

**China's Investment and Construction Activities in European Transport
Infrastructure; Considerations and Strategic Alternatives for the Port of
Rotterdam**

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Summary

China launched the One Belt One Road (OBOR) initiative in 2013. This is a very ambitious plan to improve connectivity in the Eurasian continent by means of large-scale investing in infrastructure. Due to the magnitude of the initiative, it will most likely affect trade patterns and supply chains. Relatively, China has already invested a lot in Eastern European infrastructure, while Western Europe has hardly been subject to Chinese infrastructural investments. The developments of the OBOR initiative are followed by the Port of Rotterdam with a lot of interest. They have recognized the possibility that the economic centre of gravity in Europe could shift from West to East. This report will first discuss several potential motivations which could drive China to execute their OBOR initiative, secondly a theoretical framework will be established to concretize the consequences of the OBOR initiative, then the dataset concerning Chinese maritime and infrastructural investments in Europe will be presented, and at last the data will be evaluated through the theoretical framework in order to assess the consequences for the Port of Rotterdam. By achieving this, this thesis can ultimately provide a more complete insight for the Port of Rotterdam Authority, and provide them more information regarding the consequences of the OBOR initiative. Obtaining this knowledge could help them determine their own policy.

Firstly, several possible motivations driving the OBOR initiative are discussed to possibly detect a dominant strategy. This is however not possible due to the fact that OBOR is still in a very early stage. The motivations discussed cannot be rejected either, due to OBOR's large geographical scope. A specific motivation could be applicable to a particular region, but at the same time be less fitting for a different region.

In order to determine the theoretical framework, strategic connectivity of the Port of Rotterdam is introduced as a tool of increasing the international competitiveness of The Netherlands. Strategic connectivity is divided into two components: strategic connectivity of the Port of Rotterdam in relation to domestic as well as foreign ports and logistic hubs. Relations that enhance strategic connectivity can be formed by port authorities and by companies operating in the specific port. Companies and the port they operate in can also be of mutual value to each other, by sharing their expertise and making sure the circumstances are optimal for a competitive business climate.

From a maritime perspective, the Chinese investments can be split into two parts: the investments done by COSCO Shipping and the ones performed by Hutchison Port Holdings (HPH). COSCO Shipping is a SOE and therefore generally complies with the Chinese policy, in this case OBOR. HPH on the contrary is a private firm headquartered in Hong Kong, which is known for not following the general Chinese policies due to English influences, and therefore its investments do not necessarily have to comprehend with the OBOR-related strategies. COSCO Shipping seems to be most interested in ports adjoining the Mediterranean Sea. With investments in Spain, Italy, Greece and Turkey they acquired a significant network of ports in that area. HPH's maritime assets are more scattered, but there does seem to be a centre of gravity; the Hamburg-Le Havre range.

The infrastructural investments are not in a close proximity to Rotterdam in any case. All Chinese infrastructure related investments have been in Central and Eastern European countries. The investments cover every aspect of land infrastructure; they include roads, railways, bridges and tunnels.

In the short term, the consequences of these maritime projects to the Port of Rotterdam are not very threatening. The Port of Rotterdam serves a different hinterland than the Port of Piraeus, and the hinterland connections in Northern Europe are superior to the hinterland connections in Southern Europe. The realized efficiency in the Port of Rotterdam is also unmatched by their Southern European competitors. Further development of these Southern European ports can however be threatening to the Port of Rotterdam, also due to the increasing influence COSCO Shipping has on shaping supply chains in Europe.

As far as the consequences related to the infrastructural investments are concerned, a port's performance relies heavily on the hinterland connections. (Re)constructing the generally overdue infrastructure in Central and Eastern Europe is an expensive and time-consuming project. Once this is achieved, the complementarity of both the Chinese maritime and infrastructural aspects may result in a very high competitiveness. Primarily, the road improvements have a complementary nature in relation to the maritime investments, as they determine the amount of cargo which can be further transshipped inland. The rail investments create a new supply chain, for that reason it could offer which may offer an alternative for seaborne transport. However, the amount of cargo transported by rail is still very small compared to maritime trade volumes, but the predicted growth rate of 15% may cause rail transport to become a considerable means of transport from which the Port of Rotterdam cannot be excluded.

Taking every OBOR-related consequence into account, the Port of Rotterdam should try to improve their strategic connectivity with the other ports in the Hamburg-Le Havre range in order to remain the main gateway in Europe. Chinese investments in Mediterranean ports combined with their infrastructural improvements in Central and Eastern Europe could pressurize the Port of Rotterdam's position as a main gateway.

1 Introduction

1.1 Background

During his visit to Kazakhstan in September 2013, Chinese President Xi Jinping announced his intention to construct a Silk Road Economic Belt. This is not an entirely new concept; it can be seen as a revival of the ancient Eurasian “Silk roads” which contributed greatly to the prosperity of China’s Tang dynasty. It aims to improve the land-based connection between China, Central Asia and Europe by investing heavily in infrastructure (Ministry of Foreign Affairs of the People’s Republic of China, 2013).

In October 2013, in his speech at the Indonesian Parliament, President Xi Jinping announced his plan to build a 21st- Century Maritime Silk Road. This initiative aims to set up a chain of ports located around the Chinese coast, South and Southeast Asia, Eastern Africa and eventually Europe by means of the Mediterranean Sea (Shaohui, 2015). The projects necessary to realize these plans are expected to be finalized by 2049, according to Xi Jinping (Casarini, 2016).

The Silk Road Economic Belt and the 21st Century Maritime Silk Road together form the One Belt One Road (OBOR). All areas and countries involved in OBOR would make up for over half of the world’s GNP and 70% of the world population (Casarini, 2016). The stated goal is to enhance connectivity and cooperation between the countries involved in the OBOR project, and thereby ultimately stimulate trade and the economy. The main purpose of this internationally orientated initiative is very different from the previous Chinese policy the world had known for a long time, which aimed to mingle international economics and politics as little as possible. The main focus had always been on the domestic economy, whereas international relations had not been elaborate.

Besides his announced plans for the Maritime Silk Road in October 2013, he also proposed to launch the Asian Infrastructure Investment Bank (AIIB), which function should be to facilitate the required finance for the desired infrastructural projects. It was founded on January 16, 2016, and it now has a capital of over \$100 billion. Experts state that the AIIB will be a serious rival for the World Bank and IMF in the near future (The Telegraph, 2015).

This emerging trend of Chinese international cooperation is not likely to decline, since Xi Jinping is expected to remain in his function for a long time to come. He became president in 2013, and according to the constitution he must step down in 2023. However, Xi Jinping’s reputation is indisputable within the Communist Party, and therefore they proposed to remove the clause in the constitution which says a president can reign for no longer than two five-year terms. This means that Xi Jinping could be the leader of the Communist Party for a much longer period, and as a result the OBOR-related projects are not likely to be delayed due to political resistance (BBC, 2018).

The combination of China’s pronounced ambitions concerning OBOR, their sufficient financial resources and the government’s continuity provide a well-grounded incentive to further investigate what the consequences could be for Europe. In the past 100 years, Europe has always been subject to shifts in dominant political influences. After World War II, Europe was divided in on one side liberal democracy linked to the United States, and on the other side communism related to the Soviet Union. This division was roughly between Western and Eastern Europe, with Germany being the place where both ideologies met. This division has long been present, but slowly Europe started re-integrating. With the fall of the Soviet Union and the Iron Curtain, Europe was officially no longer divided. However, decades of contradictory governance still left its marks on Europe. The steadily growing European Union (EU), founded in 1958, was a big driver for European integration (Dinan, 2014).

When the global financial crisis struck in 2007, this had big consequences for the relative unity which was present in Europe. Especially the countries in Southern Europe had many difficulties to overcome the consequences of this crisis. As a result, the other EU member-states had to come to their aid financially. This created friction on both

sides, especially in Italy, Greece, Portugal, Spain and Turkey, where extremist parties emerged, all sharing aversion against the EU (Bosco & Verney, 2012).

These developments may certainly have been helpful for China to gain influence in Europe. A lack of general leadership in Europe, and a difficult financial situation in many Mediterranean countries can make countries very interested in what China has to offer. The timing of China's launch of the OBOR initiative, shortly after the financial crisis, could leave one wondering what their true incentives are. Is it, as they say, to stimulate Eurasian cooperation or could it be a way to gain more global influence?

1.2 Problem statement

For the Port of Rotterdam these developments are very interesting and they present not only opportunities, but also threats. The Port of Rotterdam's performance relies partly on exogenous factors, such as the world economy and free trade covenants. The Port of Rotterdam Authority has recognized the possible consequences of the OBOR initiative, as the figures below demonstrate.

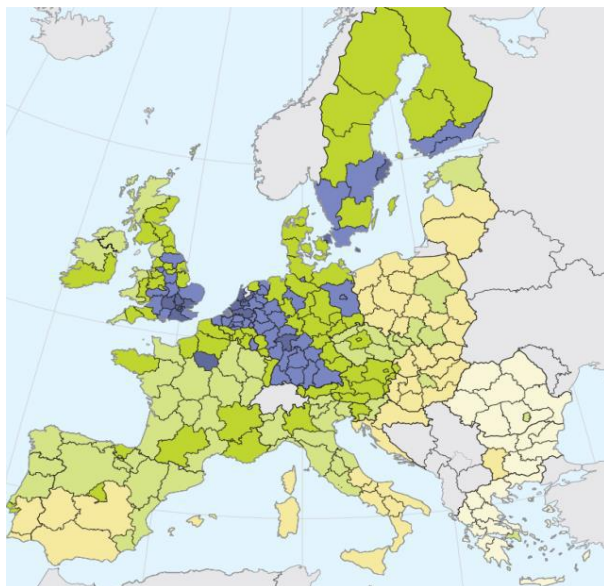


FIGURE 1: (SOURCE: (PORT OF ROTTERDAM, 2016))

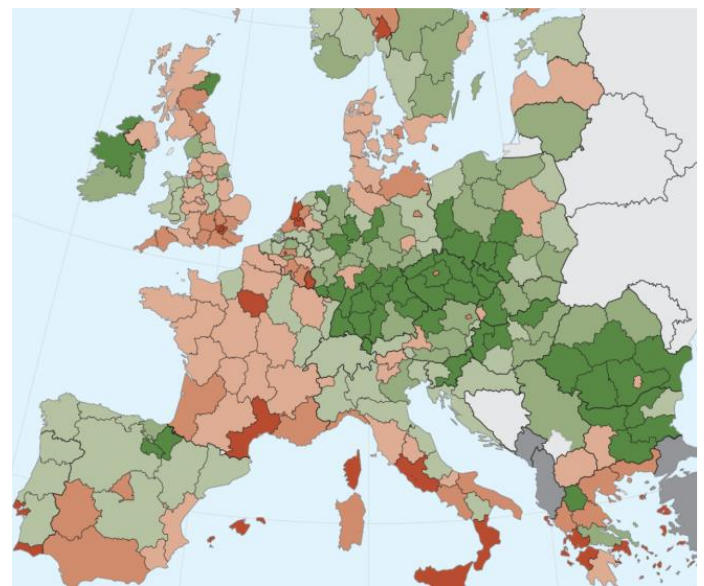


FIGURE 2: (SOURCE: (PORT OF ROTTERDAM, 2016))

Figures 1 and 2 show the manufacturing competitiveness in Europe: in figure 1 represented by blue, and in figure 2 by green. Figure 1 presents the situation in 2016, in which The Netherlands and the surrounding countries are highly competitive. Figure 2 features a future scenario where the OBOR initiative is largely implemented in Europe, and as a result the countries in Central and Eastern Europe have attracted a significant part of the production process. For the international competitiveness of the Port of Rotterdam such developments would be very harmful, therefore the OBOR initiative and all its related projects are followed with high interest. The aim of this research is to discover how many investment and construction activities China has executed in Europe from 1990 until now, followed by what this could mean for the Port of Rotterdam's position as main gateway in Europe.

1.3 Research question

Accordingly, this thesis will focus on the following research question:

“Is China’s investment and construction activity in Europe reason for the Port of Rotterdam to consider its strategic alternatives being one of the main gateways of Europe?”

1.4 Approach and outline thesis

In order to provide an answer to these questions, the following structure has been chosen:

- First, an insight will be provided regarding the possible motives behind the OBOR initiative. A Chinese, a Western and an alternative point of view will be discussed in order to provide a comprehensive understanding of the reasons driving the OBOR initiative.
- Next, a theoretical framework will be established which helps to assess the consequences of OBOR for the Port of Rotterdam. The concept of strategic connectivity will be introduced, which follows from a report that the Rotterdam School of Management has written at the request of the Rotterdam Port Authority.
- A detailed description will follow, containing all maritime and infrastructural investments China has made in Europe. Two separate tables are used to represent each category. Data for the maritime investments are attained by information that has been published by Chinese state-owned enterprises which are involved in the relevant maritime investments. For the infrastructural part, the *China Global Investment Tracker* has been used, which is the only comprehensive data set covering China’s global investment and construction. Filtering this dataset on infrastructure gives a reliable dataset which is useful for this thesis.
- An analysis will then follow which evaluates the Chinese investments in Europe and its implications for the Port of Rotterdam with respect to the theoretical framework established earlier. The maritime and infrastructural parts will be discussed separately. In addition, an interview with a high executive of the Port of Rotterdam will be presented, of which the outcomes will be compared to the findings of this thesis.
- Finally, the results of this thesis will be summarized and an answer will be provided for the research question.

2 Various strategies behind the OBOR initiative

2.1 Introduction

The OBOR initiative has evoked many reactions regarding the true motives behind its ambitious plan. This section will discuss various theories, and thereby provide a better insight into what motives could be driving OBOR. Firstly, official statements about OBOR's motives will be discussed, which mostly originate from Chinese sources. Secondly, a more Western orientated vision will be discussed, and finally an important reason behind the OBOR initiative will be mentioned; the securing of energy resources in Europe by China.

2.2 Official motivations

According to sources linked to the Chinese government, but also according to private sources in China, the OBOR initiative contains economic as well as non-economic elements. The general economic reason behind OBOR is to increase connectivity for all countries taking part in OBOR. The countries which so far have partaken in OBOR are located in Asia, Eastern Africa and Europe. Improving the connectivity requires large investments in infrastructure. These investments are meant to result in more extensive cooperation among countries that participate in OBOR, and ultimately lead to mutual economic benefit due to increased economic capacity (Swaine, 2015).

The diplomatic significance of OBOR is huge for China. In 2015, Chinese Foreign Minister Wang Yi said that OBOR would receive the highest priority in China's foreign policy. Three years later, at the National People's Congress, Yi repeated that OBOR is still the most important element of China's foreign policy (Hali, 2018).

The purpose of the OBOR initiative can best be explained by the Chinese themselves. In a report issued by the National Development and Reform commission (NDRC), Ministry of Foreign Affairs and Ministry of Commerce with State Council Authorization, the purpose of OBOR was articulated as follows:

"The initiative to jointly build the Belt and Road, embracing the trend towards a multipolar world, economic globalization, cultural diversity and greater IT application, is designed to uphold the global free trade regime and the open world economy in the spirit of open regional cooperation. It is aimed at promoting orderly and free flow of economic factors, highly efficient allocation of resources and deep integration of markets; encouraging the countries along the Belt and Road to achieve economic policy coordination and carry out broader and more in-depth regional cooperation of higher standards; and jointly creating an open, inclusive and balanced regional economic cooperation architecture that benefits all. . . . The Belt and Road Initiative aims to promote the connectivity of Asian, European and African continents and their adjacent seas, establish and strengthen partnerships among the countries along the Belt and Road, set up all-dimensional, multi-tiered and composite connectivity networks, and realize diversified, independent, balanced and sustainable development in these countries. The connectivity projects of the Initiative will help align and coordinate the development strategies of the countries along the Belt and Road, tap market potential in this region, promote investment and consumption, create demands and job opportunities, enhance people-to-people and cultural exchanges, and mutual learning among the peoples of the relevant countries, and enable them to understand, trust and respect each other and live in harmony, peace and prosperity." (NDRC, 2015).

Notable is the degree of openness which appears to be included in the OBOR initiative. No countries are excluded from becoming part of the OBOR project, and different foreign policies are not challenged by OBOR at all; on the contrary, it is meant to collaborate with other international policies.

Besides, the Chinese government has also formulated geo-political goals related to the OBOR initiative:

- Central and Western Asia is less developed than the coastal regions in Asia. By the means of OBOR, transit Central and Western Asia will become a gateway to Europe, and with that come realistic chances to achieve economic development. China also wants to move part of its industry to Central and Western Asia once the circumstances allow it, resulting in a more balanced Asia from an economic perspective.
- Bolster Asia's status in the world economy. With Central and Western Asia experiencing a rapid economic development, the total economic weight of Asia as a whole is increasing significantly.
- Increase Asian unity due to extensive cooperation and mutual benefits. Ultimately, they want to create a "community of destiny" (Swaine, 2015).

2.3 Geo-political motivation

There could however still be other goals which China hopes to accomplish with its OBOR initiative. In an article published by *The Diplomat*, a premier international current-affairs magazine for the Asia-Pacific region, a different motivation for OBOR is discussed. It emphasizes the fact that OBOR is not just a short-term policy, but also a policy which has set goals for the long term. They figure that China launched its OBOR initiative to persuade the "neighboring great powers" to form an alliance with them, thereby creating a strong, united Asia.

The U.S. is, and has long been, the most powerful nation in the world. Often, the most powerful nation tried to increase its influence in the world by expanding its territory. The U.S. did not do this, instead they wanted to protect the free market and democracy. By creating a much globalized free market, they were able to exploit their comparative advantage and create very beneficial circumstances for their exports. In the process, they established many military bases to obtain power, and formed alliances with the second most powerful countries in regions in order to prevent the strongest country from getting too powerful. As a result, the U.S. adjoins to almost 200 nations worldwide. Furthermore, the U.S. is a well-known ally of Japan and India, who they help to preserve and increase their economic and political influence in Asia.

China is aware that it cannot assume the same role as the U.S., and has therefore chosen to focus on the regional development. There are 30 countries which are all in close proximity to China, and in order to accomplish a more united Asia, they should all be persuaded by China to join the OBOR initiative in a different way. Hence the big differences among these countries. China has categorized these countries in 3 groups; small countries, pivot states and great powers. Each category requires a different approach. Small countries and pivot states need less convincing to participate in the OBOR initiative, because they can benefit from it and at the same time they do not meet the requirements to become a great power in Asia.

The great powers consist of: Kazakhstan, Indonesia, Japan and India. Each country requires a different approach to be convinced to partake in the OBOR initiative. Kazakhstan has already proclaimed to be supporting OBOR. Indonesia is the largest country in Southeast Asia. Over the years, Indonesia has realized a steady economic growth of approximately 5% (The World Bank, 2018). Its desire is to become a strong naval force. This does not concur with OBOR, which is meant just for trade in a peaceful way. Japan possesses a strong economy and has international prestige due to its place in the G7. The past proved Japan is not satisfied with China's rapid economic growth, which is considered a threat that can decline its own economy and influence in Asia. India went even further, and declined participating in OBOR. It even created its own foreign policy, the Act East policy, which however, did not receive much support from the surrounding countries. India is therefore one of the few countries in the region that has not yet embraced OBOR.

All these countries have limitations which make it difficult for them to become Asia's leading country. Either the GDP is not sufficient, or the country's size is too small, or its political influence is too small. China, on the other

hand, has managed to meet every requirement necessary to become Asia's most powerful country. If China manages to convince these powerful Asian nations to become a part of the OBOR initiative and increase cooperation with these countries, a very powerful block can be formed (Li & Yanzhuo, 2015).

2.4 Energy resources

China is the second largest oil consumer in the world. Due to an increase in China's average GDP, motorization and increased production, the demand for oil has been rising quickly. The domestic production of oil is however not increasing at the same rate. As a result, the oil consumption became larger than the oil production in 1993, and the deficit is strictly becoming larger over time (Fatima et al, 2018). In 2016, China was accountable for 23% of the total energy consumption worldwide (BP, 2016).

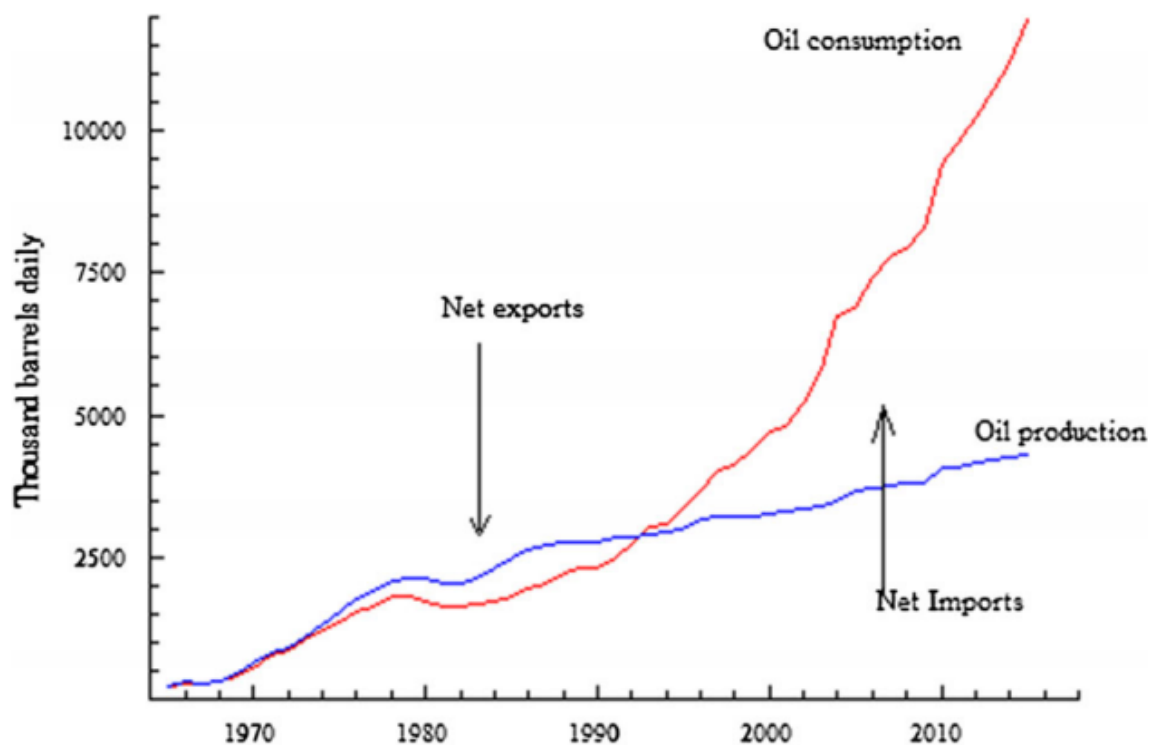


FIGURE 3: CHINA'S OIL CONSUMPTION COMPARED TO ITS OIL PRODUCTION (SOURCE: (BP, 2016))

Figure 3 visualizes the fact that China's oil production is not able to keep up with the rapidly rising oil consumption. The gap between consumption and production is getting larger exponentially. The oil production is increasing, but cannot rise at the same pace as the consumption. Domestic production of oil is limited to natural resources. These natural resources are inadequate to facilitate the consumption and therefore the Chinese government is forced to import the required amount of oil equal to the deficit. China's oil dependency makes it vulnerable for an unreliable oil supply and volatile oil prices. According to several sources this is an important motivation behind China's OBOR initiative.

The Development Research Center of the State Council of the People's Republic of China was tasked to consider several options which were meant to ensure the continuity of China's energy supply. They found a possible threat for their oil supply line which could be very harmful for the economy. Currently, almost all of China's oil is

transported by shipments through the Strait of Malacca. Blocking this supply line would have severe consequences for China's economy since it is highly dependent on oil.

In order to reduce China's vulnerability to a blockade of its oil supply lines, they want to diversify its importers and import routes. Constructing pipelines which run through Russia, Western Asia and parts of the Middle East reduces the amount of oil which has to be transported through the Strait of Malacca. The Chinese Engineering Institute estimated that in 2030, China will consume 600 million tons of crude oil and 300 billion cubic meters of natural gas annually. The countries participating in the OBOR project which have the natural resources to provide a part of China's energy demand, can deliver 143 million tons of crude oil and 206 billion cubic meters of natural gas. This is not enough to cover the total consumption, but it certainly diversifies the supply routes which is one of the primary goals of the Chinese government (Rolland, 2017).

2.5 Conclusion

It is difficult to make statements about the true motives driving the OBOR initiative because the initiative is still in a very early stage. Eventually, time will tell which factors were important for carrying out this ambitious plan. No theories which have just been discussed can be rejected, because they all contain a certain amount of truth. The scope of OBOR is very large, which is why there probably is not one specific vision which can be applied to all regions participating in OBOR. However, it is likely that certain theories apply better to certain countries than they do to other countries in a different region. For instance, Central and Western Asia and Central and Eastern Europe are more likely be envisioned as partners for China that will profit more from OBOR, because they are the main subjects of infrastructural investments due to their absent or overdue infrastructure they currently possess. For Western European countries there is less to gain, and the OBOR can be interpreted as a more threatening development which accords more to the geo-political motivation discussed earlier. So in short, it is hard to decide upon which motives are driving the OBOR, but it is likely that there are several reasons behind this initiative.

3 Concretization of the OBOR-related consequences into a useful theoretical framework for the Port of Rotterdam

3.1 Introduction

In order to assess the various consequences the OBOR initiative could have on the Port of Rotterdam, a certain theoretical framework has to be established. There are several port performance indicators, which mostly assess different aspects of a port's performance. The OBOR initiative causes different relevant effects, of which the most prominent geo-economic effects. Geo-economics assesses economics from an international perspective, and is basically an academic study of the global move of capital, market and labour (Goswami, n.d.). Trade patterns are changing due to the implementation of OBOR-related projects. New ports and infrastructure swift economic focal points due to new possibilities for companies to move products using different supply chains. This thesis will discuss the supply chains regarding containers, because, as will be made clear later on, this is the industry in which China is most involved in Europe, from a maritime perspective.

A port's performance can be measured by calculating the total added value a port creates, which consists of a direct and indirect component. Together, this forms the economic value of a port. Besides the economic value, there is also a strategic value a port creates. The strategic value of the Port of Rotterdam will be reckoned as the extent in which the Port of Rotterdam contributes to the Netherlands' competitive advantage. The Port of Rotterdam serves as the beginning of a huge supply chain which serves over 500 million consumers. Consequently, this provides opportunities for companies to be part of this network. It also works the other way round; the companies involved in this supply chain can be extremely competitive due to innovation or efficiency which increases the demand for using the Port of Rotterdam as a gateway. This mutually beneficial cooperation is not limited to the Dutch border; the Port of Rotterdam can also be of great strategic importance to foreign ports and port-related businesses. In order to maintain the Port of Rotterdam's strong strategic position, it has to be irreplaceable by being unique.

Providing a complete picture of a port's performance requires a great deal of considerations and a very large scope of different factors directly or indirectly affecting a port's performance. Since this research focuses especially on the geo-economic consequences of the OBOR initiative, the theoretical framework will be based upon the concept of strategic connectivity. The definition of strategic connectivity will be adopted from a report the Rotterdam School of Management has developed at the Port of Rotterdam's request: *"Strategic connectivity is defined as the relations between firms, organizations and governments that contribute to an increasing access to and utilization of determinants of competitiveness that are present elsewhere"* (Van den Bosch et al, 2011). Strategic connectivity will be divided into two parts: the strategic connectivity of the Port of Rotterdam in relation to domestic ports and logistic hubs, and secondly, the strategic connectivity of the Port of Rotterdam in relation to foreign ports and logistic hubs.

3.2 Strategic connectivity of the Port of Rotterdam in relation to domestic ports and logistic hubs

Several ports and logistic hubs are located in The Netherlands. The fact that these hubs can benefit from each other by means of strategic connectivity does not mean they are not competitive towards each other. Unless there is a general policy which extends to several hubs in case of ECT, the policy makers of a particular hub are trying to maximise profits, if necessary at each other's expense. At the same time, the hubs can achieve mutual benefit by

cooperating. By making infrastructure available to each other, the international competitiveness will improve due to a better overall connectivity from a national and an international perspective. Cooperation by ports can also be a factor of increased competitiveness. A recent example is the extended cooperation between the Port of Rotterdam and the Port of Dordrecht. The development of the Port of Dordrecht will be supported and supervised by the Port of Rotterdam Authority, as a consequence the Port of Dordrecht can specialize in a certain niche which creates new opportunities and is beneficial for both ports.

In order to discuss impacts on the strategic connectivity for the Port of Rotterdam, it is necessary to elaborate on the connections which the Port of Rotterdam has with other ports and logistic hubs in the Netherlands.



FIGURE 4: NATIONAL PARTNERS INCLUDED IN THE NETWORK OF THE PORT OF ROTTERDAM (SOURCE: (VAN DEN BOSCH ET AL, 2011))

A short explanation will now follow which elaborates on the different partnerships. First, the cooperation with the Port of Amsterdam, the second largest port in The Netherlands. In 2015, the two ports have extended their cooperation agreement with five years. Their previous cooperation resulted in a joint port management system which is fully operational for both ports. This system is used for administering, guiding and inspecting the shipments coming in and out. The quality and functionality of the port management and transshipment information is improved because of this cooperation (Port of Rotterdam Authority, 2015). Both port authorities stated that the next objective is to investigate the possibilities of cooperation in the field of infrastructure, a common procurement policy, information management, improving the attractiveness of rail transport, environmental sustainability, innovation, human resources and judicial processes (Port of Rotterdam Authority, 2015).

The next category is the CT which stands for container transferium. The Port of Rotterdam Authority has initiated the development of the container transferium in Alblasserdam and Heineken and the Van Uden Group have done so for the container transferium in Alphen a/d Rijn. A major reason for developing these CT's was to reduce the congestion on the roads surrounding the port. Not only in Rotterdam, but worldwide most of the containers are transferred to the hinterland using trucks. Besides the negative environmental externalities, this can also result in congestion and longer travel times which have a negative influence on competitiveness. These CT's primary purpose is enhancing the inland shipping of containers. In the case of the CT in Alblasserdam, it also serves as a container storage unit (Port of Rotterdam Authority, 2015).

Finally, Venlo is a logistic hotspot for rail, road and barge transport. Venlo's location is convenient for goods which have to be transferred to Germany, which is a common destination for goods coming from the Port of Rotterdam. Per year, approximately 300,000 containers are transferred between the Port of Rotterdam and Venlo, half of which by rail. Venlo also offers a very high quality as a logistical hub; in 2015 it was declared as the most attractive logistical location in Europe, followed by the Port of Rotterdam (Port of Rotterdam Authority, 2016)

3.3 Strategic connectivity of the Port of Rotterdam in relation to foreign ports and logistic hubs

International strategic connectivity can be achieved in two ways by the Port of Rotterdam. The Port of Rotterdam can either be strategically connected to foreign ports, logistical hubs or maritime companies or foreign companies could establish themselves in the Port of Rotterdam. Some of the companies which have settled in the Port of Rotterdam are Hutchison Port Holdings, Shell and Vopak. These globally leading companies apply their knowledge worldwide; so when they are established in the Port of Rotterdam they increase the competitiveness of the port, and thus the competitiveness of The Netherlands.

However, globalization and the increased influence of container shipping companies and container terminal operators on supply chains have undermined the bargaining position of the Port of Rotterdam Authority.

	(1) Worldwide container turnover (mln TEU)	(2) Turnover in Port of Rotterdam (mln TEU)	Share in container turnover in the Port of Rotterdam (total 2009: 9,7 mln TEU)	Share (2)/(1)x100%
APM Terminals	31,0	1,7	17,5%	5,5%
Hutchison Port Holdings/ECT	32,2	6,1	62,9%	18,9%
PSA International	45,0	---	---	---
DP World (<i>active at Maasvlakte 2 from 2013 onwards</i>)	31,5	---	---	---

TABLE 1: TURNOVER IN MLN TEU OF SOME OF THE LARGEST CONTAINER TERMINAL OPERATORS IN THE WORLD, COMPARED TO THEIR RELATIVE TURNOVER IN THE PORT OF ROTTERDAM (SOURCE: (VAN DEN BOSCH ET AL, 2011))

Table 1 demonstrates the decreased negotiating power and the limited chain management possibilities for the Port of Rotterdam with respect to the container shipping companies. To illustrate this trend; in 2009 APM Terminals transferred 5,5% of their containers through the Port of Rotterdam which is equal to 17,5% of the Port of Rotterdam's total container turnover. APM Terminals is therefore not dependent on the Port of Rotterdam but rather the other way round.

Besides the Port of Rotterdam's decreased influence with respect to the container shipping companies and container terminal operators, it is also lagging behind some foreign ports in the field of globalization. Investing in foreign ports and logistical hubs is a good way of increasing international strategic connectivity.

(1) Port	(2) Ranking 2009 (containers)	(3) Own port operator	(4) Start of the interna- tionalization process	(5) Number of countries where an interest in port(s) is held
Port of Singapore	1	PSA International	1996	16
Port of Hong Kong	3	Hutchison Port Holdings	1991	26
Port of Rotterdam	10	<i>not applicable</i>	2002	3

TABLE 2: INTERNALIZATION PROCESS OF THE PORTS OF SINGAPORE, HONG KONG AND ROTTERDAM (SOURCE: (VAN DEN BOSCH ET AL, 2011))

Table 2 shows the relative low international involvement of the Port of Rotterdam. The Port of Rotterdam's network is small compared to its Chinese counterparts. However, this can be partly explained by a different policy of the Port of Rotterdam Authority. Where Chinese port operators focussed on acquiring more foreign assets, the Port of Rotterdam has primarily concentrated on realizing superior management of the port and the supply chains running through the Port of Rotterdam. This approach has certainly resulted in revenue, as Rotterdam based companies are often requested to execute their high quality services. An example hereof is the participation of Van Oord, one of the largest dredging companies in the world, in "Dubai Tourism Vision 2020". Since 2001, Van Oord has been responsible for the hydraulic engineering work for this extremely ambitious megaproject (Van Oord,

2017). This is an example of qualitative strategic connectivity, which increases the international competitiveness of the Port of Rotterdam as well as The Netherlands.

Besides Rotterdam based companies which are hired to perform their expertise, the strategic connectivity of the Port of Rotterdam also lies in strategic partnerships with foreign ports. Examples of these strategic partnerships can be linked to interdependency of the Port of Rotterdam to respectively the Port of Duisburg and the Port of Antwerp. The Port of Rotterdam – Port of Duisburg connection is significant, as the Port of Rotterdam is the largest seaport of Europe and the Port of Duisburg is the largest inland container port in Europe. The Port of Duisburg functions as a gateway to further destinations in Europe, and also as a final destination for products originating from Rotterdam. The means of transport are all embracing: roads, rails and shipping are all used for the transport. A comprehensive example of the interdependency just mentioned and the accompanying strategic connectivity which result in increased international competitiveness is the ThyssenKrupp Steel case. ThyssenKrupp Steel is the largest producer of steel in Germany, and ranks in the top 10 worldwide. Its production of steel relies mostly on coals and ores, of which 90-95% comes from the Port of Rotterdam due to ThyssenKrupp Steel's capability to handle the largest vessels and the excellent hinterland connections. This connection provides strategic value for the Port of Rotterdam, because of their vital supply of coals and ores (Van den Bosch et al, 2011).

The Port of Antwerp also offers strategic connectivity for the Port of Rotterdam. Although they are rivals, they do increase both their competitive position by cooperating. By means of a huge pipeline network, the industrial clusters of the Port of Rotterdam, Antwerp and the industrial cluster in the Ruhr area are interconnected which results in a safe, reliable and sustainable mode of transport (Port of Antwerp, 2012). To underline this strategic connectivity; Eddy Bruyninckx, CEO of the Port of Antwerp Authority until 2016, said in 2016 that the ports of Antwerp and Rotterdam should increase their cooperation in order to become more competitive to serve the upcoming markets in Central and Eastern Europe. He considered this step necessary, because South European ports are increasingly competing for the same markets with the support of Chinese investments (Lalkens, 2016). The Port of Rotterdam has also expressed its intention to further cooperate with the Port of Antwerp in "Port Vision 2030"; a document which sets out the ambitions for the future of the Port of Rotterdam. It stated:

"Cooperation with Antwerp and the other Flemish ports can increase the competitiveness of the ports in the Rhine-Schelde area. By jointly improving the hinterland connections the competitiveness position of both Dutch and Belgian ports will strengthen relative to the North-German ports. Competing at the seaside keeps both ports competitive. Expansion of the pipeline infrastructure between Antwerp and Rotterdam strengthens the large chemical clusters of both ports" (Port of Rotterdam Authority, 2011).

Another example of the improved relationship between the ports of Rotterdam and Antwerp, was their attempt in 2011 to acquire a stake in the Port of Duisburg. Duisburg is the largest inland port in Europe, and in close proximity to Rotterdam and Antwerp. A large part of the cargo travelling inland goes through Duisburg, making it an important distribution point for the ports of Rotterdam and Antwerp. The reason for this desire to acquire a stake in the Port of Duisburg was to have more influence on the transport of goods, trying to relieve pressure on the road transport and increase the cargo transported by water or railway (nm, 2011).

3.4 Conclusion

Several ways have been discussed which can enhance the strategic connectivity of the Port of Rotterdam and hereby increase the international competitiveness of The Netherlands. Strategic connectivity can be achieved domestically as well as internationally. Furthermore, relations that enhance strategic connectivity can be formed by port authorities and by companies operating in the specific port. Companies and the port they operate in can

also be of mutual value to each other, by sharing their expertise and making sure the circumstances are optimal for a competitive business climate.

4 Chinese establishment in Europe on a maritime and infrastructural level

4.1 Introduction

The first part of this section will discuss the Chinese maritime investments in Europe, the second part will discuss the Chinese infrastructural investments in Europe and the third section will combine both maritime and infrastructural investments. In the first two sections the investments will be discussed chronologically, as this creates a detailed timeline for a better insight. Where possible, investments which are interrelated will be discussed simultaneously.

4.2 Maritime aspect

In order to acquire a good insight in to what extent China has already got a foothold in Europe on a maritime level, it is informative to take a closer look at China's SOE's. The list of China's SOE's contains over 100 companies, this shows the magnitude and relevance of these government owned companies. There are however just a few companies occupied in shipping which makes a filtering of the list possible.

The main Chinese state owned company regarding shipping is by distance China COSCO Shipping Corporation Limited (COSCO Shipping). This conglomerate arose from the merger of respectively China Ocean Shipping (Group) Company (COSCO) and China Shipping (Group) Company (CSG). The merger consisted of in total 74 transactions and was finalized in February 2016 (Liang, 2017). COSCO Shipping possesses most vessels in the world and is active in every relevant category for shipping. Furthermore, they have 22 divisions and subsidiaries.

Besides COSCO Shipping, Hutchison Port Holdings Limited (HPH) is another huge Chinese company involved in shipping. It is the world's largest port-operator, port-investor and port-developer, active in 26 countries (ECT, 2018). HPH is a subsidiary of CK Hutchison Holdings Limited, which is a private multinational conglomerate headquartered in Hong Kong. Like COSCO Shipping, CK Hutchison Holdings Limited also emerged from a merger; Cheung Kong Holdings and Hutchison Whampao merged in March 2015 into CK Hutchison Holdings Limited (Sito & Li, 2015). Next, a table will follow containing information of all Chinese maritime investments in Europe.

Year	Country	City	Quantity in millions (USD)	Company	European company/port	Ownership
1991	UK	Felixstowe	\$118	HPH	Port of Felixstowe	75%
1994	UK	Felixstowe	\$65	HPH	Port of Felixstowe	25%
1998	UK	Rochester	\$145	HPH	London Thamesport	100%
1997	UK	Harwich		HPH	Harwich International Port	100%
2002	Netherlands	Rotterdam		HPH	Europe Container Terminals	100%
2002	Netherlands	Moerdijk		ECT	Moerdijk Container Terminals	Partly
2004	Netherlands	Venlo		ECT	Venlo	100%
2004	Belgium	Antwerp	133,9	COSCO	Antwerp Gateway NV	25%

2008	Greece	Piraeus		COSCO	Port of Piraeus	100%
2009	Netherlands	Amsterdam		HPH	Amsterdam Container Terminal	50%
2009	Sweden	Malmö		HPH	Frihamnen Port	100%
2009	Belgium	Willebroek		ECT	TCT Belgium	100%
2012	Germany	Duisburg		ECT	Duisburg	100%
2014	Poland	Gdynia		HPH	Hutchison Ports Gdynia (build it themselves)	100%
2014	Belgium	Zeebrugge		COSCO	CSP Zeebrugge Terminal NV.	24%
2015	Greece	Piraeus	312,5	COSCO	Piraeus Port	51%
2015	Spain	Barcelona		HPH	Barcelona Europe South Terminal	100%
2016	Belgium	Zeebrugge	\$42	COSCO	CSP Zeebrugge Terminal NV.	76%
2017	Sweden	Stockholm		HPH	Stockholm Norvik Port	100%
2017	Spain	Valencia	\$228	COSCO	Noatum Port Holdings	51%
2017	Netherlands	Rotterdam	\$145	COSCO	Euromax Terminal Rotterdam	35%
2017	Italy	Porto Vado	\$58	COSCO	Vado Reefer Terminal	40%
2017	Turkey	Istanbul		COSCO	Kumport Terminal	40%
2017	Turkey	Istanbul		CIC Capital	Kumport Terminal	20%
2017	Turkey	Istanbul		CMHI	Kumport Terminal	5%
2018	Netherlands	Amsterdam		HPH	TMA Logistcs B.V.	50%

TABLE 3: CHINESE MARITIME INVESTMENTS IN EUROPE

Table 3 shows the maritime investments in which Chinese companies were involved. The investments are sorted based on the year in which the investment was made. It also contains information about in which port, terminal or company the investment was made, and where this port, terminal or company is established. Furthermore, under the header “Type”, one can see in what industry the particular investment is affiliated with. At last, the section “Company” shows which company is behind the investment mentioned.

COSCO Shipping and HPH have been discussed in the previous section and two more companies remain to be addressed. ECT stands for Europe Container Terminals, which is the largest container handling company in Europe. It possesses two terminals at the Maasvlakte in The Port of Rotterdam; the ECT Delta Terminal and the Euromax Terminal. Via inland shipping, railways and trucking these terminals are connected to the Moerdijk Container Terminals, ECT Venlo Terminal, TCT Belgium in Willebroek and the Duisburg Container terminal (ECT, 2018).

CIC Capital is a subsidiary of China Investment Corporation (CIC). CIC is a state owned company meant to control and overlook China’s foreign portfolio. Together with CIC International, CIC Capital has to accomplish this task (China Investment Corporation, 2018). They are not relevant for this research, because they do not show any particular interest in maritime investments, but just in feasible projects which can happen to be maritime related.

Table 3 will now be discussed chronologically in order to provide background information on the investments. The first investments were executed in the UK and all performed by HPH. As mentioned earlier, HPH is a private company whose main target is to make profit. It started in 1991 with the acquisition of 75% of the Port of Felixstowe, which core business is container handling. In 1994, HPH bought the remaining 25% shares of Orient Overseas International leading to full ownership. Currently, three terminals are operative in the Port of Felixstowe. Together these handle 4 million Twenty-Foot Equivalent Units (TEUs) annually, which equals 42% of the total containerized trade in the UK (Woollard, 2017). The port of Felixstowe is considered a highly efficient port, resulting in winning the award of "Port Operator of the Year" in 2017 (Hutchison Ports, 2017). In 1997, HPH executed another maritime in the UK, this time in the Harwich International Port. Harwich International Port is one of the largest ports in the UK, operative in Roll on/Roll off (Ro-Ro), containers, bulk and also passenger transport by means of ferries. Then, in 1998, the London Thamesport was added to HPH's assets. London Thamesport is located just 35 miles away from the centre of London, thus having a strategic location for small container traffic within the UK and for infrastructure projects around London due to its outstanding hinterland connections (Hutchison Ports, 2017). London Thamesport is, moreover, only active in container shipping, and all of its operations are run through one terminal.

The next investment is HPH's acquisition of ECT. As discussed earlier, ECT currently owns a large supply chain for containers with terminals in The Netherlands, Belgium and Germany. HPH pronounced its ambition to acquire ECT for the first time in 1999, and presented its plan to the European Commission. The Rotterdam Port Authority was HPH's partner in this plan; together they wanted to acquire ECT. At first, the European Commission denied their request, because in combination with HPH's assets in the UK they would possess 36% of the total shipping activities in Northern Europe (European Commission, 1999). Eventually, after having to make several concessions which had been introduced to guarantee a fair competition, HPH and the Rotterdam Port Authority acquired ECT. The marketshare of HPH and ECT combined was over 50% in the Northwestern European market during the time of the acquisition, and since HPH owns most of ECT's assets, they own the largest containerized supply chain in Europe (European Commission, 2001). In 2016, COSCO Shipping bought a 35% stake in the ECT Euromax Terminal. The Euromax Terminal is one of the largest container terminals in Europe, with a handling capacity of 3.2 million TEU per year (Nan, 2016).

Then, in 2004, COSCO Shipping made its introduction in Europe by purchasing 25% interest in Antwerp Gateway NV., its first asset outside of Asia. Prior to this investment COSCO Shipping had an interest in 13 terminals in China and 1 in Singapore. The investment was made because the board of COSCO Shipping believed it would result in feasible results, and also in order to diversify COSCO Shipping's presence geographically (COSCO Pacific Limited, 2004).

In 2008, COSCO Shipping continued its investments in Europe by purchasing the full operating rights for a container terminal within the facility of the Port of Piraeus, Greece's largest port. COSCO's determination to quickly improve and expand the facility was noticeable in a relatively short period; it invested over 600 million euros in the terminal within the period 2008-2015. These investments have shown results; Piraeus' container-handling volume experienced a growth of over 500% in the designated period. In order to gain more influence on the general port policy, COSCO bought 51% of the Port Authority's shares in 2015 for 280 million euros, resulting in a majority share in the port. A clause in the contract also prescribes COSCO Shipping an additional 16% if it meets the requirement of investing another 300 million euros in port facilities in the next five years. A source from within COSCO Shipping proclaimed that COSCO Shipping's investments in the Port of Piraeus in the next five years will exceed 600 million euros (Sano, 2017).

The next acquisition is from HPH by becoming owner of Amsterdam Container Terminal (ACT) in 2009. ACT had not performed well in the years previous to the acquisition, and after HPH had taken control the results were still disappointing. ACT generated heavy losses and as a result HPH moved the containerized freight to Rotterdam, and

wanted to transform ACT into a multi-purpose terminal. This, however, still did not result in profitable results, ultimately leading to the closure of ACT.

Shortly after the unfortunate closure of ACT, HPH bought the operating rights for the terminal located in the Frihamnen Port in Malmö. The port serves as an inland gateway, and also transports goods to mainly Germany and Belgium via small- or medium-sized vessels (Ports of Stockholm, 2018). In 2017, the Port of Stockholm Authority and HPH came to an agreement which states that HPH will operate the terminal currently under construction. At the Stockholm Norvik Port, a new container terminal is being constructed which can handle larger vessels and will be able to handle 450,000 TEU annually once the project is finished in 2020. In contrast to the Frihamnen Port, the new terminal will be in closer proximity to the ocean and therefore have better accessibility for larger vessels (Reinikainen, 2017).

Yet another acquisition is done by HPH; in 2014 they bought the operating rights for one of the two terminals in the Port of Gdynia. The other terminal is the Baltic Container Terminal and is run by International Container Terminal Services, inc. (ICTSI). The Port of Gdynia's goal is to transform itself from a small port mainly used for short shipping into a container hub and ocean port (Coordinating Secretariat for Maritime Issues, 2017), partly by upgrading the container terminals. In 2015, the Port of Gdynia Authority S.A. unfolded its expansion plans which would make the port able to accommodate larger vessels. It aims to handle containers with a load equal to 5 million TEU annually per 2025, which is a significant increase to the 2,061 million TEU in 2014 (Port of Gdynia Authority S.A., 2015).

Next, two investments will be discussed together because they complement each other. COSCO Shipping bought a share in the CSP Zeebrugge Terminal in 2014, and in 2016 it bought the rest of the shares, making itself full owner of the company. COSCO Shipping was in need for a central European hub. The criteria were a sufficient capacity, good maritime accessibility, high productivity and a favorable location regarding potentially interesting markets to invest. COSCO Shipping recognized all these traits in Zeebrugge (Port of Zeebrugge, 2017). Currently, the terminal has the capability to handle containers worth 1 million TEU per year. This number falls in slight comparison to neighboring container hubs Antwerp and Rotterdam, which in 2017, handled respectively 10.037 million and 12.385 million TEU (Port of Antwerp, 2017). However, Zeebrugge competes with the ports of Antwerp and Rotterdam, and with the proper investments it could certainly grow at Antwerp's and Rotterdam's expense.

HPH's next investment was in the Barcelona Europe South Terminal (BEST), one of the most promising ports in Europe; in 2017 it was Europe's fastest-growing container hub. BEST was able to handle 2.97 million TEU in that year, despite the political and economic setbacks it experienced due to Catalonia's strive for independence. One of the reasons for this growth is the investments in cranes in BEST, which makes the port the only one in the country with the capability to transship the largest vessels in the world. The terminal has become semi-automatic, and with distance the most efficient one in the Mediterranean area. Another advantage is that, in contrast to its competitors, the railways running through BEST are connected to the main European network's standard-gauge track (Barnard, 2018). These features support HPH's confidence that BEST can become the most important container terminal in the Mediterranean area.

Two years after HPH invested in BEST, COSCO Shipping bought a majority stake in Spanish container terminal operator Noatum Port Holdings S.L.U.. This gives COSCO Shipping control over container terminals in Valencia and Bilbao. In 2016, the Noatum Container Terminal Valencia handled more than 2 million TEU, making them a serious competitor of BEST. Also, in July 2017, Noatum announced the expansion of the Valencia terminal, which would enable the terminal to handle vessels of over 20,000 TEU (Louppova, 2017). COSCO Shipping itself said the following about the investment:

"The transaction represents another important measure taken by COSCO SHIPPING to implement the Belt and Road Initiative and step up the company's global operation. Meanwhile, it is also a significant progress for the Group to

further improve its overseas port network, strengthen the control and management of its ports and terminals, and more importantly, bring into full play the synergies forged between the Group's port assets and container fleet of COSCO SHIPPING Lines and the OCEAN Alliance. As COSCO SHIPPING Ports Limited becomes the controlling shareholder of NPH, it will further optimize its presence in Europe and rest of the world. After the completion of the transaction, the NPH will enjoy business support from the OCEAN Alliance, including COSCO SHIPPING Lines, and furthermore, it may serve global carriers as a public terminal, contributing to the Belt and Road Initiative serving global connectivity” (COSCO Shipping, 2017).

In accordance to this statement, the Piraeus Port Authority had also expressed its intention to cooperate closely with the terminals in Valencia in Bilbao, in order to further economic progress (Reuters, 2017).

Shortly after COSCO Shipping's investment in Spain, it bought a 40% stake in the Vado Reefer Terminal which is located in the Port of Vado, Italy. The terminal has a capacity to handle 300,000 TEUs annually, which makes it one of the larger container terminals in the Mediterranean area. In addition to this already existing terminal, COSCO Shipping has announced the construction of a new terminal which will ultimately be able to handle 900,000 TEUs per year. The construction of this terminal is scheduled to be completed in 2018. This investment expands COSCO Shipping's network of container terminals within Europe (Xinhua, 2018).

In 2017, a joint venture consisting of COSCO Shipping, CIC Capital and China Merchants Holdings International (CMHI) bought a 64,5% stake for a total amount of 940,2 million USD in Fina Liman, the company which holds the port. Within this port lies the Kumport Terminal, responsible for the 13% of the container transshipment in Turkey. The terminal's prospects are promising; in the period 2009-2014 it reported an average annual growth of approximately 30% in container volume, concluding with 1,4 million TEU in 2014. The port is located near Istanbul, making it a strategic position for trade between Europe and Asia. Also, cooperation with the Greek port of Piraeus could result in a significant market share for COSCO Shipping in the Eastern part of the Mediterranean Sea (Wee, 2015).

The latest Chinese maritime investment in Europe is performed by HPH, which bought a 50% share in TMA Logistics B.V.. TMA possesses three sites in Amsterdam and one in Antwerp. Its business is diverse, and this is also how HPH envisions this project on the short term. In cooperation with ACT, HPH wants to focus on short-sea container traffic, Ro-Ro, vehicle handling and general cargo (Wee, 2018). This strategy is different from the one HPH formulated for the previous ACT. HPH's majority stake in ECT could be a reason for this particular strategy. The larger vessels could be handled in Rotterdam, and the smaller freight can be transhipped in Amsterdam.

4.3 Infrastructural aspect

Next, the Chinese investments in European infrastructure will be discussed. Since it is more difficult to relate particular investments to each other than it has been the case for the maritime investments, the investments will be discussed chronologically.

Year	Month	Chinese Entity	Quantity in Millions (USD)	Share Size	Subsector	Country
2010	April	China Communications Construction	\$260		Road	Serbia
2011	May	Sinomach	\$2,370		Road	Ukraine
2011	June	Genertec	\$600		Aviation	Belarus
2012	February	China Communications Construction	\$400		Road	Belarus
2012	February	Guangxi Liugong Machinery	\$100	100%	Road	Poland
2012	May	China Railway Construction	\$990		Rail	Hungary
2013	January	China Communications Construction	\$850		Road	Serbia
2013	June	Shandong Gaosu	\$330	19%	Road	Serbia
2013	November	Power Construction Corp	\$375	51%	Road	Macedonia
2014	March	China Communications Construction	\$1,120		Road	Montenegro
2014	December	China Road and Bridge Group	\$1,000		Road	Montenegro
2015	March	CITIC	\$300		Road	Belarus
2015	November	China Railway Engineering, China Railway Rolling Stock	\$1,330	85%	Rail	Hungary
2016	February	China Communications Construction	\$110		Road	Latvia
2016	June	China Communications Construction	\$230		Road	Serbia

2016	November	China Communications Construction, China Railway Engineering	\$160		Rail	Serbia
2016	November	Power Construction Corp	\$220		Road	Serbia
2017	October	Xinjiang Communications Construction	\$100		Road	Ukraine
2017	November	Shandong Gaosu	\$640		Road	Bosnia
2017	November	China Communications Construction	\$520		Road	Serbia

TABLE 4: CHINESE INFRASTRUCTURAL INVESTMENTS IN EUROPE

The first investment, dating from April 2010, concerns a bridge which is constructed in Serbia. It is constructed by the China Road and Bridge Corporation (CRBC), which is a daughter company of China Communications Construction Company (CCCC). This investment enabled the construction of a bridge with a length of 1507 metres. North of the river which the bridge crosses, a new port is constructed, thus making the bridge function as a gateway connecting the newly built port to the hinterland (Dimitrijević, 2017).

The following investment represents the largest value. The contract for this deal is twofold; on the one side it consists of the Kiev Infrastructure Project, and on the other side is a new railway which connects Kiev and Borispol International Airport. The Kiev Infrastructure Project costs 2 billion USD and the railway 370 million. The Kiev Infrastructure Project aims to improve the entire infrastructure in Kiev in order to upgrade the general accessibility. The project includes tunnels, overpasses and beltways. The Borispol International Airport is the biggest airport in Ukraine. The passenger volume and the amount of cargo have both been increasing over the last years, therefore the Ukrainian government wanted to improve the connection from the airport to Kiev (Sinomach, 2015).

The next investment in June 2011 concerns a reconstruction of a terminal at the Belarusian National Airport Minsk-2 (Prysmakova, 2015). The next project, dating from February 2012, is an improvement to an already existing highway; the M5 Bobruisk-Zhlobin highway. The 400 million USD investment aims to improve this 77,66 kilometre-long highway, in order to improve connectivity in the rural areas of Belarus, and ultimately to increase economic activities in these areas. The places along the highway are small towns which could benefit from this investment, and also traffic between the cities Bobruisk and Zhlobin will improve (CRBC, 2012).

The next investment from February 2012 is an acquisition; Guangxi Liugong Machinery Co. buys all the shares in the Polish Huty Stalowa Wola S.A. Both companies are operative in the field of production of machinery. With the acquisition, Guangxi Liugong Machinery Co. wants to create a new construction and distribution centre, well capable of serving the European and North-American market in being closer to the final consumer (Koszewski, 2011).

The investment done in January 2013 was meant to build a new highway. For Serbia, this new highway is of great strategic value, because it connects the industrial areas in Western Serbia to the E-75 and E-63. These roads are European highways and are part of the European network of roads. The new highway has a length of 60 kilometres and increases the connectivity in Western Serbia (Ministry of Construction, Transport and Infrastructure, 2016).

The next investment, Shandong Gaosu's 330 million USD dollar investment, is related to CRBC's 1,000 million USD investment in Montenegro dating back to December 2014, the 1,120 million USD investment in March 2014 and also the 230 million USD done in June 2016. These investments are all part of the Belgrade-Bar highway plan. This initiative wants to connect Belgrade to Montenegro's main port: Bar. The port of Bar is currently operating below its capacity, and therefore it is looking for ways to reach new markets. The Belgrade-Bar highway is a means to connect the Port of Bar to the Serbian and Central European market. In 2015, China's Prime Minister Li Keqiang has expressed interest in developing the port of Bar (PR Service, 2015). The investments mentioned above are all part of the Belgrade-Bar highway which ought to be constructed in respectively Serbia and Montenegro. The construction of this highway in combination with a potential growth of the port of Bar due to Chinese investments is a complementing strategy (Surk, 2017).

The next investment, the 375 million USD investment agreed upon in November 2013, will enable the construction of a 57 kilometre-long highway which increases the connectivity between the Macedonian regions Kicevo and Ohrid. 51% of the construction is assigned to Macedonian companies, which will increase the national economic activities and also create jobs. During the next four years, China has promised to help with the construction of an additional highway network in Macedonia with a total length of 132 kilometres (Falanga, 2014).

The following investment, the 300 million USD investment in March 2015, concerns the development of a new factory for automobiles in Belarus. CITIC Construction performs the investment and will also operate the factory, thus being responsible for every aspect of the production process. The factory is supposed to construct 60,000 passenger cars annually (CITIC, 2015).

The next investment, registered in November 2015, is an important one for China. It is the first bid which they won for constructing a high-speed train in Europe. The railway will connect Hungary's Budapest to Serbia's Belgrade by trains which note speeds up to 200 kilometres per hour. The 1,330 million USD investment covers the Hungarian part of the railway which is 152 kilometres long, and it will be constructed in cooperation with the China Railway International Group, a subsidiary of China Railway cooperation, and the Hungarian State Railways. The Hungarian State railways will be responsible for 15% of the construction process, which leaves the China Railway International Group with 85%. Hungary got slightly concerned during the project regarding the funding, but China reassured that these funding conditions will be flexible if it decides to use Chinese equipment and products (Reuters, 2015). Recently, it was discovered that the financial details of this project differ from the ones mentioned above. A Hungarian journal concluded that the Hungarian section of the railway will cost approximately 3 billion USD, with interest between 500 and 800 million USD (Vörös, 2018).

The next investment, the 110 million USD transaction in Riga Commercial Port, serves as a means to improve the general infrastructure in the port itself and the areas around the port. The project means to increase the cargo-handling capacity of the port and to improve the connections to the hinterland (Riga Commercial Port, 2014).

The following two investments are both executed in Serbia. The 160 million USD investment upgrades particular parts of the railway network in Serbia resulting in trains being able to note speeds of 160 kilometres per hour (Ministry of Construction, Transport and Infrastructure, 2016). The other investment is made for constructing a 19,5 kilometre-long bridge which is meant to provide another route for traffic in- and just outside Belgrade (Ralev, 2017).

The next investment, dating from October 2017, is likely the first of its kind with many to follow. It means to repair two important highways in Ukraine, one which connects Western Ukraine to Central Ukraine and the other connects Kiev up until the Russian border. Over 50% of the Ukrainian roads are overdue, and as a consequence in 2016 3410 people died in traffic due to poor road conditions. The Ukrainian government has therefore expressed its prioritization of the reconstruction of many roads, in which Chinese companies could prove to be a valuable partner (Xinhua, 2017).

The 640 million USD investment in Bosnia consists of two projects. The first project is named the Bosnian Serb Railway Project; it means to connect Banja Luka, the second largest city in Bosnia, and Dobrin, lying just past the border in Croatia, by rail. The Bosnian Serb government has great expectations of the project, which will act as an important connection to Central Europe. The second project is called the Bosnian Serb Expressway Project. It forms a railway connection between Banja Luka and Prijedor. Prijedor is after Banja Luka the biggest city in the Bosnian Serb Republic. These projects will both improve the connectivity of regions within the Bosnian Serb Republic, and also enable companies within this area to operate in new markets (Shandong Hi-Speed Group Co., LTD., 2017).

The final investment mentioned in Table 4 aims to construct a new highway in Serbia with a length of 30,9 kilometres (Ralev, 2017). This highway is supposed to increase the general connectivity in Serbia.

4.4 Maritime and infrastructural investments combined

The Chinese maritime and infrastructural investments will hereby be combined in order to obtain a better insight into how the investments are distributed in Europe. The number of investments are added up, the differing importance of investments is not taken into account. The first figure in this section will include all data, the second figure will exclude HPH since this is the only company included in the data which is not a SOE. The investments are categorized by region, only the countries in which investments are made are included. This is done as follows:

- Hamburg-Le Have range: Belgium, Germany and The Netherlands
- Western Mediterranean: Italy and Spain
- Eastern Mediterranean and Adriatic Sea: Bosnia, Greece, Montenegro and Turkey
- Eastern Europe: Belarus, Hungary, Latvia, Macedonia, Poland, Serbia and Ukraine
- UK: England

Type	H-LH	Western Mediterranean	Eastern Mediterranean & Adriatic Sea	Eastern Europe	UK	Total
Maritime	11	3	5	1	4	24
Road	0	0	2	14	0	16
Rail	0	0	0	3	0	3
Aviation	0	0	0	1	0	1
Total	11	3	7	19	4	44

TABLE 5: NUMBER OF CHINESE MARITIME AND INFRASTRUCTURAL INVESTMENTS COMBINED AND CATEGORIZED BY REGION

Table 5 shows that, on a maritime level, Chinese investments are targeting every European region. The Hamburg-Le Havre (HLH) range and the Mediterranean areas combined are the two largest receivers of Chinese investments. On an infrastructural level, all investments are made in Eastern Europe with the exception of Montenegro.

Type	H-LH	Western Mediterranean	Eastern Mediterranean & Adriatic Sea	Eastern Europe	UK	Total
Maritime	4	2	5	0	0	11

Road	0	0	2	14	0	16
Rail	0	0	0	3	0	3
Aviation	0	0	0	1	0	1
Total	4	2	7	18	0	31

TABLE 6: NUMBER OF CHINESE MARITIME AND INFRASTRUCTURAL INVESTMENTS COMBINED AND CATEGORIZED BY REGION, WITH THE EXCEPTION OF HPH

With HPH taken out of the equation, the distribution of Chinese investments seems more skewed towards the East. All investments included in Table 6 are executed by Chinese SOEs, so they might be fairly representative of China's policy. If this is the case, they seem especially interested in Eastern Europe, the Eastern Mediterranean area and the Adriatic Sea region.

4.5 Conclusion

Considering the investments on both maritime and infrastructural level, it seems that China has already made much effort to increase its involvement in Europe. The maritime investments can be split into two parts: the investments done by COSCO Shipping and the ones performed by HPH. COSCO Shipping is a SOE and therefore generally complies with the Chinese policy, in this case OBOR. HPH, on the other hand, is a private firm headquartered in Hong Kong, which is known for not following the general Chinese policies due to English influences, and therefore its investments do not necessarily have to comprehend with the OBOR-related strategies. COSCO Shipping seems to be most interested in ports adjoining the Mediterranean Sea. With investments in Spain, Italy, Greece and Turkey it acquired a significant network of ports in that area. HPH's maritime assets are more scattered, but there does seem to be a centre of gravity; the HLH range. HPH and its subsidiary ECT have been involved in the HLH range for 16 years now, and during that period they have acquired various assets in The Netherlands, Belgium and Germany. During this time the supply chain, of which the Port of Rotterdam is the largest component based on trading volume, has been the largest in Europe.

As far as the infrastructural investments are concerned, these are not in close proximity to Rotterdam in any case. All Chinese infrastructure related investments have been executed in Central and Eastern European countries. The investments covered every aspect of land infrastructure; they include roads, railways, bridges and tunnels. Contrary to the maritime investments, where some investments were performed by a private company, the infrastructure investments are all performed by Chinese SOEs. A possible explanation for this could be that a private company is not likely to be convinced to invest in European infrastructure, because the project would not be profitable in most cases. However, since the SOEs follow the Chinese political agenda, the benefits of such an investment may be different than purely economic.

5 Consequences of the OBOR-related developments for the Port of Rotterdam

5.1 Introduction

In this section, the consequences of the investments which have just been discussed will be evaluated for the Port of Rotterdam. The approach will be the same as in the previous section: the maritime aspect will be discussed first, followed by the infrastructural aspect. In addition, an interview will be presented with a high executive of the Port of Rotterdam. In the end, all sections will be briefly summarized and the complementarity of the maritime and infrastructural elements will be clarified.

5.2 Maritime aspect

The data available indicate that China's maritime foothold in Europe will only increase. It has acquired many maritime assets in a relatively short time already, and this trend is likely to continue. Besides acquiring for instance a container terminal, it is also important to develop this asset into a more efficient and larger terminal in order to generate more economic value. Also in this field, China seems determined to make its investments a success. For example, the container throughput in the Port of Piraeus, which is under control of COSCO Shipping, has increased from 880.000 TEU in 2010 to 3.36 million TEU in 2015 (Hellenic Shipping News, 2016). Besides the Port of Piraeus, COSCO Shipping has invested in several Mediterranean ports, thereby creating a maritime network in Southern Europe and enhancing their strategic value. It is clear that the ports which are under COSCO Shipping's control will cooperate with each other which could result in mutual benefits.

At this point, in order to further investigate to what extent this is threatening to the Port of Rotterdam, the following figure will show the respective European maritime hinterlands.

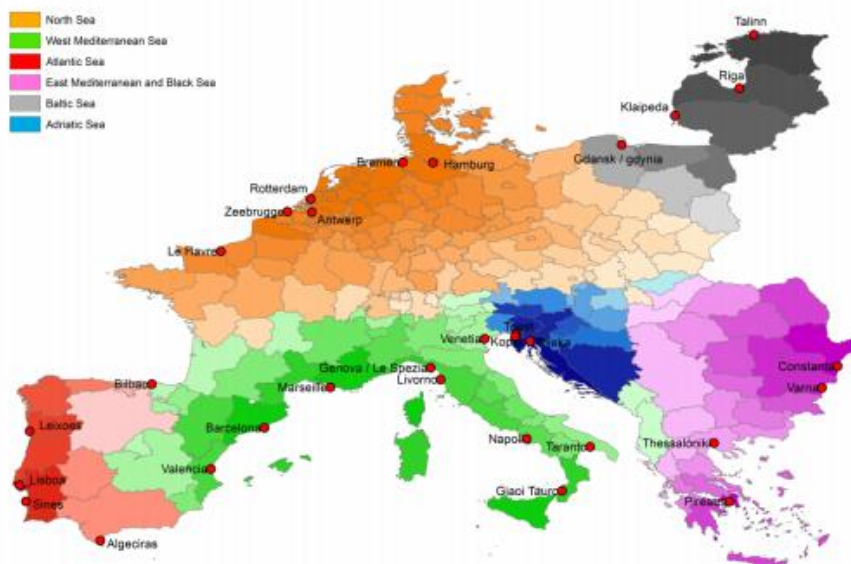


FIGURE 5: EUROPEAN MARITIME HINTERLANDS (SOURCE: (ECORYS, 2016))

As can be seen in Figure 5, the North Sea hinterland covers the largest area. The North Sea hinterland represents 57% of the total containerized throughput in Europe, followed by the Mediterranean region with 28% (Ecorys, 2016). For the Port of Rotterdam, the main new competition for Central and Eastern Europe comes from ports adjoining the Mediterranean and the Adriatic Sea. The development of the Port of Piraeus is less relevant for the Port of Rotterdam, because it serves a different hinterland. But ports in Spain, Italy and possibly soon Montenegro can be competing for hinterland served at this very moment by the Port of Rotterdam. The Mediterranean and the Adriatic hinterlands are likely to expand northwards, at the expense of ports adjoining the North Sea. This will not have a very strong direct effect on the Port of Rotterdam either, because it will sooner affect the French and Belgian ports. However, lower total throughput for the North Sea ports could increase inter-port competition in the Hamburg – Le Havre range because ports do not want to lose market share. This is at the same time an opportunity to increase the overall strategic connectivity for the HLH ports; cooperation could result in mutual benefits. Improving the connectivity among the ports and aligning the separate port policies could enable the ports to specialize more in a particular niche and thus increase the competitiveness. The Port of Rotterdam already cooperates with Belgian and German ports and logistic hubs to a certain extent. Increasing the intensity and widening the scope to the entire HLH range could further strengthen the overall competitiveness of the HLH range and prevent these ports from losing market share to upcoming Mediterranean ports.

However, as a result of this increasing market concentration due to a fiercer competition, the market power of container terminal operators is likely to further increase. If the operator of the container terminal in a particular port acquires a larger market share, this has a positive effect on the port's containerized throughput. Container terminal operators are also eager to increase their strategic connectivity by creating networks of ports in which they operate.

Operator	2016 rank	2020 rank
Cosco-China Shipping	4 th & 8 th	1 st
APM Terminals *	2 nd	2 nd
PSA International	3 rd	3 rd
Hutchinson Port Holdings	1 st	4 th
DP World	5 th	5 th
Terminal Investment Ltd	6 th	6 th
CMA CGM	9 th	7 th

TABLE 7: PREDICTED GROWTH OF CONTAINER TERMINAL OPERATORS (SOURCE: (ECORYS, 2016))

Table 7 predicts that by 2020, COSCO Shipping will be the largest container terminal operator in the world, surpassing HPH which has various assets in The Netherlands, Belgium and Germany. This is an advantage for ports affiliated with COSCO Shipping, as they can benefit from COSCO Shipping's increasing bargaining power and gain influence on shaping supply chains.

Besides shipments for which the final destination lies on the European continent, there is also a vast share of containers transshipped in Europe from Asia in order to be shipped further to the East Coast of North America. Vessels carrying such freights often travel through the Strait of Gibraltar to the Port of Rotterdam, and from there they depart to North America. Geographically, ports in Southern Europe have a more favorable location for handling such freights, which is a definite advantage in comparison to the Port of Rotterdam. The quality of the hinterland is less important for this decision making, because these freights are merely transshipped and then continue to their destination. With this in mind, the Mediterranean ports could become more attractive for such freights if they manage to run their ports efficiently enough. The superior hinterland connections in Northern Europe are not important; the transshipment efficiency of the port is the decisive factor for landing these freights.

Finally, the impact on the short sea services will be discussed. The figure below shows the weekly amount of short-sea vessels departing from The Netherlands.

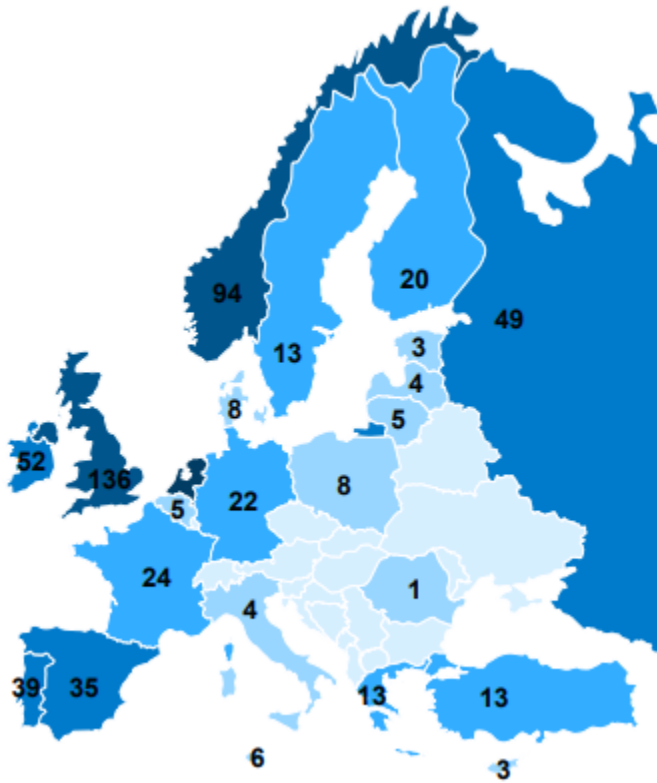


FIGURE 6: NUMBER OF SHORT SEA CONNECTIONS PER WEEK (SOURCE: ECORYS, 2016)

As can be deduced from figure 6, The Netherlands primarily serves Northern Europe and the UK with their short sea services. The OBOR-related projects in the Mediterranean Sea are not likely to compete for these markets, because due to their geographical disadvantage compared to The Netherlands for serving the Northern European market, they will most likely not be able to provide the same efficiency. A small market share of The Netherlands' short sea service can however be challenged, namely the Southern European area. This market can very well be served from the Southern European ports managed by COSCO Shipping.

5.3 Infrastructural aspect

Looking at the Chinese infrastructural investments done in Europe, it stands out that Central and Eastern European countries are in all cases the receiver of the investment. This could be correlated to the Chinese establishment of the "16+1" formation in 2012. "16" refers to sixteen European countries, of which eleven are member of the EU and five are not. The EU-member states include: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. The other five countries are Albania, Bosnia and Herzegovina, Macedonia, Montenegro and Serbia. The "1" stands for China, and this designation can be interpreted as a Chinese desire to further cooperate with these sixteen European countries in order to stimulate economic growth and connectivity. In order for China to successfully implement its OBOR initiative, it is necessary to improve all infrastructure in the regions which fall under the OBOR initiative to a sufficient standard. In the other regions of Europe, the infrastructure is mostly already adequate for extensive trading, therefore less infrastructural investments are needed in those regions. Besides, countries with a well-developed infrastructure generally have

more economic resources than countries that do not possess the same quality and quantity of infrastructure, and therefore are less reliant on foreign loans to (re)construct the required infrastructure.



FIGURE 7: PAN-EUROPEAN TRANSPORT CORRIDORS

Figure 7 shows the so-called Pan-European transport corridors. In several conferences attended by representatives of EU member-states, of which the last one dates back to 1997, ten routes were depicted which all need major improvements. These corridors include roads, railways and waterway routes. This explains the Chinese vigor to perform infrastructural investments in these regions. The OBOR initiative begins in China, and ends in Western Europe. In order for this plan to work, the infrastructure in between has to be of a proper standard.

China's rapprochement to these sixteen countries has created contrasting views within the EU. The sixteen countries which are supposed to benefit from these investments all welcomed the initiative in the beginning, since it provides means for achieving national improvements in the field of infrastructure and trade. The Hungarian Prime Minister Viktor Orban described it clearly in 2017: *"The world economy's centre of gravity is shifting from west to east; while there is still some denial of this in the western world, that denial does not seem to be reasonable. We see the world economy's centre of gravity shifting from the Atlantic region to the Pacific region. This is not my opinion – this is a fact"* (Kynge & Peel, 2017). Not surprisingly, the other countries, mainly the other EU member-states, received the 16 + 1 initiative with a certain amount of suspicion. Their main concerns can be formulated in two statements. Firstly, EU member-states which are also affiliated with the 16 + 1 project could be shifting in preference from the EU to China. The EU's common policy has been extremely difficult to negotiate in

the recent period, and also the relationships between the more prosperous member-states and the poorer ones have been tough. China reaches out to the less prosperous member-states, making it attractive for them to change their allegiance (Kynge & Peel, 2017). Secondly, the way Chinese SOEs operate does not strike well. Because of their general supply excess, easy funding by state-owned banking institutions and the full support of their government the SOEs could evaluate business choices in a different manner than private western firms. Motivations for Chinese SOEs to partake in a certain project could be different than merely economic; geo-political factors or energy security could be decisive. These procedures from SOEs could give them an unfair advantage over western firms and thereby disturb a competitive market (Chaisse & Matsushita, 2018).

The apparent exclusiveness of Western Europe in China's diplomatic plans could justly be interpreted as threatening for the Port of Rotterdam. However, the OBOR initiative is based on mutual cooperation and benefit, and in practice this vision is not detected by many European countries. Firstly, in Table 2 it can be noticed that the construction process of the particular infrastructural projects is mainly performed by Chinese companies. For that reason, the loan which these countries obtain from Chinese companies in order to carry out these projects have a long projected time to become profitable. Since the immediate benefits are limited due to the fact that it does often not positively influence economic activity or employment in the country of interest, the benefits rely on increased trade which should follow from the infrastructural improvements. To take the Hungary-Serbia railway as an example; for Hungary the cost of constructing this railway will be between 3.5 and 3.8 billion USD. The project has been delayed due to public procurement procedures and as a result the actual construction is expected to commence in 2021. In that case the project is estimated to be finalized by the end of 2023. According to estimates, the time it will require for the project to become profitable will be between 130 and 2,400 years (Vörös, 2018). This is an example of a country which is actually subject to a Chinese investment. The countries which are not included in Figure 13 have not been subject of any Chinese investment.

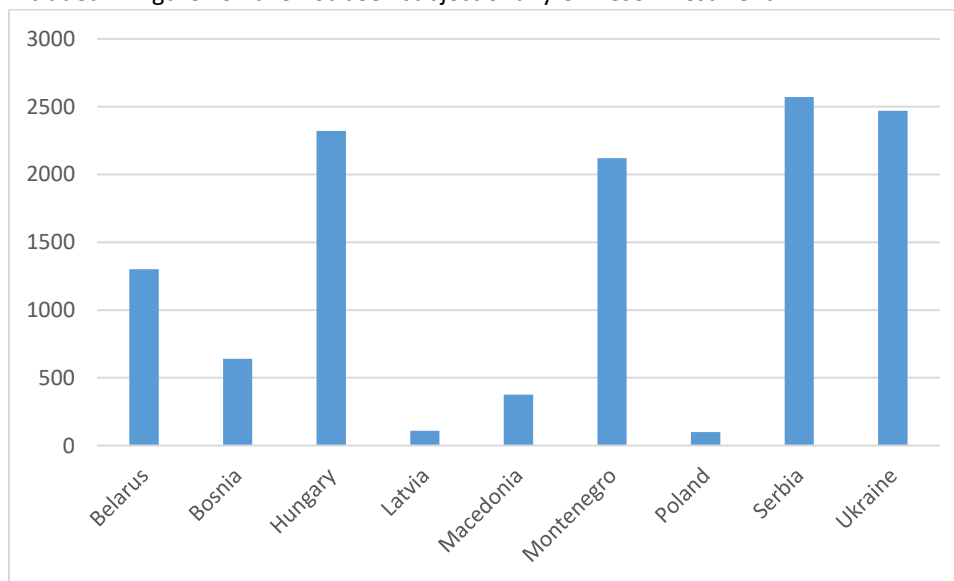


FIGURE 8: CUMULATIVE AMOUNT OF CHINESE INFRASTRUCTURAL INVESTMENTS PER COUNTRY IN MILLIONS (USD)

The 16 + 1 initiative was introduced in 2012. The funding each country received is not distributed equally as figure 8 shows. It shows inequality between the nine countries which actually received funding, but there are also seven countries missing from the graph meaning they have not been subject of a Chinese infrastructural investment at all. Given the fact that eleven countries are also EU member-states, the inclusion in the 16 + 1 initiative seems less attractive than was interpreted originally. The EU generally supports its weakest member states, therefore being a

member of the EU comes with certain perks as well. These countries were hoping that China had more to offer with their 16 + 1 initiative, but the results so far are below expectation for many (Stanzel et al, 2016).

5.4 Interview

The following table contains simplified answers regarding relevant subjects for this thesis. The answers follow from an interview done with Edwin van Espen. He is the Program Manager International Port Projects for the Port of Rotterdam. Due to his expertise in international port and port-related developments, he is the perfect person to conduct this interview with.

Motives Chinese companies	The commercial and geo-political motives are coming together, gradually but persistently overlapping.
Strategic connectivity	Strategic connectivity is important. Hutchison is important to the Port of Rotterdam, partly due to their stake in ECT. Hutchison is also a partner of the Port of Rotterdam in the Port of Sohar in Oman.
Competition from the Port of Piraeus	Is non-existent, it functions in a different service area. It is mainly a transfer hub for the Mediterranean region.
Competition from Southern-European ports	Rivalry is not a real threat as these ports lack certain vital conditions, mainly hinterland infrastructure, which makes them less competitive. If they manage to address these problems these ports could more extensively compete with the ports located in the Hamburg-Le Havre range.
Transshipment services	If they manage to duplicate the draft and transshipment processes from Piraeus they could compete with the Port of Rotterdam. However, the Port of Rotterdam is far superior in digitalization and the customs function much better, so this will probably ensure that the Port of Rotterdam will remain more efficient.
Cooperation with other ports in the Hamburg-Le Havre range	This is a relatively new development, but cooperation has increased significantly, and this trend is likely to continue.
Competition from railway transport	Very limited. It is not a sustainable model, because it relies heavily on subsidies. Railway transport could however be profitable for certain markets like fashion, but this will be no more than a niche.
Rotterdam's inclusiveness in the railway network	Rotterdam is connected to Tilburg, which is the end point of the China-Europe railway. This makes Rotterdam strategically connected to the Eurasian railway network.
Effect of Chinese investments in Eastern-European infrastructure	Factors driving these investments are mainly political. The economic impact of these investments on the Port of Rotterdam are nil.
Complementarity of all OBOR-related investments	This could give China a very competitive position in Europe. They will have a lot of global influence, perhaps too much. There are also positive sounds which say that everyone can benefit from the increased trade and production resulting from the OBOR-initiative.

TABLE 8: OUTCOMES INTERVIEW

5.5 Interpretation

Valuable information could follow from comparing the findings of this thesis to the answers provided by the foregoing interview.

Commercial and geopolitical motives are converging

The first interesting difference is the apparent converging of commercial and geo-political motives for Chinese companies. Where this thesis made a distinction between HPH and COSCO due to the fact that HPH is a private company and COSCO is a state-owned enterprise, the interviewee considered these companies as “the same coin but different sides of it”. The argumentation for this is that the commercial and geo-political motives are blending together, making it impossible to differentiate them anymore.

Strategic connectivity is a valuable factor for competition

Furthermore, the importance of strategic connectivity was acknowledged by the interviewee. The relation between the Port of Rotterdam and HPH was discussed, which is mutually beneficial for both parties. HPH is a valuable client able to import much cargo, and economically Port of Rotterdam is the best way to get the cargo into Europe due to its deep draft and excellent hinterland connections. There is also a different angle, HPH and the Port of Rotterdam have a joint venture in the Port of Sohar in Oman. Strategically this is valuable, partly because it is connected to one of the Chinese belt roads.

Service areas with Mediterranean ports are not (yet) overlapping

Both the findings of this thesis and the answers of the interviewee depicted that the competition from the Port of Piraeus is not threatening to the Port of Rotterdam. The competition from Mediterranean ports on the other hand, was estimated lower by the interviewee than was estimated in this thesis. On the short-term there is consensus that they do not meet the conditions to compete with the Port of Rotterdam, which are: good hinterland connections, deep draft, transparency, and a good business culture. On a longer term, the interviewee also saw opportunities related to the rise of other European ports. As a response to the question whether the Port of Rotterdam could benefit from the vast development of ports in other European regions the answer was:

“It depends on how you look at it, this OBOR-initiative could generate more trade so one can benefit from it. Or you can say no; it will merely duplicate your function in a different location, then you can see it as a threat. And this is actually the main question: what is it? Or is it both at the same time?”

This shows that it is yet to be revealed what the impact of these developments will have on the Port of Rotterdam.

Efficiency coming from digitization and customs procedures become more dominant in port competition

Besides the function as a gateway hub for Europe, the Port of Rotterdam is also active in transshipment. Cargo with North-America as its final destination is often transshipped in Europe. Where this thesis emphasized Rotterdam’s geographical disadvantage compared to Mediterranean ports competing for this cargo, the interviewee mentioned that the Dutch customs function much better than in the Mediterranean countries and that the Port of Rotterdam is much further ahead in the field of digitalization, which together will probably ensure that the Port of Rotterdam will remain more efficient in transshipment services.

HLH ports all seem convinced by the benefits of cooperating with each other

Where a few years ago inter-port cooperation within the HLH range occurred rarely, they now all seem to be more positive about cooperating with other ports. Despite the fact that they are still competitors to each other, they found that the mutual benefits that follow from more extensive cooperation could be significant. One result of this new trend is the increase in strategic connectivity, which on its turn has a positive influence on the international competitiveness of the country in which the port in question is established.

Railway transport no real threat

Despite the significant investments and efforts from China to revitalize the ancient silk roads, the seaborne traffic of containers is not disputed as the most efficient way of transport for containers. The process of reconstructing these railways is still in an early stage, but even when a more considerable part is finished it will still be no serious competition, unless the Chinese government chooses to continue subsidizing these freights. However, long-term subsidizing of a relatively inferior way of transportation regarding containers is not likely. This does not mean that the Port of Rotterdam did not make efforts to be connected to this railway network. Rotterdam is strategically connected to Tilburg, which is the end point of the Eurasian railway connection. So if this railway connection becomes an important mode of transportation for containers after all, the Port of Rotterdam will be included in these new trade flows.

5.6 Strategic alternatives

Following the subjects discussed above, several strategic alternatives for the Port of Rotterdam could be considered. The OBOR-related investments are mainly performed in the Central- and Eastern-European region, and the Mediterranean area. Therefore the development of these regions are the foundation at which the strategic alternatives could be formulated applicable for the Port of Rotterdam. Furthermore, the function of a port can be divided in a gateway and a transshipment function. These two distinctions result in the following table, which contains strategic alternatives categorized by service area and the function of the port.

Function	Service Area	
	Central and East Europe	Mediterranean
Gateway	Acquiring assets at strategic locations in hinterland Further collaborate with HLH ports Form strategic alliance with Hutchison / ECT in strengthening position in hinterland	Only when China acquires stakes in main gateway ports in Mediterranean or Adriatic ports or if port conditions increase significantly
Transshipment	Short-sea traffic to Scandinavia could be more contested, could however also be considered an opportunity	Not an issue on short term

TABLE 9: STRATEGIC ALTERNATIVES FOR THE PORT OF ROTTERDAM

Gateway function

As for the Port of Rotterdam's gateway function in Europe, several possibilities could be considered. The Mediterranean ports serve a different hinterland, and are therefore no threat on the short-term. However, if they manage to increase their hinterland connections, draft and their respective national business climate they could expand their service area northwards to regions currently served by HLH ports. As a result, inter-port competition within the HLH range could increase, because no port wants to lose market share. Also if China acquires stakes in ports adjoining the Adriatic Sea, this could be threatening on the long-term. Italian and Slovenian ports could very well serve Austria and the South of Germany, which are service areas of the Port of Rotterdam. Table 3 shows that

since 2015, COSCO has acquired many stakes in Southern-European ports. If new investments follow at a similar rate as in the period 2015-2018, COSCO will control many Southern-European ports in the near future.

The Port of Rotterdam will remain the main gateway in Europe for the foreseeable future, however this status could be more pressurized as ports adjoining the Mediterranean and Adriatic Sea improve their hinterland connections, draft, digitization and transparency. The Port of Rotterdam should continue to increase their strategic connectivity, in order to remain more attractive than the competition. Several ways are possible to realize this. Firstly, they ought to acquire assets in strategic locations in the hinterland. One of their biggest clients: Hutchison/ECT already has a large network of ports and logistical hubs in Europe as can be seen in Table 3. The relationship between the Port of Rotterdam and Hutchison/ECT is mutually beneficial, therefore they should make their assets available to each other as much as possible. Looking for new assets in the hinterland which yield strategic value is also important. This does not have to be in close proximity to Rotterdam, acquiring assets in Eastern-Europe and Austria could be a valuable addition to the supply chain.

Next, the Port of Rotterdam can increase its competitiveness by cooperating more extensively with other ports in the Hamburg-Le Have range. The relationship between the ports of Rotterdam and Antwerp has improved significantly in the last years, which enables interesting possibilities. Characteristic of this improved relationship was their attempt in 2011 to jointly acquire a stake in the Port of Duisburg. Sharing knowledge, assets and resources could improve the competitiveness of all HLH ports individually, and also as a unit. If all HLH ports do this, they could form an extremely competitive block in Europe with unmatched hinterland connections. This would be an adequate response to the rise of ports adjoining the Mediterranean and Adriatic Sea.

Transshipment function

The Port of Rotterdam's transshipment services are hardly contested by Central-, Eastern- and Southern-European ports. For cargo with North-America as its final destination, the Mediterranean ports could be interesting due to their location. However, their draft is insufficient, the customs in these respective countries function less efficient than in The Netherlands and the Port of Rotterdam is much further ahead in the field of digitization. This makes them no serious competition for these freights despite their geographical advantage.

As can be seen in figure 6, the UK and Scandinavia are the most important locations for Rotterdam's short-sea traffic. The cargo destined for the UK is not contested by the latest maritime developments in Europe. Scandinavia could also be served by the Port of Gdansk in Poland, which is under the control of HPH. Since HPH has a large interest in the Port of Rotterdam, it is not likely that they will move a large part of the transshipment there. On the other side, since HPH has interest in the ports of Rotterdam and Gdansk, these ports could cooperate to achieve the most efficient outcome and with that increase their competitiveness. This can be considered an opportunity and a threat. The Port of Rotterdam does have influence on the outcome, since they can effectuate further cooperation with the Port of Gdansk.

6 Conclusion

This research has attempted to answer the following research question:

“Is China’s investment and construction activity in Europe reason for the Port of Rotterdam to consider its strategic alternatives being one of the main gateways of Europe?”

This thesis has used four subsections to attain a well-grounded answer to this question. In the first part, it has been concluded that there is not one specific motivation behind the OBOR initiative which can be applied to every region participating in OBOR.

Next, a theoretical framework has been established which makes it possible to concretize the various consequences of OBOR. Strategic connectivity of the Port of Rotterdam was introduced as a tool of increasing the international competitiveness of The Netherlands. The actual Chinese maritime and infrastructural investments in Europe were clarified in the next section.

Maritimately, China has created a network of ports adjoining the Mediterranean Sea. These OBOR-related investments were executed by COSCO Shipping, which is a SOE in contrast to Hutchison Port Holding whose assets are more concentrated in the Hamburg-Le Havre range. The data on Chinese investments in European infrastructure showed that Eastern Europe is the subject in all cases with the exception of two projects in Montenegro.

At last, the consequences of these Chinese investments were assessed for the Port of Rotterdam. On the short term, the maritime as well as the infrastructural investments will not greatly affect the Port of Rotterdam. The ports in the Eastern Mediterranean serve a different hinterland than the Port of Rotterdam, so the most prominent competition comes from the Western Mediterranean ports. In this stadium, the hinterland connections and port efficiency of the Port of Rotterdam are superior to that of the Western Mediterranean ports. However, if these Mediterranean ports manage to improve their hinterland connections, increase their draft, become more transparent and the business climate in their respective country improve they could seriously compete with the ports in the Hamburg-Le Havre range and increase the inter-port competition.

The infrastructural investments consisted mostly of road and rail improvements. The economic value of the roads is highly complementary to the maritime investments, so these effects cannot be predicted yet since most projects are still under development. The containerized trading volume by rail is still very minimal compared to the maritime trading volume. On the short and medium term this will not be a serious competition to the sea born transport.

So as an answer to the research question, the Port of Rotterdam should definitely still aim to be the main gateway for Europe. It should, however, try to improve its strategic connectivity with the other ports in the Hamburg-Le Havre range in order to remain the main gateway. Chinese investments in Mediterranean ports combined with their infrastructural improvements in Central and Eastern Europe could pressurize the Port of Rotterdam’s position as the main gateway, but only if the other conditions such as hinterland connections, deep draft, transparency and an attractive national business climate are met. But even if all those requirements are achieved, the Port of Rotterdam could still remain the main gateway in Europe. Important for preserving this status is improving its strategic connectivity, by cooperating more extensively with companies active in the Port of Rotterdam and ports located in the Hamburg-Le Havre range.

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