, 2: Hambantota, Sri Lanka, 3: Piraeus, Greece, 4: Port Bagamoyo, Tanzania, 5: Kyaukpyu, Myanmar, 6: Melaka Gateway, Malaysia, 7: Doqm Port, Oman, 8: Kumport, Turkey, 9: El Hamdania, Algeria and 10: Port Cabinda, Angola

The critical criteria affecting the ranking of the investment index of the seaport are 'Proximity to major shipping line' (C11) and 'Trade scenario between China and host country' (C31). C11 and C31 could change the rank of eight seaports. Further, this explains the overall ranking of the different seaports used in the study. In the absence of the C31 changes in ranking are more drastic than the absence of C11. The ranking of Piraeus, Greece moves from six to one in absence of C32, but in absence of C11 it only slips two points to eight. Similarly, Melaka Gate slips from one to eight in absence of C32, but in absence of C11 it only slips to second. Such an effect indicates the importance of the government level relationship in establishing the seaport under

MSR.

### 5.4 Relationship between Investment Index of the Seaport and Nation's Economic Status

The study has performed a correlation analysis to determine the relationship between the investment index of the seaport and nation's economic status. The per capita GDP for year 2017 is used as an indicator for nation's economic status. The correlation analysis between the normalized values of investment index of seaport and nation's economic status is found to be -0.16. This indicates that the investment index is not positively related to the nation's economic status. This means that the investment index for seaport could be used for selecting and prioritizing the new seaport establishment initiative under MSR project.

Further, the correlation is negative indicating that the investment makes more relevance in areas with weak economic status. Such a correlation analysis is possible because the less developed or developing nations have the untapped potential that results in the lower economic status. Such nations could benefit from infrastructure projects like seaport as proposed in MSR in ensuring better utilization of their untapped potential. However, correlation results are not significant even for $p<0.1$. This indicates that economically weak nations could benefit from the investments brought under MSR for the new seaport establishment, but they may not provide any significantly better investment friendly conditions over more economically developed nations.

## 6 Conclusion

Large investments are the pressing need for most of the nations in the developing

world. Many of these countries are present in the Asia and African continent and have been the part of the routes linking Asia to Europe since many millennials. However, these countries have been struggling to benefit from the bustling trade between Asian economic giant, i.e., China and Europe. The China's international policy to leapfrog its growth with investments in other countries provides an opportunity to the Asian and African nations in enhancing their share and influence in the Eurasian trade corridor. Belt and Road Initiative (BRI) is the major development strategy of the China to achieve its vision of growth and enhance cooperation among the nations for global trade and development. The Maritime Silk Route (MSR) is part of BRI, which focuses on Eurasian trade through sea.

MSR success impinges on its ability to successfully identify and operationalize the new or important seaports needed for the trade growth in the region. New or important seaports are the huge investment projects, which China needs to undertake, as most nations in the region do not have sufficient resources to provide such massive levels of investment. New seaport investment is considered a high-risk investment as no data regarding past performance of the seaport could be obtained to estimate the future scenario. The investment conditions become riskier when developing countries are taken into consideration as they lack adequate high-quality data to determine the potential feasibility of the investment. Further, in international projects like MSR, the lack of global data regarding all critical investment parameters and diverse geopolitical structures makes the process of investment even more challenging.

Nevertheless, in such a challenging environment, investment decisions need to be made. Accordingly, the need arises for an investment index that could provide an assessment of the investment friendliness of the seaport sites across the MSR route.

One of the major constraints this index has to overcome is its ability to be operational in data scarce environment. Further, it should be able to offer better insights than those, which could be obtained from economic status of the country. Accordingly, this study has developed such an index that could address these constraints.

An AHP based investment index is proposed in this study, which evaluates the investment friendliness of the seaport site in a country using three criteria namely, port characteristics, business environment in the country and political relationship between the host country and China. Further, two criteria were sub-categorized to yield finally a list of five criteria that is used for preparing the investment index of each seaport. These criteria were given the weights based on the perspective of a Chinese investor using pairwise comparison approach.

The criteria prioritization showed that the most critical criteria for the selection of the seaport are the relationship of the host country with China. The balance of trade is viewed as important sub-criteria, which could determine the host nation enthusiasm towards debt financing-based investment from China. The least important criteria obtained from the study is the availability of competition from existing seaport. While, competition from major seaport is a low priority criterion, it does exert influence on the overall investment friendliness ranking of the seaport.

The study ranking of the investment friendliness of the ten seaports in the MSR projects showed that Melaka Gateway, Malyasia seaport is most investment friendly, while Kumport, Turkey seaport is least investment friendly. The support from literature for such findings indicates the relevance and reliability of the proposed investment index. Additionally, it is observed that investment to procure an existing seaport may not always be as environment friendly as compared to establishing a new

seaport.

The investment index did not share positive association with economic status of country, rather a weak and not significant negative association with the economic status of the country. This reflects the mutual benefits that could be obtained from the MSR investment in seaport projects. Since, the current assessment indicates that economic status does not play the role in determining investment friendliness of a seaport, if any role it plays, it plays in the favor of the economically weaker nations.

Overall, the study concludes that the MSR project is beneficial for the growth and development of Eurasian trade as well as for various nations who lie in the between the China and Europe. The new investment index could enable China to quickly generate the first impressions about the investment friendliness of any seaport site. Further, the learnings from the study also reflect need for the China to focus on its geopolitical relationship with all the nations in the region. This will ensure the better acceptability of the MSR initiative among the nations in region. This would lead to greater investment friendly environment for China in the region.

The lack of relationship between economic status of nation and investment friendliness of nation concludes that China need not have to worry about the current economic capability of the nation or current repayment potential of the nation. If the seaport is economically viable, the host nation would support the project and would be able to pay back the debt-based investments. This could help China to achieve its vision of enabling development of the developing nations. Further, it could help in advancing the China ideology of development based on ‘Beijing Consensus’, which focuses on development over democracy for the lesser-developed nations.

The outcomes of this study provide critical policy recommendation that would be

necessary for the success of MSR. The study recommends that China's foreign policy must focus on nurturing relationship with the other nations in the region. The policy could benefit from incorporation of the strategies that would help in ensuring the better economic growth of both China and the host nations. The new investment index provides an alternate strategy to the common diplomatic strategy accepted globally. The index could help in determining the level of economic collaboration and benefit sharing the China should expect for achieving its vision. Further, the study outcomes provide a new framework for the initiative implementers and executors to assess the various important seaport sites necessary for the success of MSR. In cases of critical seaport sites with poor investment friendliness, the index could also be used as a roadmap for identifying the parameters that China needs to focus in ensuring the better investment friendliness of those sites.

# Reference


Abelson, J. *et al.* (2003) 'Does deliberation make a difference? Results from a citizens panel study of health goals priority setting', *Health Policy*, 66, pp. 95–106. doi: 10.1016/S0168-8510(03)00048-4.

Azman-Saini, W. N. W., Baharumshah, A. Z. and HookLaw, S. (2010) 'Foreign direct investment, economic freedom and economic growth: International evidence', *Economic Modelling*, 27(5), p. 2010.

Berköz, L. (1999) 'The role of ports in the economic development of Turkey', in *39th European Congress of the Regional Science Association*. Dublin, Ireland.

Busse, M. and Hefeker, C. (2007) 'Political Risk, Institutions and Foreign Direct Investment', *European Journal of Political Economy*, 23(2), pp. 397–415.

Chhibber, A. and Dailami, M. (1990) *Fiscal policy and private investment in developing countries : Recent evidence on key selected issues*. Policy Research Working Paper Series 559. World Bank.

Corcoran, A. and Gillanders, R. (2012) 'Foreign Direct Investment and The Ease of Doing Business', *Review of World Economics*, 151(1), pp. 103–126.

Degang, S. U. N. and Zoubir, Y. (2017) '"Development First": China's investment in seaport constructions and operations along the Maritime Silk Road', *Asian Journal of Middle Eastern and Islamic Studies*, 11(3), pp. 35–47.

Dupasquier, C. and N.Osakwe, P. (2006) 'Foreign Direct Investment in Africa: Performance, Challenges and Responsibilities.', *Journal of Asian Economics*, 17(2), pp. 241–260.

Dwarakish, G. S. and Salim, A. M. (2015) 'Review on the Role of Ports in the Development

of a Nation', *Aquatic Procedia*. Elsevier B.V., 4(1), pp. 295–301. doi: 10.1016/j.aqpro.2015.02.040.

Eom, G. H. (2017) 'Silk roads again: Revisiting roads connecting Eurasia', *Journal of Eurasian Studies*. Elsevier Ltd, 8(1), pp. 1–2. doi: 10.1016/j.euras.2016.12.002.

Ferrari, C. (2011) *Ports and regional economic development: Global Ports and Urban Development: Challenges and Opportunities*. Paris, France.

Fisher, C. C. (2009) *Foreign Direct Investment in greenfield port Projects in Developing Nations: A determination of leading indicators for successful investment*. Erasmus University Rotterdam.

Forbes (2017) *China's Seaport Shopping Spree: What China Is Winning By Buying Up The World's Ports*.

Galli, M. (2017) 'Beyond frontiers: Ancient Rome and the Eurasian trade networks', *Journal of Eurasian Studies*. Elsevier Ltd, 8(1), pp. 3–9. doi: 10.1016/j.euras.2016.12.001.

GDELT (2018) *The GDELT Project*.

Göndör, M. and Nistor, P. (2012) 'Fiscal Policy and Foreign Direct Investment: Evidence from some Emerging EU Economies', *Social and Behavioral Sciences*, 58(12), pp. 1256–66.

Graaff, N. De and Apeldoorn, B. Van (2018) 'US–China relations and the liberal world order: contending elites, colliding visions?', *International Affairs*, 94(1), pp. 113–131.

Green, Mi. J. (2018) *China's Maritime Silk Road: Strategic and Economic Implications for the Indo-Paci c Region., Centre for Strategic and International Studies*. Washington DC.

Gunder, A. and William, R. (2005) 'Afro-Eurasian Bronze Age Economic Expansion and Contraction Revisited*', *Journal of World History*, 16(2), pp. 115–172. doi: 10.1353/jwh.2005.0142.

Hansen, H. and Rand, J. (2006) 'On the causal links between FDI and growth in developing

countries', *World Economy*, 29(1), pp. 21–41. doi: 10.1111/j.1467-9701.2006.00756.x.

Heritage Foundation (2018) *2018 Index of Economic Freedom*. Available at: https://www.heritage.org/index/about (Accessed: 26 July 2018).

İnalcık, H. and Quataert, D. (1994) *An Economic and Social History of the Ottoman Empire, 1300–1914*. Cambridge, UK: Cambridge University Press.

Informa (2017) *Llyod's list one hundred ports*. London, UK.

Jain, R., Panse, R. and Mishra, S. (2018) 'Impact of local factors on decision making – a multi criteria modelling framework in wind energy investment', *Current Science*, 114(12), pp. 2467–2472.

Jain, R. and Rao, B. (2013) 'Application of AHP Tool for decision making of choice of technology for extraction of anti-cancer bioactive compounds of plant origin', *International Journal of Analytic Hierarchy Process*, 5(1), pp. 3–29.

Joc (2015) *Challenges to China ports' slowing growth unprecedented*.

Joc (2016) *Chinese ports face wide array of changes, challenges*.

Jouili, T. A. (2016) 'The Role of Seaports in the Process of Economic Growth', *Developing Country Studies*, 6(2), pp. 64–69.

Kapuria-Foreman, V. (2007) 'Economic Freedom and Foreign Direct Investment in Developing Countries', *The Journal of Developing Areas*, 41(1), pp. 143–154.

Kowalczyk, U. (2012) *Case Study on Hub-And-Hinterland Development In The Baltic Sea Region*. Gdansk, Poland.

Laventhal, W. T. (2009) *Container ports in developing countries*. Rutgers University.

Lim, E.-G. (2001) *Determinants of, and the relation between, foreign direct investment and growth: A summary of the recent literature.* Working Paper 01/175. International Monetary Fund (IMF).

Molaie, B. and Ahmadi, A. (2013) 'The Effect of Democracy , Economic Stability and Political Stability on Foreign Direct Investment Evidence from 138 World's Countries', *Journal of Business and Economics*, 4(9), pp. 881–894.

Saaty, T. L. (1980) *The Analytic Hierarchy Process*. New York, USA: McGraw-Hill.

Shah, M. H. (2016) 'The Effect of macroeconomic stability on inward FDI in African developing countries', *International Journal of Business Studies Review*, 1(1), pp. 1–11.

Sleeper, D. M. (2012) 'Port Significance: Contributions to Competitiveness in Latin America and Asia', *Journal for Global Business and Community*, 3(1), pp. 22–28.

Solt, F. (2009) 'Standardizing the World Income Inequality', *Social Science quarterly*, 90(2), pp. 231–242. doi: 10.1111/j.1540-6237.2009.00614.x.

The Diplomat (2018) *US-China Trade Relations: Impending Trade War?* Washington DC, USA.

The Economist (2016) *Our bulldozers, our rules*. Beijing, China.

The Economist (2017) *China's expanding investment in global ports*. Available at: http://country.eiu.com/article.aspx?articleid=925980476&Country=Iceland&topic=Economy&subtopic=Regional+developments&subsubtopic=Investment (Accessed: 26 July 2018).

The Loadstar (2015) *China consortium moves into Turkish port market with control of terminal Kumport*.

The Star Online (2017) *Huge investments go into building Malaysian ports*. Available at: https://www.thestar.com.my/business/business-news/2017/07/22/huge-investments-go-into-building-malaysian-ports/ (Accessed: 26 July 2018).

Trading Economics (2018) *Balance of Trade: China*. Available at: https://tradingeconomics.com/china/balance-of-trade (Accessed: 26 July 2018).

UNCTAD (2017) *Review of maritime trade*. Geneva, Switzerland.

Washington Times (2018) *Greece welcomes massive Chinese investment, wonders about American money*. Available at: https://www.washingtontimes.com/news/2018/apr/3/greece-welcomes-chinas-investment-port/ (Accessed: 26 July 2018).

World Bank (2016) *Pension investment in infrastructure debt: a new source of capital for project finance*. Available at: http://blogs.worldbank.org/ppps/pension-investment-infrastructure-debt-new-source-capital-project-finance/ (Accessed: 26 July 2018).

World Bank (2017) *Doing Business: Measuring business regulations*. Washington DC, USA.

Xinhua News Agency (2015) *China unveils action plan on Belt and Road Initiative*. Beijing, China.

XinhuaNet (2017) *Belt & Road Initiative brings opportunities to countries involved: U.S. experts*. Beijing, China.

Zahedi, F. (1986) 'The Analytic Hierarchy Process--A Survey of the Method and its Applications', *Interfaces*, pp. 96–108.